PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

Assignment ID: PATI331949

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Eaton Intelligent Power Limited	08/02/2021

RECEIVING PARTY DATA

Company Name:	Danfoss Power Solutions II Technology A/S
Street Address:	Nordborgvej 81
City:	Nordborg
State/Country:	DENMARK
Postal Code:	6430

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	17574050

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: (612)332-5300
Email: astevens@merchantgould.com
Correspondent Name: T. Patrick Johnson
Address Line 1: 150 S. 5th Street, Suite 2200
Address Line 4: Minneapolis, MINNESOTA 55402

ATTORNEY DOCKET NUMBER:	18673.0443USC1
NAME OF SUBMITTER:	Aimee Stevens
SIGNATURE:	Aimee Stevens
DATE SIGNED:	06/28/2024

Total Attachments: 125
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page105.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page44.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page82.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page45.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page97.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page78.tiff

source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page28.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page55.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page125.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page43.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page38.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page72.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page99.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page74.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page8.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page27.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page32.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page58.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page15.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page93.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page52.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page107.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page95.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page120.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page6.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page110.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page121.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page108.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page7.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page12.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page119.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page76.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page60.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page33.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page40.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page81.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page42.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page35.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page112.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page49.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page98.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page84.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page101.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page92.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page3.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page64.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page113.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page61.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page53.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page115.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page123.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page26.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page67.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page116.tiff

source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page50.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page87.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page70.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page34.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page65.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page103.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page68.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page63.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page4.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page47.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page39.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page79.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page90.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page54.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page91.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page59.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page48.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page109.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page10.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page80.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page66.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page16.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page111.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page25.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page57.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page20.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page9.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page118.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page29.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page31.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page30.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page117.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page11.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page124.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page37.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page24.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page69.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page13.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page62.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page2.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page41.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page94.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page21.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page46.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page122.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page71.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page73.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page104.tiff

source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page77.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page19.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page75.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page85.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page88.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page1.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page56.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page36.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page106.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page18.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page83.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page86.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page17.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page100.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page14.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page51.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page22.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page102.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page23.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page89.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page114.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page5.tiff
source=2024-06-28-ASSIGNMENT-SIGNED-Eaton to Danfoss#page96.tiff

IP ASSIGNMENT AGREEMENT

This IP ASSIGNMENT AGREEMENT (this "Agreement") is executed as of August 2, 2021 (the "Effective Date"), between Eaton Intelligent Power Limited, a private company limited by shares, duly organized and existing under the laws of Ireland, with registered company number 523985, having its registered office at Eaton House, 30 Pembroke Road, Dublin 4, Ireland (the "Assignor"), and Danfoss Power Solutions II Technology A/S, a, a public limited liability company, duly organized and existing under the laws of the Kingdom of Denmark, having its registered office at Nordborgvej 81, 6430 Nordborg, Denmark (the "Assignee"). For good and valuable consideration, receipt of which is acknowledged, the Assignor and the Assignee agree as follows:

A. The Assignor and Assignee are direct or indirect wholly owned subsidiaries of Eaton Corporation plc, an Irish public limited company ("Eaton"), and Danfoss A/S, a public limited liability company incorporated under the laws of the Kingdom of Denmark ("Danfoss" and together with Eaton, the "Principals"), respectively.

B. Pursuant to that certain Asset Sale and Purchase Agreement, dated contemporaneously with the date herewith (as it may be amended, restated or otherwise modified from time to time, the "Purchase Agreement"), by and between Assignor and Assignee, Assignor wishes to sell, assign, transfer, convey and deliver to the Assignee certain Assigned IP (defined below), upon the terms and subject to the conditions set forth in the Purchase Agreement and this Agreement.

NOW THEREFORE, in consideration of One U.S. Dollar (U.S. $1.00) and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by Assignor and Assignee, Assignor and Assignee agree as follows:

1. Definitions. Capitalized terms not defined herein shall have the meaning set forth in the Purchase Agreement.

   "Business" means the following activities conducted by Eaton's Hydraulics Segment: designing, engineering, developing, testing, manufacturing, assembling, marketing, selling and servicing the following product lines, as such business is conducted as of the date hereof, but excluding the Excluded Business:

   (a) hydraulic pumps, hydraulic motors, hydraulic power units, hydraulic valves, hydraulic integrated circuits, hydrostatic transmissions, hydraulic steering units, hydraulic accumulators, hydraulic cylinders, and HFX programmable controllers, VFX programmable displays, Pro-FX® software and TFX remote monitoring systems for controlling and monitoring hydraulic systems and components, in each case serving the Mobile Off-Highway End Market, the Industrial End Market, and the On-Highway End Market;

   (b) hydraulic hoses and fittings, industrial and specialty hoses, fuel, air conditioning and refrigeration hoses and assemblies, and connectors, in each case serving the Mobile Off-Highway End Market and Industrial End Market;

(c) aerial refueling hoses; and

(d) Airflex® brand industrial drum brakes, industrial disc brakes, constricting and expanding industrial clutches, and associated torque limiting couplings, quick release valves, and rotorseals.

"Governmental Authority" means any national, federal, state or local governmental, regulatory or administrative authority, agency or commission or any judicial or arbitral body.

"Intellectual Property" means all intellectual property rights arising under the Laws of the United States or any other jurisdiction, including the following: (a) trade names, trademarks and service marks (registered and unregistered), Internet domain names, trade dress and similar rights, and applications to register any of the foregoing and all goodwill associated with any of the foregoing; (b) patents and patent applications and rights in respect of utility models or industrial designs, including all provisionals, continuations, continuations-in-part, divisionals, reissues, reexaminations, renewals and extensions; (c) copyrights and mask works and registrations and applications therefor and all moral rights associated therewith; and (d) trade secrets, know-how, inventions (whether or not patentable), invention disclosures, discoveries, methods, processes, technical data, specifications, research and development information, technology, algorithms, software (in source code and object code form), databases, data collections, data analytics and other proprietary or confidential information, including customer and supplier lists. "Person" means an individual, corporation, partnership, limited liability company, limited liability partnership, syndicate, person, trust, association, organization or other entity, including any Governmental Authority, and including any successor, by merger or otherwise, of any of the foregoing.

2. Assignment. As of the Effective Date, the Assignor hereby sells, assigns, transfers, conveys and delivers to the Assignee, the Assignee accepts, all of the Assignor's right, title and interest in and to all the Intellectual Property owned by Assignor and used or held for use exclusively in the Business or under development for use exclusively in the Business (collectively, the "Assigned IP"), including without limitation the Intellectual Property set forth in **Exhibit A** to this Agreement, including the right to seek damages for the past, present and future infringement or other violation of any such Assigned IP and the goodwill appurtenant to any such Assigned IP. Assignee may at any time freely assign any of its right, title and interest in and to the Assigned IP, including to any of its Affiliates, and may record or permit others to record such subsequent assignments. The foregoing assignment also includes all of Assignor's right to file patent, trademark and copyright applications throughout the world for the Assigned IP in the name of Assignee, its successors and assigns; and all claims, demands, income, damages, royalties, payments, accounts and accounts receivable now or hereafter due and/or payable, and rights to causes of action and remedies, related to any of the Assigned IP, including without limitation all proceeds to infringement suits. The Assignor hereby waives all moral or similar rights arising from any of the Assigned IP insofar as the Assignor may lawfully do so and such waiver shall extend to all successors and assigns to the copyright in the Assigned IP.

3. Further Assurances. The Assignor shall, upon request of Assignee and for no additional consideration, execute all documents reasonably required to properly vest the Assigned IP, or any part thereof, in the Assignee or otherwise to perfect the Assignee's title in and to the Assigned IP. For purposes of clarity, the Assignee shall be responsible for any costs or expenses associated with the Assignor obtaining any associated documents, including without limitation apostilles, legalizations, or notarizations.

4. Domain Name Transfer. The Assignor agrees to initiate the transfer process with respect to the domain names included in the Assigned IP (the "Assigned Domain Names") electronically from the Assignor's account and servers to the Assignee's account and as soon as reasonably practicable following the Effective Date, and to execute and deliver such assignment and other documents, if reasonably required, and take such action as the registrar of the Assigned Domain Names may reasonably require in order to effectuate the transfer of control and ownership of the Assigned Domain Names from the Assignor to the Assignee.

5. Recordation. The Assignee is given full powers to attend to the filing and recordation of this Agreement before the relevant authoritie(s) as necessary to enforce the above mentioned rights and obligations in conformity with this Agreement, and the Assignor hereby consents to such filing and recordation.

6. General. This Agreement and all disputes or controversies arising out of or relating to this Agreement or the transactions contemplated hereby shall be governed by, and construed in accordance with, the internal laws of the State of Delaware, without regard to the laws of any other jurisdiction that might be applied because of the conflicts of laws principles of the State of Delaware. Each of the parties hereto irrevocably agrees that any legal action or proceeding arising out of or relating to this Agreement brought by any party hereto or its successors or assigns against the other party hereto shall be brought and determined in the Court of Chancery of the State of Delaware, provided, that if jurisdiction is not then available in the Court of Chancery of the State of Delaware, then any such legal action or proceeding may be brought in any federal court located in the State of Delaware or any other Delaware state court, and each of the parties hereto hereby irrevocably submits to the exclusive jurisdiction of the aforesaid courts for itself and with respect to its property, generally and unconditionally, with regard to any such action or proceeding arising out of or relating to this Agreement and the transactions contemplated hereby. Each of the parties hereto agrees not to commence any action, suit or proceeding relating thereto except in the courts described above in Delaware, other than actions in any court of competent jurisdiction to enforce any judgment, decree or award rendered by any such court in Delaware as described herein. Each of the parties hereto further agrees that notice as provided herein shall constitute sufficient service of process and the parties hereto further waive any argument that such service is insufficient. Each of the parties hereto hereby irrevocably and unconditionally waives, and agrees not to assert, by way of motion or as a defense, counterclaim or otherwise, in any action or proceeding arising out of or relating to this Agreement or the transactions contemplated hereby, (a) any claim that it is not personally subject to the jurisdiction of the courts in Delaware as described herein for any reason, (b) that it or its property is exempt or immune from jurisdiction of any such court or from any legal process commenced in such courts (whether through service of notice,

attachment prior to judgment, attachment in aid of execution of judgment, execution of judgment or otherwise) and (c) that (i) the suit, action or proceeding in any such court is brought in an inconvenient forum, (ii) the venue of such suit, action or proceeding is improper or (iii) this Agreement, or the subject matter hereof, may not be enforced in or by such courts.

7. Counterparts. This Agreement may be executed in two or more counterparts, all of which shall be considered one and the same instrument and shall become effective when one or more counterparts have been signed by each of the parties hereto and delivered to the other party.

IN WITNESS OF WHICH, THIS AGREEMENT HAS BEEN DULY EXECUTED BY THE UNDERSIGNED SIGNATORIES ON BEHALF OF THE PARTIES.

[*Signature page follows*]

SIGNED FOR AND ON BEHALF OF ASSIGNOR

EATON INTELLIGENT POWER LIMITED

By: _____
Name: John Kavanagh
Title: Director

SIGNED FOR AND ON BEHALF OF ASSIGNEE

DANFOSS POWER SOLUTIONS II TECHNOLOGY A/S

By:_____
Name: Torben Christensen
Title: Director

By:_____
Name: Anders Stahlschmidt
Title: Director

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	11/14/2016	10-2018-7016150			HYDRAULIC PUMP CONTROL SYSTEM
United States	11/14/2016	15/776365	03/23/2021	10954927	HYDRAULIC PUMP CONTROL SYSTEM
India	08/18/2016	201817006779			HYDRO-MECHANICAL TRANSMISSION
United States	08/18/2016	15/753846	03/10/2020	10584781	HYDRO-MECHANICAL TRANSMISSION
China	01/23/2018	201880007325.9			PUMP/MOTOR WITH INTEGRATED VARIATOR FOR USE IN HYDRAULIC SYSTEMS
European Patent Convention	01/23/2018	18741617.7			PUMP/MOTOR WITH INTEGRATED VARIATOR FOR USE IN HYDRAULIC SYSTEMS
United States	01/23/2018	16/480112			PUMP/MOTOR WITH INTEGRATED VARIATOR FOR USE IN HYDRAULIC SYSTEMS
Great Britain	09/15/2015	1516311.6			OPPOSED AXIAL PISTON UNIT INTIGRATED DIRVE SOLUTION
European Patent Convention	09/12/2017	17190730.6	09/04/2019	EP3296607	HOSE ALIGNMENT SUBASSEMBLIES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	10/14/2011	11776048.8	07/05/2017	602011039333.2	PARALLEL ARCHITECTURED INTELLIGENT ACCUMULATOR FOR ENERGY SAVING
Great Britain	10/14/2011	11776048.8	07/05/2017	EP2638293	PARALLEL ARCHITECTURED INTELLIGENT ACCUMULATOR FOR ENERGY SAVING
India	10/14/2011	844/KOLNP/2013	5/18/2021	366904	PARALLEL ARCHITECTURED INTELLIGENT ACCUMULATOR FOR ENERGY SAVING
Italy	10/14/2011	11776048.8	07/05/2017	EP2638293	PARALLEL ARCHITECTURED INTELLIGENT ACCUMULATOR FOR ENERGY SAVING
United States	01/23/2015	14/604328	05/24/2016	9346207	HYDRAULIC DRIVE CIRCUIT WITH PARALLEL ARCHITECTURED ACCUMULATOR
United States	05/27/2011	13/117876	10/01/2013	8544675	FLUID RESERVOIR ASSEMBLY
United States	06/11/2010	12/814303	08/06/2013	8499616	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
China	06/11/2010	201510295944.0	12/11/2018	201510295944.0	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
Japan	06/11/2010	2014-105545	11/20/2015	5841192	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
United States	08/05/2013	13/959350	02/10/2015	8950249	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	05/06/2015	2016-567001	12/27/2019	JP6635947	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
South Korea	05/06/2015	2016-7033856			HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
United States	05/06/2015	15/309120	09/03/2019	10399572	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
France	12/19/2013	13810954.1	08/08/2018	EP2935884	CONTACTLESS LINEAR SWASH PLATE POSITION SENSOR
Germany	12/19/2013	13810954.1	08/08/2018	602013041774	CONTACTLESS LINEAR SWASH PLATE POSITION SENSOR
Great Britain	12/19/2013	13810954.1	08/08/2018	EP2935884	CONTACTLESS LINEAR SWASH PLATE POSITION SENSOR
Japan	12/19/2013	2015-548546	01/18/2019	6465809	CONTACTLESS LINEAR SWASH PLATE POSITION SENSOR
South Korea	12/19/2013	2015-7018746	01/25/2021	2209297	CONTACTLESS LINEAR SWASH PLATE POSITION SENSOR
United States	05/13/2014	14/276110	04/26/2016	9322444	HIGH ENERGY VENTILATED CONSTRUCTION BRAKE WITH DUAL DRUM
United States	03/21/2014	14/222420	01/03/2017	9534584	WIND TURBINE ELECTRIC GENERATOR WITH TORQUE LIMITING BRAKE
United States	08/01/2013	13/956973	06/23/2015	9062731	WATER COOLED BRAKE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	06/11/2010	2015-113236	07/07/2017	6169126	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
United States	02/09/2015	14/617431	07/24/2018	10030648	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
Japan	06/11/2010	2015-113237	03/10/2017	6104313	FAULT DETECTION AND MITIGATION IN HYBRID DRIVE SYSTEM
United States	12/17/2010	12/971859	07/15/2014	8776711	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
China	12/20/2010	201080061921.9	02/17/2016	201080061921.9	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
European Patent Convention	12/20/2010	10803683.1	02/06/2019	EP2517081	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
Germany	12/20/2010	10803683.1	02/06/2019	602010056912.8	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
Great Britain	12/20/2010	10803683.1	02/06/2019	EP2517081	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
Italy	12/20/2010	10803683.1	02/06/2019	502019000031657	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
Singapore	12/20/2010	201204621-5	03/31/2015	181871	ACTIVE HEAVE COMPENSATION WITH ACTIVE DAMPING CONTROL
Canada	11/26/2012	2856773	03/10/2020	2856773	PUSH FIT FITTING WITH RETAINING CLIP
France	11/26/2012	12791479.4	05/04/2016	EP2783148	PUSH FIT FITTING WITH RETAINING CLIP

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	08/09/2016	2018506560	12/17/2020	6811766	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
United States	08/09/2016	15/751374	07/14/2020	10711771	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
United States	07/13/2020	16/927316			ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
Great Britain	08/13/2015	1514362.1			SPOOL ANTI-ROTATION MECHANISM WITH REDUCED TORQUE AND FRICTION FOR HYDRAULIC VALVE
China	05/06/2015	201580035445.6	05/10/2019	CN 106460370 A	LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
European Patent Convention	05/06/2015	15789693.7	11/11/2020	EP3140462	LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
Germany	05/06/2015	15789693.7	11/11/2020	EP3140462	LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
Italy	05/06/2015	15789693.7	11/11/2020	EP3140462	LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Italy	08/08/2014	14833989.8	10/24/2018	502019000006917	METHOD FOR DETECTING A BURST HOSE IN A HYDRAULIC SYSTEM
United States	08/08/2014	14/910735	04/03/2018	9933328	METHOD FOR DETECTING A BURST HOSE IN A HYDRAULIC SYSTEM
China	06/28/2013	201310268767.8	03/01/2017	201310268767.8	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
European Patent Convention	06/27/2014	14817204.2	04/17/2019	EP3014122	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
Germany	06/27/2014	14817204.2	04/17/2019	EP3014122	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
Great Britain	06/27/2014	14817204.2	04/17/2019	EP3014122	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
Italy	06/27/2014	14817204.2	04/17/2019	502019000051696	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
United States	06/27/2014	14/900010	01/07/2020	10527035	ANTI-RIPPLE INJECTION METHOD AND APPARATUS AND CONTROL SYSTEM FOR A PUMP
China	06/28/2013	201310265563.9	10/29/2019	201310265563.9	PULSE WIDTH MODULATION METHOD AND APPARATUS FOR VARIABLE FREQUENCY DRIVE
European Patent Convention	06/27/2014	14818698.4			PULSE WIDTH MODULATION METHOD AND APPARATUS FOR VARIABLE FREQUENCY DRIVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	12/29/2009	1020117018157	10/13/2016	101667828	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
France	01/29/2009	09151675.7	08/21/2013	2213927	HOSE FITTING AND METHOD FOR FASTENING THE HOSE FITTING TO A HOSE
Germany	01/29/2009	09151675.7	08/21/2013	602009018117.3	HOSE FITTING AND METHOD FOR FASTENING THE HOSE FITTING TO A HOSE
Great Britain	01/29/2009	09151675.7	08/21/2013	2213927	HOSE FITTING AND METHOD FOR FASTENING THE HOSE FITTING TO A HOSE
Italy	01/29/2009	502013902190395	08/21/2013	2213927	HOSE FITTING AND METHOD FOR FASTENING THE HOSE FITTING TO A HOSE
Spain	01/29/2009	09151675.7	08/21/2013	2213927	HOSE FITTING AND METHOD FOR FASTENING THE HOSE FITTING TO A HOSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	03/05/2012	13/385779	10/20/2015	9163387	FAULT DETECTION, ISOLATION AND RECONFIGURATION SYSTEMS AND METHODS FOR CONTROLLING ELECTROHYDRAULIC SYSTEMS USED IN CONSTRUCTION EQUIPMENT
China	03/05/2012	201610457043.1	08/09/2019	201610457043.1	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS (COMBINED DISCLOSURES 10-CLP-251; 10-CLP-527; 10-CLP-528; 10-CLP-529; 11-CLP-042; 11-CLP-043; 11-CLP-055)
Germany	03/05/2012	15186440.2	05/01/2019	602012059738.0	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS
Great Britain	03/05/2012	15186440.2	05/01/2019	EP2990544	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS
Italy	03/05/2012	15186440.2	05/01/2019	502019000059931	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	2021-05-21	202111022705			Frictional Brake for Rotating Ring Type Hydraulic Traction Motor
United States of America	2021-06-04	63/197008			Actuator Deadhead/Stall Detection In A Load Sense Hydraulic System
India	2021-06-29	202111029169			High Temperature Wi-Fi & Bluetooth Module for Automotive and off-road Automotive Application
India	2021-06-30	202111029355			Compact Mosfet Based Ignition control circuit for Automotive and off-road Automotive Application ECU
India	2021-07-09	202111030832			3 way 3 position poppet type proportional & On Off SiCV valve
United States	7/20/2021	63/223765			Axial Piston Device with Features for Reducing Flow Velocity Through Valve Port During Pressure Transistion
United States	7/23/2021	63/225235			Hose for Pumping Concrete

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	02/16/2011	2130/KOLNP/2013	03/17/2021	361709	SEMI-PLUGGED STAR GEROTOR
Japan	02/16/2011	2013-547914	04/24/2015	5733543	SEMI-PLUGGED STAR GEROTOR
United States	12/29/2009	12/648410	12/17/2013	8607559	FLUID BYPASS SYSTEM
Brazil	12/20/2010	BR112012015944 5			FLUID BYPASS SYSTEM
China	12/20/2010	201080059777.5	03/30/2016	201080059777.5	FLUID BYPASS SYSTEM
European Patent Convention	12/20/2010	10799217.4	10/03/2018	EP2519749	FLUID BYPASS SYSTEM
Germany	12/20/2010	10799217.4	10/03/2018	EP2519749	FLUID BYPASS SYSTEM
Great Britain	12/20/2010	10799217.4	10/03/2018	EP2519749	FLUID BYPASS SYSTEM
India	12/20/2010	1503/KOLNP/2012	06/23/2020	339168	FLUID BYPASS SYSTEM
Italy	12/20/2010	10799217.4	10/03/2018	502018000041248	FLUID BYPASS SYSTEM
Japan	12/20/2010	2012-547122	08/05/2016	5980123	FLUID BYPASS SYSTEM
South Korea	12/20/2010	1020127015941	06/27/2018	101874126	FLUID BYPASS SYSTEM
European Patent Convention	10/14/2011	11776048.8	07/05/2017	EP2638293	PARALLEL ARCHITECTURED INTELLIGENT ACCUMULATOR FOR ENERGY SAVING

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	04/23/2012	2191/KOLNP/2014			METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
Mexico	04/23/2012	MX/a/2014/012716	11/20/2018	360852	METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
United States	04/23/2012	14/396286	04/24/2018	9952170	METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
France	12/21/2010	10196272.8	08/14/2013	2468494	HYBRID INNER TUBE FOR HIGH PRESSURE HYDRAULIC HOSES
Germany	12/21/2010	10196272.8	08/14/2013	602010009370.0	HYBRID INNER TUBE FOR HIGH PRESSURE HYDRAULIC HOSES
Great Britain	12/21/2010	10196272.8	08/14/2013	2468494	HYBRID INNER TUBE FOR HIGH PRESSURE HYDRAULIC HOSES
Italy	12/21/2010	502013902190394	08/14/2013	2468494	HYBRID INNER TUBE FOR HIGH PRESSURE HYDRAULIC HOSES
Spain	12/21/2010	10196272.8	08/14/2013	2468494	HYBRID INNER TUBE FOR HIGH PRESSURE HYDRAULIC HOSES
United States	08/05/2009	12/536190	04/01/2014	8684037	PROPORTIONAL POPPET VALVE WITH INTEGRAL CHECK VALVE
India	08/03/2010	269/KOLNP/2012	4/5/2021	364075	PROPORTIONAL POPPET VALVE WITH INTEGRAL CHECK VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	03/13/2013	13714392.1	07/18/2018	602013040423.2	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
Great Britain	03/13/2013	13714392.1	07/18/2018	EP2877768	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
Italy	03/13/2013	13714392.1	07/18/2018	EP2877768	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
Turkey	03/13/2013	13714392.1	07/18/2018	2018 14677	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
United States	03/13/2013	14/417213	02/14/2017	9568124	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
Brazil	09/24/2013	BR1120150064949	06/01/2021	BR112015006494 9	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
European Patent Convention	09/24/2013	13774308.4	10/31/2018	EP2897800	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
France	09/24/2013	13774308.4	10/31/2018	EP2897800	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	06/10/2015	15806061.6			ENERGY RECOVERY SYSTEM FOR OFF-HIGHWAY VEHICLES WITH HYDRAULIC TRANSFORMER COUPLED TO TRANSMISSION POWER TAKE-OFF
Japan	06/10/2015	2016-572685	02/06/2020	6656178	ENERGY RECOVERY SYSTEM FOR OFF-HIGHWAY VEHICLES WITH HYDRAULIC TRANSFORMER COUPLED TO TRANSMISSION POWER TAKE-OFF
United States	04/19/2019	16/388546			ENERGY RECOVERY SYSTEM FOR OFF-HIGHWAY VEHICLES WITH HYDRAULIC TRANSFORMER COUPLED TO TRANSMISSION POWER TAKE-OFF
China	10/26/2015	201580066478.7	12/24/2019	CN107000564	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
European Patent Convention	10/26/2015	15853696.1			HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
Japan	10/26/2015	2017-522921	12/08/2020	6806409	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
United States	10/26/2015	15/522464	09/10/2019	10408237	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
Great Britain	12/18/2017	1721113.7			TUBE CONNECTION WITH A SPECIAL CONICAL SELF-TAPPING INTERNAL THREAD

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Africa	02/21/2013	F2013/00356	11/27/2013	F2013/00356	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
South Africa	02/21/2013	A2013/00355	11/27/2013	A2013/00355	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
South Africa	02/21/2013	F2013/00354	12/23/2013	F2013/00354	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
United States	09/12/2013	14/428158	01/07/2020	10527205	WAVE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
European Patent Convention	09/12/2013	13766830.7	07/04/2018	EP2895836	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
France	09/12/2013	13766830.7	07/04/2018	EP2895836	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
Germany	09/12/2013	13766830.7	07/04/2018	602013039748.1	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
Great Britain	09/12/2013	13766830.7	07/04/2018	EP2895836	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
Turkey	09/12/2013	13766830.7	07/04/2018	2018-14223	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
United States	09/13/2013	14/026091	01/03/2017	9535024	SENSE AND HOLD CIRCUIT FOR HOSE ASSEMBLY
United States	03/13/2013	14/646903	07/17/2018	10024465	ENERGY HARVESTING CIRCUIT FOR LIFE-SENSING HOSE ASSEMBLY
European Patent Convention	03/14/2014	14721136.1	12/26/2018	EP2971379	HOSE VOLTAGE CARRIER
France	03/14/2014	14721136.1	12/26/2018	EP2971379	HOSE VOLTAGE CARRIER
Germany	03/14/2014	14721136.1	12/26/2018	602014038584.2	HOSE VOLTAGE CARRIER

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	07/05/2004	200410068817.9	08/12/2009	200410068817.9	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
France	07/07/2004	04015988.1	03/20/2013	EP1496256	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
Germany	07/07/2004	04015988.1	03/20/2013	602004041386.0	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
Great Britain	07/07/2004	04015988.1	03/20/2013	EP1496256	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
Italy	07/07/2004	502013902159073	03/20/2013	EP1496256	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
United States	08/13/2001	09/928304	02/08/2005	6853781	AIR BLOWN FIBER (ABF) CABLE WITH LOW COMPOSITE COEFFICIENT OF THERMAL EXPANSION
United States	02/08/2005	11/053361	11/22/2005	6968106	AIR BLOWN FIBER (ABF) CABLE WITH LOW COMPOSITE COEFFICIENT OF THERMAL EXPANSION
United States	11/13/2001	10/008582	08/24/2004	6779269	SELF-COMPENSATING HOSE COUPLING
United States	08/27/2002	10/228793	08/03/2004	6769720	COUPLING ASSEMBLY WITH PROFILED RAMPS
China	08/14/2003	03820128.3	12/23/2009	03820128.3	COUPLING ASSEMBLY WITH PROFILED RAMPS
France	08/14/2003	03791077.5	12/18/2013	EP1579142	COUPLING ASSEMBLY WITH PROFILED RAMPS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	12/29/2009	2827/KOLNP/2011	08/26/2019	318970	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Italy	12/29/2009	502014902263961	04/02/2014	EP2379924	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Japan	12/29/2009	2011-544929	05/30/2014	5549892	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
South Africa	12/29/2009	2011/04957	04/25/2012	2011/04957	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	08/06/2012	13/567715	09/03/2013	8527073	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
China	12/23/2013	201310722058.2	04/12/2017	201310722058.2	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
European Patent Convention	07/17/2017	17181643.2	11/13/2019	EP3276444	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
United States	07/11/2013	13/939963	05/19/2015	9037272	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
China	01/25/2017	201710060552.5	05/04/2021	201710060552.5	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
United States	06/02/2009	12/476980	11/26/2013	8590570	TWO STEP ACTUATOR
United States	11/10/2008	12/267898	03/20/2012	8136353	METHOD AND APPARATUS FOR AUTOMATIC PUMP SHUTOFF
United States	09/22/2009	12/564071	06/18/2013	8464756	SPOOL VALVE
India	09/21/2010	635/KOLNP/2012	05/07/2019	312402	SPOOL VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	07/13/2012	201220431260.0	07/12/2013	201220431260.0	DOUBLE VENTILATING CLUTCH ASSEMBLY
United States	07/16/2012	13/549944	06/17/2014	8752680	MULTI-CHAMBERED, LIQUID-COOLED DISC BRAKE
Canada	07/12/2013	2879416	03/05/2019	2879416	MULTI-CHAMBERED, LIQUID-COOLED DISC BRAKE
European Patent Convention	07/12/2013	13820314.6			MULTI-CHAMBERED, LIQUID-COOLED DISC BRAKE
China	07/16/2013	201310298209.6	11/15/2019	201310298209.6	MULTI-CHAMBERED, LIQUID-COOLED DISC BRAKE
China	07/16/2013	201320422335.3	04/02/2014	201320422335.3	MULTI-CHAMBERED, LIQUID-COOLED DISC BRAKE
United States	02/10/2012	13/370834	08/12/2014	8800726	DUAL-ROTOR FORCE TRANSMITTING ASSEMBLY
India	02/07/2013	6622/DELNP/2014			DUAL-ROTOR FORCE TRANSMITTING ASSEMBLY
Russia	02/07/2013	2014136743	08/04/2017	2627252	DUAL-ROTOR FORCE TRANSMITTING ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	01/22/2007	200780002726.7	07/04/2012	200780002726.7	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
Germany	01/22/2007	07705450.0	05/18/2016	602007046350.5	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
Great Britain	01/22/2007	07705450.0	05/18/2016	EP1974145	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
India	01/22/2007	3269/KOLNP/2008	02/17/2017	280173	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
Italy	01/22/2007	502016000075285	05/18/2016	EP1974145	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
Japan	01/22/2007	2008/550868	06/14/2013	5288184	ROTARY FLUID PRESSURE APPARATUS AND IMPROVED PARKING LOCK ASSEMBLY FOR USE THEREIN
South Korea	01/22/2007	2008-7020352	02/26/2014	2008/7020352	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
United States	07/11/2008	12/160624	04/17/2012	8157552	ROTARY FLUID PRESSURE DEVICE AND IMPROVED PARKING LOCK ASSEMBLY THEREFOR
United States	09/02/2009	12/552415	04/30/2013	8430017	CONTROL DEVICE FOR A HYDRAULIC MOTOR
Austria	10/12/2009	09744737.9	08/07/2013	EP2473733	CONTROL DEVICE FOR A HYDRAULIC MOTOR

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	02/08/2016	16749661.1	04/01/2020	EP3256725	TORQUE CONTROL FOR VARIABLE DISPLACEMENT PUMP
Germany	02/08/2016	16749661.1	04/01/2020	EP3256725	TORQUE CONTROL FOR VARIABLE DISPLACEMENT PUMP
Great Britain	02/08/2016	16749661.1	04/01/2020	EP3256725	TORQUE CONTROL FOR VARIABLE DISPLACEMENT PUMP
Italy	02/08/2016	16749661.1	04/01/2020	EP3256725	TORQUE CONTROL FOR VARIABLE DISPLACEMENT PUMP
United States	02/09/2016	15/549723	12/08/2020	10859069	TORQUE CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMP
United States	11/04/2020	17/089095			TORQUE CONTROL SYSTEM FOR VARIABLE DISPLACEMENT PUMP
United States	10/07/2015	29/541741	12/05/2017	D804438	ELECTRONICS ENCLOSURE
Japan	06/23/2015	P2015-125456	02/12/2020	JP6644780	STEERING SYSTEM FOR LOAD SENSING CIRCUIT
European Patent Convention	06/20/2016	16814300.6	08/19/2020	EP3315386	STEERING SYSTEM FOR LOAD SENSING CIRCUIT
Germany	06/20/2016	16814300.6	08/19/2020	EP3315386	STEERING SYSTEM FOR LOAD SENSING CIRCUIT
France	06/20/2016	16814300.6	08/19/2020	EP3315386	STEERING SYSTEM FOR LOAD SENSING CIRCUIT
Great Britain	06/20/2016	16814300.6	08/19/2020	EP3315386	STEERING SYSTEM FOR LOAD SENSING CIRCUIT
United States	06/20/2016	15/738989	04/07/2020	10611403	STEERING DEVICE FOR CONSTRUCTION/TRANSPORT/FARM MACHINE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	10/14/2011	11776047.0	12/05/2018	EP2627906	HYBRID SYSTEM FOR HIGH EFFICIENCY INDUSTRIAL PROCESSES
Germany	10/14/2011	11776047.0	12/05/2018	EP2627906	HYBRID SYSTEM FOR HIGH EFFICIENCY INDUSTRIAL PROCESSES
United States	10/14/2011	13/273573	03/31/2015	8991167	HYBRID SYSTEMS FOR INDUSTRIAL PROCESSES
United States	03/23/2015	14/665816	01/23/2018	9874233	HYBRID HYDRAULIC SYSTEMS FOR INDUSTRIAL PROCESSES
United States	12/22/2011	13/335595	09/30/2014	8845303	TORQUE CONTROL FOR THE OPEN CIRCUIT PISTON PUMP
China	12/13/2011	201180060106.5	01/06/2016	201180060106.5	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
European Patent Convention	12/13/2011	11799939.1	08/30/2017	EP2652213	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
Germany	12/13/2011	11799939.1	08/30/2017	602011041141.1	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
Great Britain	12/13/2011	11799939.1	08/30/2017	EP2652213	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
Italy	12/13/2011	502017000137488	08/30/2017	EP2652213	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
Japan	12/13/2011	2013-544687	05/12/2017	6138050	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
South Korea	12/13/2011	2013-7018230	07/13/2018	1880323	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
United States	12/13/2011	13/324620	01/30/2018	9879404	REGENERATIVE BOOM LIFT SYSTEM FOR A WHEEL LOADER
Brazil	10/03/2013	BR1120150076114	01/19/2021	BR112015007611 4	AUTOMATIC OIL SPILL DETECTION SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	02/09/2018	18156195.2	04/14/2021	EP3361699	CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
France	02/09/2018	18156195.2	04/14/2021	EP3361699	CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
Germany	02/09/2018	18156195.2	04/14/2021	EP3361699	CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
Japan	02/09/2018	2018-022318			CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
China	02/13/2018	201810151014.1			CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
United States	02/13/2018	15/895448	01/21/2020	10541831	CONTROL SYSTEM NETWORK ARCHITECTURE FOR FLUIDIC CONTROL SYSTEMS
United States	04/09/2018	15/948437	09/22/2020	10781816	HYDRAULIC MOTOR BRAKE
Canada	04/10/2018	3000732			HYDRAULIC MOTOR BRAKE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	11/16/2015	201580061219.5	10/29/2019	CN107002633	ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
European Patent Convention	11/16/2015	15861774.6	01/01/2020	EP3221560	ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
India	11/16/2015	201717017788			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
Japan	11/16/2015	2017-525395	07/09/2020	6731918	ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
Mexico	11/16/2015	MX/a/2017/006285			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
South Korea	11/16/2015	2017-7013771			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
United States	11/16/2015	15/527677	03/17/2020	10590771	ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
United States	03/16/2020	16/819983			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
Canada	08/09/2016	3003553			ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
China	08/09/2016	201680055917.9	09/06/2019	201680055917.9	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/19/2020	16/906172			SYSTEM AND METHOD FOR ANTICIPATING AND CORRECTING FOR OVER-CENTER TRANSITIONS IN MOBILE HYDRAULIC EQUIPMENT
United States	08/30/2019	16/557656			SYSTEM AND METHOD FOR DETECTING COIL FAULTS
China	02/03/2020	202010079438.9			DISPLACEMENT CONTROL WITH ANGLE SENSOR ADJUSTMENT
European Patent Convention	01/28/2020	20154209.9			DISPLACEMENT CONTROL WITH ANGLE SENSOR ADJUSTMENT
India	01/28/2020	202014003801			DISPLACEMENT CONTROL WITH ANGLE SENSOR ADJUSTMENT
Great Britain	11/27/2018	1819276.5			COMPOSITE HOSE MANDREL

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	04/17/2018	18167673.5			KOMPAKTER HYDRAULIKZYLINDER ZUR BEARBEITUNG EINES ROHRES.
China	04/19/2018	2018103540226			KOMPAKTER HYDRAULIKZYLINDER ZUR BEARBEITUNG EINES ROHRES.
United States	04/19/2018	15/956776	10/27/2020	10814458	KOMPAKTER HYDRAULIKZYLINDER ZUR BEARBEITUNG EINES ROHRES.
Japan	04/20/2018	2018-81579			KOMPAKTER HYDRAULIKZYLINDER ZUR BEARBEITUNG EINES ROHRES.
European Patent Convention	01/30/2018	18154301.8			ADJUSTMENT ASSEMBLY FOR A PRESS APPARATUS
United States	01/31/2018	15/884722	01/12/2021	10888914	ADJUSTMENT ASSEMBLY FOR A PRESS APPARATUS
United States	06/21/2019	16/448148			SYSTEM AND METHOD UTILIZING A LIGHT TRANSFER PROTOCOL FOR SENSOR MONITORING HOSE ASSEMBLY DEGRADATION
United States	06/21/2019	16/448157	06/08/2021	11029272	SYSTEM AND METHOD FOR HOSE ASSEMBLY WITH DEGRADATION MONITORING
United States	10/08/2018	29/665871	03/23/2021	D914016	SENSOR SIGNAL RECEIVER
United States	11/28/2018	16/202228			HYDRAULIC SYSTEM WITH LOAD SENSE AND METHODS THEREOF
Germany	11/29/2018	102018130404.8			HYDRAULIC SYSTEM WITH LOAD SENSE AND METHODS THEREOF

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Patent Cooperation Treaty	10/14/2019	PCT/EP2019/077815			COMPOSITE HOSE MANDREL
United States of America	2019-10-14	17/285113			COMPOSITE HOSE MANDREL
Great Britain	01/25/2019	1901012.3			NEXT GENERATION ONE-PIECE HEADED FLANGE ADAPTABLE FOR DIFFERENT TYPES OF INDUSTRIAL HOSES
United States	07/23/2021	17/425700			NEXT GENERATION ONE-PIECE HEADED FLANGE ADAPTABLE FOR DIFFERENT TYPES OF INDUSTRIAL HOSES
Great Britain	01/25/2019	1901014.9			NEXT GENERATION CRIMP FREE FITTING SOLUTION FOR INDUSTRIAL AND LOW HYDRAULIC HOSE ASSEMBLIES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	04/11/2018	18166911.0			HYDRAULIC MOTOR BRAKE
United States	11/09/2017	15/808212	03/31/2020	10605277	METHOD TO AUTOMATICALLY DETECT PARAMETER FOR PRESSURE DYNAMICS CONTROL
United States	03/30/2020	16/834450	05/11/2021	11002297	METHOD TO AUTOMATICALLY DETECT PARAMETER FOR PRESSURE DYNAMICS CONTROL
United States	11/09/2017	15/808311	11/26/2019	10487860	METHOD TO AUTOMATICALLY DETECT RATIO OF AN ACTUATOR
United States	11/09/2017	15/808373	09/10/2019	10408238	CONTROL STRATEGY FOR HYDRAULIC ACTUATOR WITH A PAIR OF INDEPENDENT METERING VALVES
United States	08/15/2018	15/999067	10/27/2020	10816099	SPOOL VALVE
China	02/14/2020	201880052784.9			SPOOL VALVE
European Patent Convention	03/06/2020	18765743.2			SPOOL VALVE
United States	08/18/2017	15/680957	02/04/2020	10550935	HYDRAULIC MECHANICAL TRANSMISSION
China	02/01/2018	201880009704.1			HYBRID WIRELESS SENSOR NETWORK ARCHITECTURE FOR FLUID DELIVERY AND DISTRIBUTION SYSTEMS

Exhibit A

Patents

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/19/2001	10/020971	04/08/2003	6544018	HYDRAULIC MOTOR HAVING MULTIPLE SPEED RATIO CAPABILITY
Great Britain	07/22/2004	04254369.4	09/05/2007	EP1619105	ANTI-SATURATION MANIFOLD BLOCK
Italy	07/22/2004	502007901579305	09/05/2007	EP1619105	ANTI-SATURATION MANIFOLD BLOCK
United States	01/22/2007	11/658134	01/11/2011	7866151	ANTI-SATURATION VALVE ASSEMBLY FOR LOAD SENSING HYDRAULIC SYSTEM
United States	08/02/2000	09/631024	12/30/2003	6670004	LAMINATED NYLON AIR BRAKE TUBING
United States	10/23/2002	10/278953	08/03/2004	6769249	LOW SLIP STEERING SYSTEM AND IMPROVED FLUID CONTROLLER THEREFOR
United States	04/17/2002	10/124024	08/03/2004	6769451	POWER BEYOND STEERING UNIT WITH BYPASS
United States	10/29/2002	10/282633	01/20/2004	6679691	ANTI CAVITATION SYSTEM FOR TWO-SPEED MOTORS
United States	07/11/2003	10/618417	01/23/2007	7165396	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
India	06/24/2004	352/KOL/2004	09/19/2011	248984	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS
Brazil	06/30/2004	PI0402604-7	09/04/2012	PI0402604-7	PUMP CONTROL OVERRIDE FOR TANDEM PUMPS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Italy	02/14/2003	102003901087179	10/01/2008	1347660	COUPLING FOR CONNECTING HYDRAULICS DUCTS
Japan	02/14/2003	2003037042	05/20/2005	3678364	COUPLING FOR CONNECTING HYDRAULICS DUCTS
United States	02/17/2003	10/368224	01/10/2006	6983959	COUPLING FOR CONNECTING HYDRAULICS DUCTS
France	02/18/2003	0301918	08/10/2007	FR2836203	COUPLING FOR CONNECTING HYDRAULICS DUCTS
United States	09/21/2006	11/524752	04/13/2010	7695259	ROTARY FLUID PRESSURE DEVICE WITH MODULAR MULTI-SPEED CONTROL MECHANISM
United States	06/15/2006	11/453490	05/12/2009	7530801	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
Denmark	06/14/2007	07766546.1	11/18/2009	EP2027367	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
France	06/14/2007	07766546.1	11/18/2009	EP2027367	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
Germany	06/14/2007	07766546.1	11/18/2009	602007003353.5	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	07/12/2019	201910629688.2			POWER ARCHITECTURE FOR A VEHICLE SUCH AS AN OFF-HIGHWAY VEHICLE
European Patent Convention	06/29/2019	19744986.1			SYSTEM AND DEVICE FOR ANTICIPATING AND CORRECTNG OVER-CENTER TRANSITIONS IN MOBILE HYDRAULIC EQUIPMENT
United States	06/29/2019	17/256834			SYSTEM AND DEVICE FOR ANTICIPATING AND CORRECTNG OVER-CENTER TRANSITIONS IN MOBILE HYDRAULIC EQUIPMENT
United States	06/26/2019	16/453518	07/21/2020	10718447	SYSTEM AND METHOD FOR ANTICIPATING AND CORRECTING FOR OVER-CENTER TRANSITIONS IN MOBILE HYDRAULIC EQUIPMENT
European Patent Convention	07/01/2019	19183744.2	05/19/2021	EP3587877	SYSTEM AND METHOD FOR DETECTING SPOOL VALVE OPERATING CONDITIONS
Denmark	07/01/2019	19183744.2	05/19/2021	EP3587877	SYSTEM AND METHOD FOR DETECTING SPOOL VALVE OPERATING CONDITIONS
France	07/01/2019	19183744.2	05/19/2021	EP3587877	SYSTEM AND METHOD FOR DETECTING SPOOL VALVE OPERATING CONDITIONS
Germany	07/01/2019	19183744.2	05/19/2021	EP3587877	SYSTEM AND METHOD FOR DETECTING SPOOL VALVE OPERATING CONDITIONS
Italy	07/01/2019	19183744.2	05/19/2021	EP3587877	SYSTEM AND METHOD FOR DETECTING SPOOL VALVE OPERATING CONDITIONS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	12/13/2013	13815332.5	09/19/2018	EP2931983	SYSTEM AND METHOD FOR CONTROLLED LOWERING OF A LOAD
Great Britain	12/13/2013	13815332.5	09/19/2018	EP2931983	SYSTEM AND METHOD FOR CONTROLLED LOWERING OF A LOAD
Italy	12/13/2013	13815332.5	09/19/2018	502018000038790	SYSTEM AND METHOD FOR CONTROLLED LOWERING OF A LOAD
United States	12/13/2013	14/106112	01/14/2020	10533304	SYSTEM AND METHODS FOR CONTROLLED LOWERING AND LIFTING OF A LOAD
United States	01/13/2020	16/740682			SYSTEM AND METHODS FOR CONTROLLED LOWERING AND LIFTING OF A LOAD
European Patent Convention	07/17/2013	13740191.5	03/28/2018	EP2875237	FREEWHEEL HYDRAULIC MOTOR
Germany	07/17/2013	13740191.5	03/28/2018	602013035067.1	FREEWHEEL HYDRAULIC MOTOR
Great Britain	07/17/2013	13740191.5	03/28/2018	EP2875237	FREEWHEEL HYDRAULIC MOTOR
Italy	07/17/2013	13740191.5	03/28/2018	502018000016462	FREEWHEEL HYDRAULIC MOTOR
United States	07/17/2013	13/944465	01/24/2017	9551222	FREEWHEEL HYDRAULIC MOTOR
China	12/20/2013	201380067978.3	07/28/2017	201380067978.3	FAIL OPERATIONAL MODES FOR AN ELECTRO-HYDRAULIC SYSTEM
European Patent Convention	12/20/2013	13819150.7	03/11/2020	EP2938890	FAIL OPERATIONAL MODES FOR AN ELECTRO-HYDRAULIC SYSTEM
United States	12/20/2013	14/136224	08/23/2016	9423800	FAIL OPERATIONAL MODES FOR AN ELECTRO-HYDRAULIC SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Brazil	06/29/2012	BR1120140000239	02/09/21	BR1120140000239	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
China	06/29/2012	201280032979.X	11/30/2016	201280032979	HYDRAULIC SYSTEMS UTILIZING COMBINATION OPEN-AND-CLOSED-LOOP PUMP SYSTEMS
European Patent Convention	06/29/2012	12807645.2	03/21/2018	EP2751433	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
Germany	06/29/2012	12807645.2	03/21/2018	602012044287.5	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
Great Britain	06/29/2012	12807645.2	03/21/2018	EP2751433	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
India	06/29/2012	3706/KOLNP/2013	03/30/2021	363505	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
Italy	06/29/2012	12807645.2	03/21/2018	502018000014788	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
Japan	06/29/2012	2014-519134	10/07/2016	6017555	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL
South Korea	06/29/2012	2014-7002205	05/02/2019	10-1976888	TRANSIT MIXER DRUM DRIVE WITH COMBINATION CLOSED LOOP AND OPEN LOOP PUMP CONTROL

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	09/21/2010	1020127009341	08/03/2017	101766929	SPOOL VALVE
United States	02/22/2010	12/710039	11/26/2013	8594852	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
China	02/22/2011	201180014950.4	09/16/2015	201180014950.4	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
Germany	02/22/2011	11706436.0	04/20/2016	602011025545.2	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
Great Britain	02/22/2011	11706436.0	04/20/2016	EP2539594	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
India	02/22/2011	2454/KOLNP/2012	02/17/2020	332146	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
Italy	02/22/2011	502016000072969	04/20/2016	EP2539594	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
Japan	02/22/2011	2012-555075	11/30/2018	6440344	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
South Korea	02/22/2011	1020127024458	08/10/2018	101889562	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	04/06/2010	2012-504767	02/13/2015	5692542	CONTROL OF A FLUID CIRCUIT USING AN ESTIMATED SENSOR VALUE
United States	01/20/2010	12/690724	10/23/2012	8291934	PROPORTIONAL VALVE ASSEMBLY
China	01/19/2011	201180014786.7	05/06/2015	201180014786.7	VALVISTOR ARRANGEMENT THAT ALLOWS BOTH ANTICAV AND FLOAT FUNCTIONS
United States	11/30/2009	12/626970	05/01/2012	8166795	OUT-OF-RANGE-SENSOR RECALIBRATION
China	11/25/2010	201080062568.6	11/12/2014	201080062568.6	OUT-OF-RANGE-SENSOR RECALIBRATION
Germany	11/25/2010	10798594.7	03/08/2017	602010040628.8	OUT-OF-RANGE-SENSOR RECALIBRATION
Great Britain	11/25/2010	10798594.7	03/08/2017	EP2507519	OUT-OF-RANGE-SENSOR RECALIBRATION
Italy	11/25/2010	502017000061948	03/08/2017	EP2507519	OUT-OF-RANGE-SENSOR RECALIBRATION

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Italy	03/14/2014	14720401.0	05/01/2019	502019000058440	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
Japan	03/14/2014	2016-503008	11/09/2018	6429856	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
South Korea	03/14/2014	2015-7026957	10/23/2020	2171544	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
United States	03/14/2014	14/212320	08/16/2016	9416799	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
China	05/06/2015	201580035453.0	05/10/2019	201580035453.0	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
European Patent Convention	05/06/2015	15790021.8		EP3140463	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
Germany	05/06/2015	15790021.8	07/22/2020	EP3140463	HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION
India	05/06/2015	201617037855			HYDRAULIC HYBRID PROPEL CIRCUIT WITH HYDROSTATIC OPTION AND METHOD OF OPERATION

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	10/22/2010	1020127012711	02/20/2018	101832508	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
United States	01/06/2011	12/985396	12/22/2015	9217430	SEMI-PLUGGED STAR GEROTOR AND METHOD OF ASSEMBLING THE SAME
Brazil	02/16/2011	BR1120130174560	01/19/2021	BR112013017456 0	SEMI-PLUGGED STAR GEROTOR
China	02/16/2011	201180064427.2	02/22/2017	201180064427.2	SEMI-PLUGGED STAR GEROTOR AND METHOD OF ASSEMBLING THE SAME
European Patent Convention	02/16/2011	11710867.0	03/31/2021	2661562	SEMI-PLUGGED STAR GEROTOR
Germany	02/16/2011	11710867.0	03/31/2021	2661562	SEMI-PLUGGED STAR GEROTOR
France	02/16/2011	11710867.0	03/31/2021	2661562	SEMI-PLUGGED STAR GEROTOR

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Italy	04/13/2011	11162171.0	11/21/2018	502019000012885	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE
Japan	04/13/2011	2011-089605	10/16/2015	5822512	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE
United States	11/13/2012	13/675570	04/18/2017	9624773	PROXIMITY SWITCH ACTUATION MECHANISM
United States	06/02/2009	12/476996	08/07/2012	8235070	TWO POSITION THREE WAY VALVE
India	06/02/2010	4890/KOLNP/2011	12/20/2019	327895	TWO POSITION THREE WAY VALVE
South Korea	06/02/2010	1020117030821	06/08/2017	101747450	TWO POSITION THREE WAY VALVE
United States	09/29/2009	12/569415	10/23/2012	8292605	ROTARY FLUID DEVICE WITH MULTI-LEVEL PHASE SHIFT CONTROL
China	10/16/2009	200980150238.X	01/29/2014	200980150238.X	MOTION CONTROL OF WORK VEHICLE
European Patent Convention	10/16/2009	09740812.4	06/26/2019	EP2349903	MOTION CONTROL OF WORK VEHICLE
Germany	10/16/2009	09740812.4	06/26/2019	EP2349903	MOTION CONTROL OF WORK VEHICLE
Great Britain	10/16/2009	09740812.4	06/26/2019	EP2349903	MOTION CONTROL OF WORK VEHICLE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	04/25/2018	112018001592.0			DRIFT COMPENSATION SYSTEM FOR DRIFT RELATED TO DAMPING OF MASS-INDUCED VIBRATION IN MACHINES
China	10/18/2018	201880025881.9			DRIFT COMPENSATION SYSTEM FOR DRIFT RELATED TO DAMPING OF MASS-INDUCED VIBRATION IN MACHINES
Germany	10/23/2019	112018001592			DRIFT COMPENSATION SYSTEM FOR DRIFT RELATED TO DAMPING OF MASS-INDUCED VIBRATION IN MACHINES
United States	10/28/2019	16/665535	06/15/2021	11035389	DRIFT COMPENSATION SYSTEM FOR DRIFT RELATED TO DAMPING OF MASS-INDUCED VIBRATION IN MACHINES
China	10/18/2019	201880025887.6			SYSTEM FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES HAVING HYDRAULICALLY CONTROLLED BOOMS OR ELONGATE MEMBERS
India	11/14/2019	201917046277			SYSTEM FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES HAVING HYDRAULICALLY CONTROLLED BOOMS OR ELONGATE MEMBERS
European Patent Convention	11/26/2019	18792266.1			SYSTEM FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES HAVING HYDRAULICALLY CONTROLLED BOOMS OR ELONGATE MEMBERS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	10/28/2011	2013-536865	04/15/2016	5917536	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
South Korea	10/28/2011	2013-7011986	01/15/2018	1820556	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
United States	10/28/2011	13/881442	05/17/2016	9341063	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
United States	03/15/2011	13/048303	08/11/2015	9103358	CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME
China	03/16/2011	201180014234.6	11/25/2015	201180014234.6	CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME
European Patent Convention	03/16/2011	11712093.1	01/01/2020	EP2547915	CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME
Germany	03/16/2011	11712093.1	01/01/2020	602011064344.40	CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME
India	03/16/2011	2504/KOLNP/2012			CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	05/06/2015	201617037851		WO 2015/171803	LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
Japan	05/06/2015	2016-566888			LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
South Korea	05/06/2015	2016-7033857			LOW NOISE ALGORITHM FOR HYDRAULIC SYSTEMS
China	06/15/2015	201580047114.4	12/10/2019	106661894	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION
United States	06/15/2015	15/326395	06/18/2019	10323663	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION AND PREVENT UN-COMMANDED MOTION IN HYDRAULIC SYSTEMS
European Patent Convention	07/15/2015	15822402.2	02/17/2021	EP3169858	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION
France	07/15/2015	15822402.2	02/17/2021	EP3169858	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION
Germany	07/15/2015	15822402.2	02/17/2021	EP3169858	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION
United Kingdom	07/15/2015	15822402.2	02/17/2021	EP3169858	METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION
United States	06/17/2019	16/442696			METHODS AND APPARATUS TO ENABLE BOOM BOUNCE REDUCTION AND PREVENT UN-COMMANDED MOTION IN HYDRAULIC SYSTEMS
China	06/10/2015	201580030939.5			ENERGY RECOVERY SYSTEM FOR OFF-HIGHWAY VEHICLES WITH HYDRAULIC TRANSFORMER COUPLED TO TRANSMISSION POWER TAKE-OFF

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	11/07/2014	14862731.8	04/22/2020	EP3069439	ENERGY COMBINER
Turkey	11/07/2014	14862731.8	04/22/2020	EP3069439	ENERGY COMBINER
United States	11/07/2014	15/036725	06/25/2019	10333297	ENERGY COMBINER
United States	11/07/2014	15/036736	10/02/2018	10088080	COLLAPSE RESISTANT HOSE AND THE MANUFACTURE OF THE SAME
China	03/31/2015	201580025588.9	05/31/2019	ZL201580025588.9	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
France	03/31/2015	15722455.1	05/16/2018	EP3126806	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
Germany	03/31/2015	15722455.1	05/16/2018	602015011200.8	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
Great Britain	03/31/2015	15722455.1	05/16/2018	EP3126806	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
Italy	03/31/2015	15722455.1	05/16/2018	EP3126806	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
Spain	03/31/2015	15722455.1	05/16/2018	EP3126806	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
					RUBBER HOSE
Great Britain	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
India	09/22/2016	201817009605			SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
Italy	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
Japan	09/22/2016	2018-516810	02/15/2019	6479263	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
Spain	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
Turkey	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
European Patent Convention	10/04/2017	17784920.5			RETAINING CLIP FOR ATTACHING DEEP DRAWN SOCKET ON NIPPLE OUT OF TUBE
United States	10/04/2017	16/339388			RETAINING CLIP FOR ATTACHING DEEP DRAWN SOCKET ON NIPPLE OUT OF TUBE
China	02/20/2020	201880053992			INTELLIGENT RIDE CONTROL
European Patent Convention	02/20/2020	18832449.5			INTELLIGENT RIDE CONTROL

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Canada	08/26/2016	2996298			FLUID CONDUIT FITTING ASSEMBLY
Canada	03/10/2015	2884811			SAFETY DEVISE FOR HYDRAULIC HOSE CRIMPING MACHINE
United States	03/03/2016	15/059713	10/01/2019	10427207	ACTIVATION ASSEMBLY FOR A PRESS APPARATUS
Brazil	03/05/2015	BR1120160205952			LOAD-REACTION SWITCHING VALVE ASSEMBLY
European Patent Convention	03/05/2015	15757811.3	11/06/2019	EP3114008	LOAD-REACTION SWITCHING VALVE ASSEMBLY
Germany	03/05/2015	15757811.3	11/06/2019	EP3114008	LOAD-REACTION SWITCHING VALVE ASSEMBLY
Great Britain	03/05/2015	15757811.3	11/06/2019	EP3114008	LOAD-REACTION SWITCHING VALVE ASSEMBLY
Italy	03/05/2015	15757811.3	11/06/2019	EP3114008	LOAD-REACTION SWITCHING VALVE ASSEMBLY
United States	03/05/2015	15/123159	10/08/2019	10435064	LOAD-REACTION SWITCHING VALVE ASSEMBLY
United States	07/18/2018	16/038506			LOAD-DEPENDENT HYDRAULIC FLUID FLOW CONTROL SYSTEM
European Patent Convention	07/19/2018	18184585.0			LOAD-DEPENDENT HYDRAULIC FLUID FLOW CONTROL SYSTEM
China	02/08/2016	201680017095.5	08/09/2019	201680017095.5	TORQUE CONTROL FOR VARIABLE DISPLACEMENT PUMP

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/14/2012	13/714799	11/01/2016	9482352	FLOW DIRECTING SPOOL FOR VALVE
China	07/17/2013	201380038257.X	12/28/2016	201380038257.X	COMBINED MOTOR AND BRAKE ROTATING BRAKE-RELEASE PISTON
European Patent Convention	07/17/2013	13742359.6			COMBINED MOTOR AND BRAKE ROTATING BRAKE-RELEASE PISTON
Germany	07/17/2013	13742359.6	12/12/2021	EP2895739	COMBINED MOTOR AND BRAKE ROTATING BRAKE-RELEASE PISTON
France	07/17/2013	13742359.6	12/12/2021	EP2895739	COMBINED MOTOR AND BRAKE ROTATING BRAKE-RELEASE PISTON
Japan	07/17/2013	2015-523201	09/29/2017	6214652	COMBINED MOTOR AND BRAKE ROTATING BRAKE-RELEASE PISTON
United States	07/17/2013	13/944405	11/03/2015	9175563	COMBINED MOTOR AND BRAKE WITH ROTATING BRAKE-RELEASE PISTON
China	06/28/2013	201310265564.3	12/28/2016	201310265564.3	CONTROL SYSTEM AND METHOD FOR PUMP WITH VARIABLE FREQUENCY DRIVE AND PUMP SYSTEM
European Patent Convention	06/27/2014	14818247.0	02/05/2020	EP3014123	CONTROL SYSTEM AND METHOD FOR PUMP WITH VARIABLE FREQUENCY DRIVE AND PUMP SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	10/28/2019	16/665553			SYSTEM FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES HAVING HYDRAULICALLY CONTROLLED BOOMS OR ELONGATE MEMBERS
United States	01/10/2019	16/244803	10/13/2020	10801525	HYDRAULIC VALVE WITH PRESSURE LIMITER FUNCTION
China	01/11/2019	201910030008.5			POST COMPENSATED VALVE WITH INDIVIDUAL SECTION PRESSURE LIMITER FUNCTION
Germany	01/11/2019	102019100648.1			POST COMPENSATED VALVE WITH INDIVIDUAL SECTION PRESSURE LIMITER FUNCTION
United States	08/24/2020	17/000544			HYDRAULIC VALVE WITH PRESSURE LIMITER FUNCTION
China	02/14/2020	CN201880052820.1			CONTROL SYSTEM FOR HYDRAULI AXIAL DISPLACEMENT MACHINES
European Patent Convention	03/13/2020	18846281.6			CONTROL SYSTEM FOR HYDRAULI AXIAL DISPLACEMENT MACHINES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/29/2012	13/538082	12/22/2015	9217447	HYDRAULIC SYSTEMS UTILIZING COMBINATION OPEN- AND CLOSED-LOOP PUMP SYSTEMS
China	09/28/2012	201280047981.4	08/24/2016	201280047981.4	STEERING CONTROL UNIT AND ELECTRO-HYDRAULIC STEERING LOAD SENSE CONTROL
Germany	09/28/2012	12778171.4	11/25/2015	602012012731.7	STEERING CONTROL UNIT AND ELECTRO-HYDRAULIC STEERING LOAD SENSE CONTROL
Great Britain	09/28/2012	12778171.4	11/25/2015	EP2760726	STEERING CONTROL UNIT AND ELECTRO-HYDRAULIC STEERING LOAD SENSE CONTROL
Italy	09/28/2012	502016000004758	11/25/2015	EP2760726	STEERING CONTROL UNIT AND ELECTRO-HYDRAULIC STEERING LOAD SENSE CONTROL
United States	09/28/2012	13/630386	12/01/2015	9200645	STEERING CONTROL UNIT AND ELECTRO-HYDRAULIC STEERING LOAD SENSE CONTROL
China	05/09/2013	201380024961.X	04/12/2017	201380024961.X	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM
European Patent Convention	05/09/2013	13724999.1	03/28/2018	EP2847469	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM
Germany	05/09/2013	13724999.1	03/28/2018	602013035049.3	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	10/03/2013	201380052019.4	01/12/2018	201380052019.4	AUTOMATIC OIL SPILL DETECTION SYSTEM
European Patent Convention	10/03/2013	13779993.8	04/22/2020	EP2904365	AUTOMATIC OIL SPILL DETECTION SYSTEM
France	10/03/2013	13779993.8	04/22/2020	EP2904365	AUTOMATIC OIL SPILL DETECTION SYSTEM
Germany	10/03/2013	13779993.8	04/22/2020	EP2904365	AUTOMATIC OIL SPILL DETECTION SYSTEM
Great Britain	10/03/2013	13779993.8	04/22/2020	EP2904365	AUTOMATIC OIL SPILL DETECTION SYSTEM
United States	10/03/2013	14/045316	11/29/2016	9506465	AUTOMATIC OIL SPILL DETECTION SYSTEM
United States	11/09/2016	15/346934	11/19/2019	10480550	AUTOMATIC OIL SPILL DETECTION SYSTEM
China	03/05/2012	201280011648.8	08/10/2016	201280011648.8	FAULT DETECTION, ISOLATION AND RECONFIGURATION SYSTEMS FOR CONTROLLING ELECTROHYDRAULIC SYSTEMS USED IN CONSTRUCTION EQUIPMENT (COMBINED DISCLOSURES 10-CLP-251; 10-CLP-527; 10-CLP-528; 10-CLP-529; 11-CLP-042; 11-CLP-043; 11-CLP-055)
Germany	03/05/2012	12715240.3	11/25/2015	602012012622.1	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	12/14/2018	18212817.3			LEAKAGE MODULATION IN HYDRAULIC SYSTEMS CONTAINING A THREE-WAY SPOOL VALVE
United States	12/13/2018	16/218610	11/24/2020	10844884	LEAKAGE MODULATION IN HYDRAULIC SYSTEMS CONTAINING A THREE-WAY SPOOL VALVE
European Patent Convention	12/14/2018	18212818.1			LEAKAGE MODULATION IN HYDRAULIC SYSTEMS CONTAINING A THREE-WAY SPOOL VALVE
Patent Cooperation Treaty	04/23/2021	PCT/EP2021/025167			Intelligent control architecture for engine using CMA
Patent Cooperation Treaty	06/26/2020	PCT/EP2020/025303			VALVE PLATE FOR FLUID PUMP
Great Britain	07/21/2017	1711774.8			NEW METHODOLOGY FOR BRAIDED HOSE MANUFACTURING
China	04/12/2018	2018800249595			NEW METHODOLOGY FOR BRAIDED HOSE MANUFACTURING
India	04/12/2018	201917041080			NEW METHODOLOGY FOR BRAIDED HOSE MANUFACTURING
United States	04/12/2018	16/604,571			NEW METHODOLOGY FOR BRAIDED HOSE MANUFACTURING

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Patent Cooperation Treaty	07/24/2020	PCT/EP2020/025345			LOW PERMEATION TYPE C AIR CONDITIONING HOSE
Patent Cooperation Treaty	08/25/2020	PCT/EP2020/025384			SECUREMENT ARRANGEMENT TO HOLD A HOSE TO A FITTING
Patent Cooperation Treaty	02/06/2020	PCT/EP2020/025054			PRESSURE BOOST SYSTEM
United States	07/23/2021	17/425702			PRESSURE BOOST SYSTEM
Patent Cooperation Treaty	07/01/2020	PCT/EP2020/025310			HYDRAULIC SYSTEM ARCHITECTURES AND BIDIRECTIONAL PROPORTIONAL VALVES USABLE IN THE SYSTEM ARCHITECTURES
Patent Cooperation Treaty	04/24/2020	PCT/EP2020/025188			HYDRAULIC CIRCUIT ARCHITECTURE WITH ENHANCED OPERATING EFFICIENCY
Patent Cooperation Treaty	12/11/2020	PCT/EP2020/025574			System and Method for Response Deterioration Measurements for Solenoid Operated Valves
India	2/26/2021	202111008145			Self Centering Double acting Blind Mate coupling with Self Centering Mechanism
United States of America	2020-07-31	63/059670			Ride Control For Work Machines

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	12/29/2009	200980157816.2	04/29/2015	200980157816.2	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
France	12/29/2009	09806197.1	04/02/2014	EP2379924	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Germany	12/29/2009	09806197.1	04/02/2014	602009023012.3	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Great Britain	12/29/2009	09806197.1	04/02/2014	EP2379924	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/19/2013	14/134545	09/19/2017	9765501	CONTROL SYSTEM FOR HYDRAULIC SYSTEM AND METHOD FOR RECOVERING ENERGY AND LEVELING HYDRAULIC SYSTEM LOADS
China	01/09/2013	201380005076.7	04/12/2017	201380005076.7	METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
European Patent Convention	01/09/2013	13702671.2			METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
India	01/09/2013	1337/KOLNP/2014			METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
Japan	01/09/2013	2014-552268	12/02/2016	6049758	METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
South Korea	01/09/2013	2014-7020371	03/15/2019	101956959	METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
United States	01/09/2013	13/737381	09/27/2016	9453503	METHOD FOR OBTAINING A FULL RANGE OF LIFT SPEEDS USING A SINGLE INPUT
United States	08/22/2011	13/214304	12/09/2014	8905072	TWIN SPOOL MANUAL OVERRIDE
China	08/16/2012	201280040876.8	04/20/2016	201280040876.8	TWIN SPOOL MANUAL OVERRIDE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	11/12/2019	18717358.8			NEW METHODOLOGY FOR BRAIDED HOSE MANUFACTURING
Great Britain	09/04/2019	1912704.2			FORCE REQUIRED TO BEND TESTING DEVICE
Great Britain	12/22/2017	1721787.8			DEVELOPMENT OF EN 45545-2:2013 HL2-R22 AND HL3-R23 COMPATIBLE RUBBER RECIPES FOR SAEJ517 100R4 HOSE
Great Britain	11/02/2018	1817964.8			FLAT FACE CONNECT UNDER WORKING PRESSURE COUPLING (FF CUWP)
Great Britain	05/17/2019	1906951.7			MULTIPLATE COUPLING SOLUTION WITH CENTRALIZED RACK AND PINION GUIDING AND LOCKING MECHANISM
Patent Cooperation Treaty	03/24/2020	PCT/EP2020/058214			MULTIPLATE COUPLING SOLUTION WITH CENTRALIZED RACK AND PINION GUIDING AND LOCKING MECHANISM
United States	06/26/2019	16/453261			HYDRAULIC SYSTEM CONTROL MODULE HAVING IMPROVED HOUSING FEATURES AND METHOD OF MANUFACTURING THE SAME

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	03/16/2011	1020127023585	01/14/2019	101940330	CORROSION-RESISTANT POSITION MEASUREMENT SYSTEM AND METHOD OF FORMING SAME
United States	04/29/2010	12/770261	05/07/2013	8435010	CONTROL OF A FLUID PUMP ASSEMBLY
Brazil	04/28/2011	BR112012027716 2	03/30/2021	BR112012027716 2	CONTROL OF A FLUID PUMP ASSEMBLY
Canada	04/28/2011	2797706	11/08/2016	2797706	CONTROL OF A FLUID PUMP ASSEMBLY
China	04/28/2011	201180021442.9	07/15/2015	201180021442.9	CONTROL OF A FLUID PUMP ASSEMBLY
European Patent Convention	04/28/2011	11718852.4	08/21/2019	EP2564071	CONTROL OF A FLUID PUMP ASSEMBLY
Germany	04/28/2011	11718852.4	08/21/2019	EP2564071	CONTROL OF A FLUID PUMP ASSEMBLY
Japan	04/28/2011	2013-508233	04/24/2015	5733540	CONTROL OF A FLUID PUMP ASSEMBLY
South Korea	04/28/2011	2012-7028201	06/28/2018	1874653	CONTROL OF A FLUID PUMP ASSEMBLY
Brazil	04/22/2011	BR112012027722 7	03/30/2021	BR112012027722 7	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
Canada	04/22/2011	2797828	04/18/2017	2797828	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
China	04/22/2011	201180032216.0	03/25/2015	201180032216.0	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
Germany	04/22/2011	11716796.5	03/23/2016	602011024290.3	MULTIPLE FLUID PUMP COMBINATION CIRCUIT

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	05/13/2014	201480030444.8	07/05/2019	201480030444.8	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
European Patent Convention	05/13/2014	14803575.1	03/14/2018	EP3004470	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
Germany	05/13/2014	14803575.1	03/14/2018	602014022412.1	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
Great Britain	05/13/2014	14803575.1	03/14/2018	EP3004470	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
India	05/13/2014	10073/DELNP/2015			HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
Italy	05/13/2014	14803575.1	03/14/2018	502018000013835	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
South Korea	05/13/2014	2015-7036758	08/31/2020	2152148	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
United States	05/13/2014	14/894662	11/07/2017	9810242	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
United States	11/06/2017	15/804542	12/10/2019	10502239	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	02/11/2013	13/763773	03/03/2015	8967356	EXPANDER BRAKE/CLUTCH ASSEMBLY AND METHOD OF MAKING SAME
Great Britain	06/03/2014	1409873.5	09/28/2016	GB2526827	EXPANDER BRAKE/CLUTCH ASSEMBLY AND METHOD OF MAKING SAME
India	06/06/2014	1526/DEL/2014			EXPANDER BRAKE/CLUTCH ASSEMBLY AND METHOD OF MAKING SAME
Argentina	06/12/2014	P140102250	07/31/2020	AR096596B1	EXPANDER BRAKE/CLUTCH ASSEMBLY AND METHOD OF MAKING SAME
China	06/30/2014	201410305847.0	05/07/2019	201410305847.0	EXPANDER BRAKE/CLUTCH ASSEMBLY AND METHOD OF MAKING SAME
United States	04/27/2012	29/419398	11/26/2013	D694140	HOSE AND SENSOR ASSEMBLY
Australia	10/22/2012	201215223	01/03/2013	346094	HOSE AND SENSOR ASSEMBLY
European Community Design	10/26/2012	001348965-0001	10/26/2012	001348965-0001	HOSE AND SENSOR ASSEMBLY
South Africa	10/26/2012	A2012/01891	08/28/2013	A2012/01891	HOSE AND SENSOR ASSEMBLY
South Africa	10/26/2012	F2012/01892	08/28/2013	F2012/01892	HOSE AND SENSOR ASSEMBLY
United States	10/21/2013	29/470356	05/10/2016	D755656	HOSE AND SENSOR ASSEMBLY
United States	04/27/2012	29/419413	10/15/2013	D691503	LIFESENSE HOSE WIRELESS GATEWAY DESIGN
United States	08/23/2013	29/465071	12/15/2015	D745425	HOSE SENSOR SIGNAL RECEIVER
Germany	06/28/2013	13737748.7	05/03/2017	602013020622.8	ABRASION MONITORING SYSTEM FOR HOSE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	11/25/2013	14/089301	11/29/2016	9507350	DEVICE AND METHOD FOR CONTROLLING A FLUID ACTUATOR
United States	08/02/2011	13/196316	09/02/2014	8821139	BALANCE PLATE FOR A FLUID DEVICE
China	08/03/2011	201180038466.5	01/06/2016	201180038466.5	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
European Patent Convention	08/03/2011	11743921.6	10/03/2018	EP2601381	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
Germany	08/03/2011	11743921.6	10/03/2018	602011052553.0	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
Italy	08/03/2011	11743921.6	10/03/2018	502018000044047	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
Japan	08/03/2011	2013-523296	12/04/2015	5847820	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
South Korea	08/03/2011	1020137005303	03/08/2017	101716538	BALANCE PLATE ASSEMBLY FOR A FLUID DEVICE
United States	04/13/2010	12/759052	08/06/2013	8500423	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE
European Patent Convention	04/13/2011	11162171.0	11/21/2018	EP2392826	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE
Germany	04/13/2011	11162171.0	11/21/2018	602011054014.9	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE
Great Britain	04/13/2011	11162171.0	11/21/2018	EP2392826	FRAME ROTATED HYDDRAULIC MOTOR WITH IMPROVED PARKING BRAKE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	06/27/2014	14818247.0	5-Feb-20	602014 060652.0	CONTROL SYSTEM AND METHOD FOR PUMP WITH VARIABLE FREQUENCY DRIVE AND PUMP SYSTEM
United States	06/27/2014	14/899992	05/19/2020	10655621	CONTROL SYSTEM AND METHOD OF A VFD-BASED PUMP AND PUMP SYSTEM
China	01/09/2013	201380012183.2	08/24/2016	201380012183.2	PROPEL CIRCUIT AND WORK CIRCUIT COMBINATIONS FOR A WORK MACHINE
European Patent Convention	01/09/2013	13701518.6			SIMPLIFIED WORK AND PROPEL CIRCUIT COMBINATIONS
Germany	01/09/2013	13701518.6	12/02/2020	EP2802528	SIMPLIFIED WORK AND PROPEL CIRCUIT COMBINATIONS
Great Britain	01/09/2013	13701518.6	12/02/2020	EP2802528	SIMPLIFIED WORK AND PROPEL CIRCUIT COMBINATIONS
France	01/09/2013	13701518.6	12/02/2020	EP2802528	SIMPLIFIED WORK AND PROPEL CIRCUIT COMBINATIONS
Japan	01/09/2013	2014-552267	06/23/2017	6161630	SIMPLIFIED WORK AND PROPEL CIRCUIT COMBINATIONS
United States	01/09/2013	13/737679	06/05/2018	9989042	PROPEL CIRCUIT AND WORK CIRCUIT COMBINATIONS FOR A WORK MACHINE
United States	08/10/2012	13/572115	05/08/2018	9963855	METHOD AND APPARATUS FOR RECOVERING INERTIAL ENERGY
European Patent Convention	08/10/2012	12748345.1	02/21/2018	EP2742185	SYSTEM AND METHOD FOR RECOVERING ENERGY AND LEVELING HYDRAULIC SYSTEM LOADS
Japan	08/10/2012	2014-526087	02/03/2017	6084972	SYSTEM AND METHOD FOR RECOVERING ENERGY AND LEVELING HYDRAULIC SYSTEM LOADS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Denmark	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM
France	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM
Germany	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM
Italy	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	08/16/2012	12748032.5	04/15/2020	EP2748468	TWIN SPOOL MANUAL OVERRIDE
France	08/16/2012	12748032.5	04/15/2020	EP2748468	TWIN SPOOL MANUAL OVERRIDE
Germany	08/16/2012	12748032.5	04/15/2020	EP2748468	TWIN SPOOL MANUAL OVERRIDE
Great Britain	08/16/2012	12748032.5	04/15/2020	EP2748468	TWIN SPOOL MANUAL OVERRIDE
Italy	08/16/2012	12748032.5	04/15/2020	EP2748468	TWIN SPOOL MANUAL OVERRIDE
China	11/29/2012	201280058217.7	12/23/2015	201280058217.7	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
France	11/29/2012	12798669.3	12/21/2016	EP2786056	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
Germany	11/29/2012	12798669.3	12/21/2016	602012026918.9	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	04/12/2012	12715532.3	11/02/2016	EP2877672	PLUNGER TYPE WIRE RISER TENSIONER FOR OFFSHORE RIGS AND SHIPS, WITH INTERNAL A.P.V.
Italy	04/12/2012	502016000132599	11/02/2016	EP2877672	PLUNGER TYPE WIRE RISER TENSIONER FOR OFFSHORE RIGS AND SHIPS, WITH INTERNAL A.P.V.
United States	04/12/2012	14/391446	05/31/2016	9353581	PLUNGER TYPE WIRE RISER TENSIONER FOR OFFSHORE RIGS AND SHIPS, WITH INTERNAL A.P.V.
European Patent Convention	12/14/2012	12809502.3	02/06/2019	EP2791515	FLOW DIRECTING SPOOL FOR VALVE
Germany	12/14/2012	12809502.3	02/06/2019	602012056512.8	FLOW DIRECTING SPOOL FOR VALVE
Great Britain	12/14/2012	12809502.3	02/06/2019	EP2791515	FLOW DIRECTING SPOOL FOR VALVE
Italy	12/14/2012	12809502.3	02/06/2019	502019000027216	FLOW DIRECTING SPOOL FOR VALVE
Japan	12/14/2012	2014-547488	09/01/2017	6198750	FLOW DIRECTING SPOOL FOR VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Singapore	12/21/2011	2013048319	01/07/2016	191307	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
South Korea	12/21/2011	2013-7019103	02/01/2019	10-1947197	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Turkey	12/21/2011	11811610.2	05/17/2017	TR201708069T4	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
United States	05/22/2015	14/719724	08/09/2016	9410649	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
United States	07/19/2016	15/214408	01/21/2020	10539258	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
United States	02/18/2011	13/030763	03/04/2014	8662108	QUICK CONNECT FLUID COUPLING
Great Britain	11/22/2010	11801897.7	11/01/2017	EP2643674	PRESSURE SENSING HOSE
Brazil	11/22/2011	BR112013012673 6	11/03/2020	BR112013012673 6	PRESSURE SENSING HOSE
China	11/22/2011	201180056353.8	07/21/2017	201180056353.8	PRESSURE SENSING HOSE
European Patent Convention	11/22/2011	11801897.7	11/01/2017	EP2643674	PRESSURE SENSING HOSE
France	11/22/2011	11801897.7	11/01/2017	EP2643674	PRESSURE SENSING HOSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
South Korea	08/03/2010	1020127005185	01/18/2018	101821827	PROPORTIONAL POPPET VALVE WITH INTEGRAL CHECK VALVE
United States	07/14/2011	13/183008	07/08/2014	8770543	PROPORTIONAL POPPET VALVE WITH INTEGRAL CHECK VALVES
United States	09/22/2009	12/564069	10/16/2012	8286652	CONFIGURABLE ACTIVE JERK CONTROL
China	09/21/2010	201080047488.3	04/08/2015	201080047488.3	CONFIGURABLE ACTIVE JERK CONTROL
South Korea	09/21/2010	1020127009342	10/19/2017	101790358	CONFIGURABLE ACTIVE JERK CONTROL
United States	10/13/2009	12/577928	10/23/2012	8291925	METHOD FOR OPERATING A HYDRAULIC ACTUATION POWER SYSTEM EXPERIENCING PRESSURE SENSOR FAULTS
Finland	10/13/2010	10773188.7	11/20/2013	EP2488763	METHOD FOR OPERATING A HYDRAULIC ACTUATION POWER SYSTEM EXPERIENCING PRESSURE SENSOR FAULTS
South Korea	10/13/2010	1020127012188	02/20/2018	101832507	METHOD FOR OPERATING A HYDRAULIC ACTUATION POWER SYSTEM EXPERIENCING PRESSURE SENSOR FAULTS
Sweden	10/13/2010	10773188.7	11/20/2013	EP2488763	METHOD FOR OPERATING A HYDRAULIC ACTUATION POWER SYSTEM EXPERIENCING PRESSURE SENSOR FAULTS
United States	04/07/2009	12/419663	01/29/2013	8359849	CONTROL OF A FLUID CIRCUIT USING AN ESTIMATED SENSOR VALUE
India	04/06/2010	4147/KOLNP/2011	04/06/2010	301796	CONTROL OF A FLUID CIRCUIT USING AN ESTIMATED SENSOR VALUE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/27/2014	14/900033	03/16/2021	10951149	METHOD AND APPARATUS FOR PULSE-WIDTH MODULATION OF A VARIABLE-FREQUENCY DRIVE
Germany	06/27/2014	14818698.4	10/07/2020	EP3014754	PULSE WIDTH MODULATION METHOD AND APPARATUS FOR VARIABLE FREQUENCY DRIVE
France	06/27/2014	14818698.4	10/07/2020	EP3014754	PULSE WIDTH MODULATION METHOD AND APPARATUS FOR VARIABLE FREQUENCY DRIVE
Great Britain	06/27/2014	14818698.4	10/07/2020	EP3014754	PULSE WIDTH MODULATION METHOD AND APPARATUS FOR VARIABLE FREQUENCY DRIVE
China	06/28/2013	201310267723.3	12/28/2016	20130267723.3	SERVO PUMP CONTROL SYSTEM AND METHOD
European Patent Convention	06/27/2014	14818733.9			SERVO PUMP CONTROL SYSTEM AND METHOD
Germany	06/27/2014	14818733.9	05/05/2021	EP3014124	SERVO PUMP CONTROL SYSTEM AND METHOD
France	06/27/2014	14818733.9	05/05/2021	EP3014124	SERVO PUMP CONTROL SYSTEM AND METHOD
Great Britain	06/27/2014	14818733.9	05/05/2021	EP3014124	SERVO PUMP CONTROL SYSTEM AND METHOD
United States	06/27/2014	14/900044	10/29/2019	10458403	SERVO PUMP CONTROL SYSTEM AND METHOD
China	12/20/2013	201380067489.8	06/30/2017	201380067489.8	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
European Patent Convention	12/20/2013	13818164.9	03/13/2019	EP2935904	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
France	11/07/2014	14861695.6	12/30/2020	EP3069030	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
Great Britain	11/07/2014	14861695.6	12/30/2020	EP3069030	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
United States	11/07/2014	15/036756	07/09/2019	10344783	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
United States	07/03/2019	16/502273	06/29/2021	11047406	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
United States	07/15/2015	14/799827	05/22/2018	9976615	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
Australia	07/12/2016	2016204870	08/29/2019	2016204870	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
South Africa	07/13/2016	2016/04879	08/30/2017	2016/04879	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
Canada	07/14/2016	2936103	01/07/2020	2936103	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
China	07/15/2016	201610735445.3	06/12/2020	106351978	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
United States	09/08/2015	29/538771	12/13/2016	D773910	WRENCH
United States	06/27/2014	29/495175	05/10/2016	D755938	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
Australia	11/18/2014	201415873	02/04/2015	359707	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
European Community Design	12/04/2014	002590414-0001	12/04/2014	002590414-0001	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	A2014/01724	08/26/2015	A2014/01724	SENSOR ENCLOSURE ASSEMBLY FOR A

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	03/05/2012	12715240.3	11/25/2015	EP2681366	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS
Italy	03/05/2012	502016000017225	11/25/2015	EP2681366	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS
Japan	03/05/2012	2013-556619	06/16/2017	6157365	FAULT DETECTION, ISOLATION AND RECONFIGURATION SYSTEMS AND METHODS FOR CONTROLLING ELECTROHYDRAULIC SYSTEMS USED IN CONSTRUCTION EQUIPMENT (COMBINED DISCLOSURES 10-CLP-251; 10-CLP-527; 10-CLP-528; 10-CLP-529; 11-CLP-042; 11-CLP-043; 11-CLP-055)
South Korea	03/05/2012	1020137025932	02/07/2019	101947842	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS (COMBINED DISCLOSURES 10-CLP-251; 10-CLP-527; 10-CLP-528; 10-CLP-529; 11-CLP-042; 11-CLP-043; 11-CLP-055)

Country	Application Date	Application Number	Grant Date	Patent Number	Title
					HOSE
Australia	11/18/2014	201415874	02/04/2015	359708	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	F2014/01725	08/26/2015	F2014/01725	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	A2014/01726	08/26/2015	A2014/01726	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	F2014/01727	08/26/2015	F2014/01727	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
United States	06/27/2014	29/495176	09/22/2015	D739506	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
Australia	11/18/2014	201415871	02/04/2015	359705	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
European Community Design	12/04/2014	002590414-0002	12/04/2014	002590414-0002	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	A2014/01728	08/26/2015	A2014/01728	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
Australia	11/18/2014	201415872	02/04/2015	359706	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	F2014/01729	08/26/2015	F2014/01729	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	A2014/01730	08/26/2015	A2014/01730	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE
South Africa	08/26/2015	F2014/01731	08/26/2015	F2014/01731	SENSOR ENCLOSURE ASSEMBLY FOR A HOSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	02/08/2013	201310108159.0	07/07/2017	201310108159.0	DUAL-ROTOR FORCE TRANSMITTING ASSEMBLY
Argentina	02/18/2013	P130100421	01/31/2019	089963	DUAL-ROTOR FORCE TRANSMITTING ASSEMBLY
Australia	04/26/2012	2012249621	05/26/2016	2012249621	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Brazil	04/26/2012	BR1120130274093	10/06/2020	BR1120130274093	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Canada	04/26/2012	2834196	04/03/2018	2834196	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
China	04/26/2012	201280021112.4	06/08/2016	201280021112.4	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Germany	04/26/2012	12718859.7	11/25/2015	602012012626.4	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Great Britain	04/26/2012	12718859.7	11/25/2015	EP2702380	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
India	04/26/2012	3009/KOLNP/2013			DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Italy	04/26/2012	502016000011876	11/25/2015	EP2702380	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Japan	04/26/2012	2014-508551	04/14/2017	6126585	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
South Korea	04/26/2012	2013-7030608	09/27/2019	10-2028764	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
Turkey	04/26/2012	2015/16807	11/25/2015	EP2702380	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY
United States	04/27/2012	13/458691	09/06/2016	9435709	DEGRADATION MONITORING SYSTEM FOR HOSE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	11/22/2011	11801897.7	11/01/2017	602011042983.3	PRESSURE SENSING HOSE
India	11/22/2011	1435/KOLNP/2013	08/24/2020	344776	PRESSURE SENSING HOSE
Japan	11/22/2011	2013-541027	04/15/2016	5917548	PRESSURE SENSING HOSE
South Korea	11/22/2011	2013/7015826	10/22/2018	1912477	PRESSURE SENSING HOSE
Turkey	11/22/2011	11801897.7	11/01/2017	EP2643674	PRESSURE SENSING HOSE
United States	11/22/2011	13/302692	06/13/2017	9677967	PRESSURE SENSING HOSE
United States	12/23/2010	12/977445	07/22/2014	8783732	FLUID CONNECTOR WITH HOSE CUTTING BLADES
China	10/28/2011	201180052553.6	08/31/2016	2011800525536.	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
European Patent Convention	10/28/2011	11779940.3	11/22/2017	EP2633184	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
Germany	10/28/2011	11779940.3	11/22/2017	602011043607.4	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS
Italy	10/28/2011	11779940.3	11/22/2017	502018000004732	FLUID DEVICE WITH PRESSURIZED ROLL POCKETS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	02/01/2018	18748589.1			HYBRID WIRELESS SENSOR NETWORK ARCHITECTURE FOR FLUID DELIVERY AND DISTRIBUTION SYSTEMS
United States	02/01/2018	16/482757	07/20/2021	11070624	HYBRID WIRELESS SENSOR NETWORK ARCHITECTURE FOR FLUID DELIVERY AND DISTRIBUTION SYSTEMS
United States	08/18/2017	15/680898	04/20/2021	10982763	HYDRAULIC MECHANICAL TRANSMISSION WITH TORQUE BOOST
United States	07/02/2019	16/460554			SYSTEM AND METHOD FOR DETECTING POSITION OF A VALVE DRIVEN BY A SOLENOID LINEAR ACTUATOR
European Patent Convention	07/03/2019	19184279.8			SYSTEM AND METHOD FOR DETECTING POSITION OF A VALVE DRIVEN BY A SOLENOID LINEAR ACTUATOR
India	07/04/2019	201914026871			SYSTEM AND METHOD FOR DETECTING POSITION OF A VALVE DRIVEN BY A SOLENOID LINEAR ACTUATOR
China	07/05/2019	201910604482.4			SYSTEM AND METHOD FOR DETECTING POSITION OF A VALVE DRIVEN BY A SOLENOID LINEAR ACTUATOR
United States	08/18/2017	15/680805	11/26/2019	10487940	HYDRAULIC MECHANICAL TRANSMISSION WITH INCREASED EFFICIENCY
United States	08/09/2017	16/324444			HYDRAULIC SYSTEMS AND COMPONENTS INCLUDING WIRELESS CONTROL TECHNOLOGY
Great Britain	04/21/2017	1706377.7			KOMPAKTER HYDRAULIKZYLINDER ZUR BEARBEITUNG EINES ROHRES.

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Italy	01/27/2004	502014902266821	04/09/2014	EP1443212	ROTARY FLUID PRESSURE DEVICE AND IMPROVED INTEGRAL BRAKE ASSEMBLY
United States	05/12/2003	10/434638	08/24/2004	6779624	CONTROL UNIT FOR POWER STEERING APPARATUS AND STEERING WHEEL ANGLE CORRECTING SYSTEM
Germany	02/18/2002	10206852.6	02/12/2009	10206852.6	CROWN QUICK RELEASE
Italy	02/14/2003	102003901087180	10/01/2008	1347661	COUPLING FOR CONNECTING HYDRAULIC DUCTS
Japan	02/14/2003	2003037024	06/10/2005	3686408	CROWN QUICK RELEASE
United States	02/17/2003	10/368318	11/15/2005	6964435	CROWN QUICK RELEASE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	12/20/2013	13818164.9	03/13/2019	602013052395.9	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
Great Britain	12/20/2013	13818164.9	03/13/2019	EP2935904	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
Italy	12/20/2013	13818164.9	03/13/2019	502019000039693	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
Japan	12/20/2013	2015-549781	03/30/2018	6312701	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
United States	12/20/2013	14/136277	04/26/2016	9323253	PROPORTIONAL FLOW CONTROL OF A FLUID PUMP ASSEMBLY
China	03/14/2014	201480014589.9	08/29/2017	201480014589.9	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
European Patent Convention	03/14/2014	14720401.0	05/01/2019	EP2971795	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
Germany	03/14/2014	14720401.0	05/01/2019	602014045730.4	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
Great Britain	03/14/2014	14720401.0	05/01/2019	EP2971795	METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS
India	03/14/2014	8448/DELNP/2015			METHODS AND SYSTEMS FOR FLOW SHARING IN A HYDRAULIC TRANSFORMER SYSTEM WITH MULTIPLE PUMPS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	08/10/2012	13/571517	10/30/2017	9803338	SYSTEM AND METHOD FOR RECOVERING ENERGY AND LEVELING HYDRAULIC SYSTEM LOADS
United States	06/28/2013	13/930924	09/06/2016	9435355	HYDRAULIC LAUNCH ASSIST TRICKLE CHARGE TRANSFORMER
United States	02/28/2013	13/780553	05/29/2018	9982690	DIGITAL HYDRAULIC TRANSFORMER AND METHOD FOR RECOVERING ENERGY AND LEVELING HYDRAULIC SYSTEM LOADS
India	12/17/2013	5439/DELNP/2015			SUPERVISORY SYSTEM CONTROL METHOD FOR HYDRAULIC ENERGY RECOVERING SYSTEM COMBINED WITH U.S. APP #61/558882
Japan	12/17/2013	2015-549564	04/13/2018	6320417	SUPERVISORY SYSTEM CONTROL METHOD FOR HYDRAULIC ENERGY RECOVERING SYSTEM COMBINED WITH U.S. APP #61/558882
South Korea	12/17/2013	2015-7019367	06/18/2020	20150095926	SUPERVISORY SYSTEM CONTROL METHOD FOR HYDRAULIC ENERGY RECOVERING SYSTEM COMBINED WITH U.S. APP #61/558882

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	10/12/2009	200980162243.2	02/11/2015	200980162243.2	CONTROL DEVICE FOR A HYDRAULIC MOTOR
France	10/12/2009	09744737.9	08/07/2013	EP2473733	CONTROL DEVICE FOR A HYDRAULIC MOTOR
Germany	10/12/2009	09744737.9	08/07/2013	602009017816.4	CONTROL DEVICE FOR A HYDRAULIC MOTOR
Great Britain	10/12/2009	09744737.9	08/07/2013	EP2473733	CONTROL DEVICE FOR A HYDRAULIC MOTOR
Japan	10/12/2009	2012-527399	01/31/2014	5464275	CONTROL DEVICE FOR A HYDRAULIC MOTOR
South Korea	10/12/2009	2012-7008479	01/31/2017	1703375	CONTROL DEVICE FOR A HYDRAULIC MOTOR AND HYDRAULIC MOTOR ASSEMBLY
United States	10/31/2006	11/590199	10/20/2009	7604104	CLUTCH BRAKE ASSEMBLY
China	10/30/2007	200710165486.4	05/04/2011	200710165486.4	CLUTCH BRAKE ASSEMBLY
United States	07/18/2008	12/218781	08/21/2012	8245827	CLUTCH-BRAKE ASSEMBLY
China	07/17/2009	200980136309.0	04/16/2014	200980136309.0	CLUTCH-BRAKE ASSEMBLY
United States	02/01/2007	11/670263	02/03/2015	8944112	BRAIDED HOSE AND METHOD OF MAKING THE SAME

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	11/29/2018	1819466.2			HYDRAULIC SYSTEM WITH LOAD SENSE AND METHODS THEREOF
European Patent Convention	02/07/2020	18832834.8			ELECTROMECHANICAL CONTROLLER
United States	01/13/2020	16/630697			ELECTROMECHANICAL CONTROLLER
United States	03/29/2019	16/369116	04/06/2021	10968927	HYDRAULIC VALVE ASSEMBLY WITH AUTOMATED TUNING
Germany	04/02/2019	102019108627.2			HYDRAULIC VALVE ASSEMBLY WITH AUTOMATED TUNING
China	04/25/2018	201880025901.2			SYSTEM WITH MOTION SENSORS FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES
India	04/25/2018	201917045861			SYSTEM WITH MOTION SENSORS FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES
Great Britain	04/25/2018	90000187918545.00			SYSTEM WITH MOTION SENSORS FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES
European Patent Convention	11/26/2019	18791854.5			SYSTEM WITH MOTION SENSORS FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES
United States	10/28/2019	16/665511			SYSTEM WITH MOTION SENSORS FOR DAMPING MASS-INDUCED VIBRATION IN MACHINES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	10/15/2009	12/579448	08/20/2013	8515687	DEGRADATION DETECTION SYSTEM FOR A HOSE ASSEMBLY
Australia	12/29/2009	2009336606	10/22/2015	2009336606	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Brazil	12/29/2009	PI0919370-7	10/29/2019	PI0919370-7	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY
Canada	12/29/2009	2749079	08/18/2015	2749079	DEGRADATION DETECTION SYSTEM FOR HOSE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	05/25/2012	12731206.4	10/26/2016	602012024581.6	VALVE ASSEMBLY WITH INTEGRAL SENSORS
Great Britain	05/25/2012	12731206.4	10/26/2016	EP2715150	VALVE ASSEMBLY WITH INTEGRAL SENSORS
Italy	05/25/2012	502016000131027	10/26/2016	EP2715150	VALVE ASSEMBLY WITH INTEGRAL SENSORS
Japan	05/25/2012	2014-512152	12/09/2016	6053761	VALVE ASSEMBLY WITH INTEGRAL SENSORS
United States	05/25/2012	13/480779	10/06/2015	9151396	VALVE ASSEMBLY WITH INTEGRAL SENSORS
United States	09/14/2015	14/853508	12/06/2016	9512933	VALVE ASSEMBLY WITH INTEGRAL SENSORS
Great Britain	03/04/2011	1103664.7	03/15/2017	GB2488588	TRAPEZOIDAL DYNAMIC BACK-UP RING
Great Britain	03/04/2011	1701820.1	11/22/2017	GB2549366	TRAPEZOIDAL DYNAMIC BACK-UP RING
United States	02/23/2011	13/033583	08/20/2013	8512207	TORQUE CONVERTER CONTROL FOR A VEHICLE
United States	07/17/2013	13/944330	05/20/2014	8727945	TORQUE CONVERTER CONTROL FOR A VEHICLE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
France	07/09/2009	09786003.5	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY
Germany	07/09/2009	09786003.5	05/29/2013	602009016060.5	HOSE WITH FAULT DETECTION CAPABILITY
Great Britain	07/09/2009	09786003.5	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY
India	07/09/2009	226/KOLNP/2011	10/24/2019	323638	HOSE WITH FAULT DETECTION CAPABILITY
Italy	07/09/2009	502013902183941	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY
Japan	07/09/2009	2011/517263	06/20/2014	5561495	HOSE WITH FAULT DETECTION CAPABILITY
Netherlands	07/09/2009	09786003.5	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY
Russia	07/09/2009	2011104480	02/10/2014	2511831	HOSE WITH FAULT DETECTION CAPABILITY
Singapore	07/09/2009	201100131.0	04/30/2013	168105	HOSE WITH FAULT DETECTION CAPABILITY
South Africa	07/09/2009	2011/00313	09/28/2011	2011/00313	HOSE WITH FAULT DETECTION CAPABILITY
South Korea	07/09/2009	1020117002858	03/10/2016	101604153	HOSE WITH FAULT DETECTION CAPABILITY
Spain	07/09/2009	09786003.5	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY
Sweden	07/09/2009	09786003.5	05/29/2013	EP2304294	HOSE WITH FAULT DETECTION CAPABILITY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	08/14/2003	03791077.5	12/18/2013	EP1579142	COUPLING ASSEMBLY WITH PROFILED RAMPS
Italy	08/14/2003	502014902237234	12/18/2013	EP1579142	COUPLING ASSEMBLY WITH PROFILED RAMPS
Japan	08/14/2003	2004-532367	08/06/2010	4560781	COUPLING ASSEMBLY WITH PROFILED RAMPS
Mexico	01/27/2005	MX/a/2006/008556	04/16/2009	266036	COUPLING ASSEMBLY WITH LATCHING SLEEVE
United States	01/27/2005	11/044515	06/09/2009	7543854	COUPLING ASSEMBLY WITH LATCHING SLEEVE
United States	09/26/2002	10/255453	08/31/2004	6782698	STEERING CONTROL UNIT WITH LOW NULL BAND LOAD SENSING BOOST
United States	02/03/2003	10/357089	06/01/2004	6743002	ROTARY FLUID PRESSURE DEVICE AND IMPROVED INTEGRAL BRAKE ASSEMBLY
France	01/27/2004	04001693.3	04/09/2014	EP1443212	ROTARY FLUID PRESSURE DEVICE AND IMPROVED INTEGRAL BRAKE ASSEMBLY
Great Britain	01/27/2004	04001693.3	04/09/2014	EP1443212	ROTARY FLUID PRESSURE DEVICE AND IMPROVED INTEGRAL BRAKE ASSEMBLY
India	01/27/2004	38/KOL/2004	03/09/2010	239174	ROTARY FLUID PRESSURE DEVICE AND IMPROVED INTEGRAL BRAKE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	08/30/2019	16/557590			SYSTEM AND METHOD FOR SPOOL FAULT DETECTION OF SOLENOID VALVES USING ELECTRICAL SIGNATURE
United States	07/01/2019	16/459134			DUAL POWER ELECTRO HYDRAULIC MOTION CONTROL SYSTEM
India	07/09/2019	201914027489			NOVEL DUAL POWER ELECTRO HYDRAULIC ACTUATOR
European Patent Convention	07/11/2019	19185886.9			NOVEL DUAL POWER ELECTRO HYDRAULIC ACTUATOR
China	07/12/2019	201910629665.1			NOVEL DUAL POWER ELECTRO HYDRAULIC ACTUATOR
United States	07/01/2019	16/459162			POWER ARCHITECTURE FOR A VEHICLE SUCH AS AN OFF-HIGHWAY VEHICLE
European Patent Convention	07/10/2019	19185616.0			POWER ARCHITECTURE FOR A VEHICLE SUCH AS AN OFF-HIGHWAY VEHICLE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/29/2009	12/493885	10/08/2013	8550792	ENERGY CONVERSION DEVICE AND METHOD OF REDUCING FRICTION THEREIN
United States	10/16/2009	12/580997	12/03/2013	8596051	CONTROL VALVE ACTUATION
India	06/02/2009	5040/KOLNP/2010	08/20/2019	318453	INTEGRATED DUMP AND OVER-PRESSURE VALVE
South Korea	06/02/2009	1020107029235	10/16/2017	101788872	INTEGRATED DUMP AND OVER-PRESSURE VALVE
United States	06/02/2009	12/476989	02/11/2014	8646481	VALVE HAVING INTEGRATED PRESSURE ASSIST MECHANISM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	06/11/2009	09763643.5	07/19/2017	602009047238.0	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
Great Britain	06/11/2009	09763643.5	07/19/2017	EP2297624	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
India	06/11/2009	133/KOL NP/2011	05/08/2019	312447	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
Italy	06/11/2009	09763643.5	07/19/2017	EP2297624	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
Japan	06/11/2009	2011-513697	04/18/2014	5522414	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
United States	06/11/2009	12/483091	08/07/2012	8239069	AUTO-TUNING ELECTRO-HYDRAULIC VALVE
Germany	06/11/2009	17181643.2	11/13/2019	EP3276444	AUTO-TUNING ELECTRO-HYDRAULIC VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/02/2009	12/477006	06/18/2013	8464754	VALVE MANIFOLD
United States	05/22/2013	13/900219	09/06/2016	9435438	VALVE MANIFOLD
Japan	04/01/2014	2014-075635	01/22/2016	5872612	INTEGRATED DUMP AND OVER-PRESSURE VALVE
Japan	06/02/2009	2015-146911	04/21/2017	6127250	HYDRAULIC SYSTEM
United States	06/02/2009	12/476973	11/06/2012	8302627	HYDRAULIC SYSTEM
South Korea	06/02/2010	1020117030332	03/29/2017	101723251	HYDRAULIC SYSTEM
United States	06/02/2009	12/477009	01/22/2013	8356630	VALVE DAMPING SYSTEM
European Patent Convention	06/11/2009	09763643.5	07/19/2017	EP2297624	AUTO-TUNING ELECTRO-HYDRAULIC VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	07/01/2019	19183743.4	01/13/2021	EP3589095	HYDRAULIC SYSTEM CONTROL MODULE HAVING IMPROVED HOUSING FEATURES AND METHOD OF MANUFACTURING THE SAME
France	07/01/2019	19183743.4	01/13/2021	EP3589095	HYDRAULIC SYSTEM CONTROL MODULE HAVING IMPROVED HOUSING FEATURES AND METHOD OF MANUFACTURING THE SAME
Germany	07/01/2019	19183743.4	01/13/2021	EP3589095	HYDRAULIC SYSTEM CONTROL MODULE HAVING IMPROVED HOUSING FEATURES AND METHOD OF MANUFACTURING THE SAME
United Kingdom	07/01/2019	19183743.4	01/13/2021	EP3589095	HYDRAULIC SYSTEM CONTROL MODULE HAVING IMPROVED HOUSING FEATURES AND METHOD OF MANUFACTURING THE SAME
Patent Cooperation Treaty	05/21/2020	PCT/EP2020/025238			OPTIMIZING MODE TRANSITIONS BETWEEN DUAL POWER ELECTRO-HYDROSTATIC CONTROL SYSTEMS
European Patent Convention	06/29/2019	19744985.3			CONTROLLER AND CONTROL SYSTEM WITH ENHANCED ORIENTATION DETECTION FOR MOBILE HYDRAULIC EQUIPMENT
United States	06/29/2019	17/256818			CONTROLLER AND CONTROL SYSTEM WITH ENHANCED ORIENTATION DETECTION FOR MOBILE HYDRAULIC EQUIPMENT
Patent Cooperation Treaty	08/31/2020	PCT/EP2020/025392			LOW POWER HYDRAULIC VALVES WITH INCREASED RATE-OF-FLOW

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/03/2004	11/003266	03/20/2007	7192062	QUICK CONNECT CARTRIDGE ASSEMBLY WITH PLUG
United States	03/31/2006	11/394879	04/14/2009	7516757	IMPROVED POWER BEYOND STEERING SYSTEM
United States	05/06/2004	10/839852	02/07/2006	6993904	INTEGRATED VALVE SYSTEM
France	05/03/2005	05009674.2	05/19/2010	EP1593856	INTEGRATED VALVE SYSTEM
Germany	05/03/2005	05009674.2	05/19/2010	602005021273.6	INTEGRATED VALVE SYSTEM
Great Britain	05/03/2005	05009674.2	05/19/2010	EP1593856	INTEGRATED VALVE SYSTEM
Italy	05/03/2005	502010901856560	05/19/2010	EP1593856	INTEGRATED VALVE SYSTEM
Japan	05/06/2005	2005135400	08/26/2011	4806806	INTEGRATED VALVE SYSTEM
United States	03/30/2005	11/093467	08/14/2007	7255193	SPEED EQUALIZING LINKAGE DESIGN FOR DUAL HYDROSTATIC TRANSMISSIONS
Germany	01/14/2003	10301127.7	09/17/2009	10301127.7	COUPLING FOR CONNECTING HYDRAULICS DUCTS
Great Britain	02/14/2003	0303379.2	05/05/2004	2387420	COUPLING FOR CONNECTING HYDRAULICS DUCTS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States of America	2020-11-13	63/113497			Additive Manufactured Seal Rotor; And Method
India	2020-09-10	202011039112			New concept of work section which converts inlet pump system from variable to fixed displacement on a mobile sectional control valve having pre and or post compensated sections stacked together.
United States of America	2020-12-22	63/128981			Safety Disconnect Double shut off Coupling
United States of America	2020-08-06	63/062096			Retainer plate with integrated drive for Bent Axis Motor or Pump
India	2021-02-26	202111008145			Self Centering Double acting Blind Mate coupling with Self Centering Mechanism
United States of America	2020-07-31	63/059676			Gravity Lower Control For Work Machines
United States of America	2021-04-23	63/179012			Hose Sensor Assembly Including Direct Sensor Integration With Monitoring Circuitry
India	2021-04-15	202111017524			Compact 1-wire braid having textile cover hose exceeding SAE100R5 performance with super flexibility, tight bend radius and light weight hose utilizing flat crimp fitting for assemblies.

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Argentina	02/04/2012	P120100364	09/15/2016	AR 088709	PNEUMATIC CONSTRICTING DRUM BRAKE ASSEMBLY
China	02/06/2012	201220111663.7	01/02/2013	201220111663.7	PNEUMATIC CONSTRICTING DRUM BRAKE ASSEMBLY
United States	03/28/2012	13/432753	12/30/2014	8919514	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
Argentina	03/26/2013	P130100987	12/21/2018	AR 090508 B1	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
Australia	03/27/2013	2013239664	06/08/2017	2013239664	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
China	03/28/2013	201310103952.1	04/12/2017	201310103952.1	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
China	03/28/2013	201320148192.1	11/06/2013	201320148192.1	FLOATING HOUSING FORCE TRANSMITTING ASSEMBLY
Brazil	04/23/2012	BR1120140263426			METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
Canada	04/23/2012	2871287	12/11/2018	2871287	METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
China	04/23/2012	201280072545.2	04/12/2017	201280072545.2	METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE
European Patent Convention	04/23/2012	12875245.8			METHOD AND SYSTEMS FOR MEASURING HOSE RESISTANCE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/22/2010	12/976661	12/03/2013	8596404	COMMISSIONING A HYBRID DRIVE ASSEMBLY OF A VEHICLE
United States	03/18/2009	12/406413	01/22/2013	8356637	HYDRAULIC SUPPLY HOSE INCLUDING AN INTEGRAL TENSIL-LOAD MEMBER
United States	01/18/2013	13/745078	12/29/2015	9222606	HYDRAULIC SUPPLY HOSE INCLUDING AN INTEGRAL TENSIL-LOAD MEMBER
United States	04/24/2009	12/429219	09/22/2015	9140324	FLUID COOLED COUPLING ASSEMBLY
United States	04/28/2009	12/431432	03/13/2012	8132781	INTERLOCK SYSTEM FOR VALVE COUPLING
China	04/28/2010	201080028851.7	03/12/2014	201080028851.7	INTERLOCK SYSTEM FOR VALVE COUPLING
France	04/28/2010	10728879.7	11/20/2013	EP2425172	INTERLOCK SYSTEM FOR VALVE COUPLING
Germany	04/28/2010	10728879.7	11/20/2013	602010011897.5	INTERLOCK SYSTEM FOR VALVE COUPLING
Great Britain	04/28/2010	10728879.7	11/20/2013	EP2425172	INTERLOCK SYSTEM FOR VALVE COUPLING
Italy	04/28/2010	502014902224776	11/20/2013	EP2425172	INTERLOCK SYSTEM FOR VALVE COUPLING
Japan	04/28/2010	2012-507838	08/01/2014	5585896	INTERLOCK SYSTEM FOR VALVE COUPLING

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	11/29/2012	12798669.3	12/21/2016	EP2786056	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
Italy	11/29/2012	502017000012109	12/21/2016	EP2786056	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
Spain	11/29/2012	12798669.3	12/21/2016	EP2786056	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
United States	11/29/2012	14/359111	07/24/2018	10030795	AUFBAU EINER PRESSVERBINDUNG FUER DRUCKBELASTETE ROHRE MITTELS EINER GESCHLITZTEN HALTEHUELSE
United States	03/13/2013	13/799232	09/22/2015	9140323	AN IMPROVED DRUM AND CONSTRICTING DRUM ASSEMBLY
Argentina	03/13/2014	P140100987	01/30/2020	AR095440B1	AN IMPROVED DRUM AND CONSTRICTING DRUM ASSEMBLY
China	03/13/2014	201420185526.7	08/06/2014	201420185526.7	AN IMPROVED DRUM AND CONSTRICTING DRUM ASSEMBLY
United States	02/22/2013	13/773747	11/04/2014	8875850	DISC BRAKE ASSEMBLY AND METHOD OF MAKING SAME
China	06/12/2014	201410261640.8	03/29/2019	201410261640.8	DISC BRAKE ASSEMBLY AND METHOD OF MAKING SAME
United States	03/14/2013	13/826700	06/16/2015	9057412	AN IMPROVED DRUM AND CONSTRICTING DRUM ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	06/14/2007	07766546.1	11/18/2009	EP2027367	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
Italy	06/14/2007	502010901800159	11/18/2009	EP2027367	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
Japan	06/14/2007	2009-514924	03/09/2012	4941851	BI-DIRECTIONAL DISC VALVE MOTOR AND IMPROVED VALVE-SEATING MECHANISM THEREFOR
United States	10/07/2005	11/246408	02/17/2009	7490626	STEER VALVE WITH HYDRAULIC VEHICLE POSITION FEEDBACK
United States	06/30/2005	11/170810	04/13/2010	7695022	FLUID COUPLING CAP
Australia	06/23/2006	2006202709	09/27/2012	2006202709	FLUID COUPLING CAP
France	06/27/2006	06013221.4	07/29/2009	EP1739336	FLUID COUPLING CAP
Germany	06/27/2006	06013221.4	07/29/2009	602006008073.5	FLUID COUPLING CAP
Great Britain	06/27/2006	06013221.4	07/29/2009	EP1739336	FLUID COUPLING CAP
Italy	06/27/2006	502009901772274	07/29/2009	EP1739336	FLUID COUPLING CAP
Spain	06/27/2006	06013221.4	07/29/2009	EP1739336	FLUID COUPLING CAP
Japan	06/29/2006	2006179762	06/29/2012	5024595	FLUID COUPLING CAP
Germany	08/13/2005	102005038476.5	05/28/2020	DE102005038476	O-RING NIPPLE FOR HIGH PRESSURE HYDRAULIC HOSE
France	08/08/2006	06776672.5	09/14/2016	EP1913299	O-RING NIPPLE FOR HIGH PRESSURE HYDRAULIC HOSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	05/09/2013	13724999.1	03/28/2018	EP2847469	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM
Italy	05/09/2013	13724999.1	03/28/2018	502018000015293	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM
United States	05/09/2013	13/890565	07/05/2016	9382923	LOAD ENERGY ASSIST AND HORSEPOWER MANAGEMENT SYSTEM
European Patent Convention	01/04/2013	13701142.5	12/12/2018	EP2804992	ELECTRONIC LOAD DROP PREVENTION
Germany	01/04/2013	13701142.5	12/12/2018	602013048081.8	ELECTRONIC LOAD DROP PREVENTION
Great Britain	01/04/2013	13701142.5	12/12/2018	EP2804992	ELECTRONIC LOAD DROP PREVENTION
Italy	01/04/2013	13701142.5	12/12/2018	502019000013731	ELECTRONIC LOAD DROP PREVENTION
United States	01/11/2013	13/739187	04/25/2017	9631738	GUIDING DEFORMATION IN SEATED HYDRAULIC METERING DEVICES
Germany	04/12/2012	12715532.3	11/02/2016	602012024824.6	PLUNGER TYPE WIRE RISER TENSIONER FOR OFFSHORE RIGS AND SHIPS, WITH INTERNAL A.P.V.

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	11/25/2010	2012-541592	07/03/2015	5769725	OUT-OF-RANGE-SENSOR RECALIBRATION
South Korea	11/25/2010	1020127015856	11/21/2017	101801991	OUT-OF-RANGE-SENSOR RECALIBRATION
United States	10/22/2009	12/603586	02/19/2013	8375989	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
China	10/22/2010	201080058424.3	06/10/2015	201080058424.3	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
European Patent Convention	10/22/2010	10773781.9	03/21/2018	EP2491253	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
Germany	10/22/2010	10773781.9	03/21/2018	602010049328.8	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
Great Britain	10/22/2010	10773781.9	03/21/2018	EP2491253	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
Italy	10/22/2010	10773781.9	03/21/2018	502018000014809	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM
Japan	10/22/2010	2012-535403	02/19/2016	5885666	METHOD OF OPERATING A CONTROL VALVE ASSEMBLY FOR A HYDRAULIC SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Japan	07/30/2015	P2015-150778	11/27/2019	JP6612079	FLOW AMPLIFICATION FOR STEERING SYSTEM
United States	03/27/2015	15/300187	01/07/2020	10526177	SPEED CONTROL SYSTEM FOR CRANE AND WINCH APPLICATIONS
United States	01/06/2020	16/734899			SPEED CONTROL SYSTEM FOR CRANE AND WINCH APPLICATIONS
European Patent Convention	12/15/2016	16876696.2	07 May 2021	EP3390521	SELF-HEALING WATER-SWELLABLE HYDRAULIC SEAL
France	12/15/2016	16876696.2	07 May 2021	EP3390521	SELF-HEALING WATER-SWELLABLE HYDRAULIC SEAL
Germany	12/15/2016	16876696.2	07 May 2021	EP3390521	SELF-HEALING WATER-SWELLABLE HYDRAULIC SEAL
United Kingdom	12/15/2016	16876696.2	07 May 2021	EP3390521	SELF-HEALING WATER-SWELLABLE HYDRAULIC SEAL
United States	12/15/2016	16/063184			SELF-HEALING WATER-SWELLABLE HYDRAULIC SEAL
United States	07/08/2016	15/205472	11/06/2018	10118637	LOAD-SENSING SYSTEM
Brazil	11/16/2015	BR1120170100380			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT
Canada	11/16/2015	2966535			ROTARY FLUID PRESSURE DEVICE WITH DRIVE-IN-DRIVE VALVE ARRANGEMENT

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	05/12/2008	12/119104	11/16/2010	7832614	METHOD OF EXPLOSION WELDING TO CREAT AN EXPLOSION WELDED ARTICLE HAVING A CURVED OR NON-PLANAR SURFACE
United States	05/02/2008	12/114061	04/26/2011	7931112	VALVE FOR A LOAD-REACTION STEERING SYSTEM
Germany	04/29/2009	09159085.1	12/18/2013	602009020793.8	VALVE FOR A LOAD-REACTION STEERING SYSTEM
Great Britain	04/29/2009	09159085.1	12/18/2013	EP2113445	VALVE FOR A LOAD-REACTION STEERING SYSTEM
Italy	04/29/2009	502014902229961	12/18/2013	EP2113445	VALVE FOR A LOAD-REACTION STEERING SYSTEM
Japan	05/07/2009	2009-112755	11/07/2014	5641272	VALVE FOR A LOAD-REACTION STEERING SYSTEM
United States	04/25/2011	13/093670	09/25/2012	8272471	VALVE FOR A LOAD-REACTION STEERING SYSTEM
India	04/10/2009	3806/KOLNP/2010	08/26/2019	318907	HYDRAULIC SYSTEM INCLUDING FIXED DISPLACEMENT PUMP FOR DRAWING MULTIPLE VARIABLE LOADS AND METHOD OF OPERATION
South Korea	04/10/2009	1020107025305	07/07/2016	101639453	HYDRAULIC SYSTEM INCLUDING FIXED DISPLACEMENT PUMP FOR DRAWING MULTIPLE VARIABLE LOADS AND METHOD OF OPERATION
United States	04/13/2009	12/422881	07/02/2013	8474364	HYDRAULIC SYSTEM INCLUDING PRIORITY BASED VALVE SEQUENCING

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	11/26/2012	12791479.4	05/04/2016	602012018149.4	PUSH FIT FITTING WITH RETAINING CLIP
Great Britain	11/26/2012	12791479.4	05/04/2016	EP2783148	PUSH FIT FITTING WITH RETAINING CLIP
Italy	11/26/2012	502016000058090	05/04/2016	EP2783148	PUSH FIT FITTING WITH RETAINING CLIP
United States	12/23/2010	12/977309	05/26/2015	9038259	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Brazil	12/21/2011	BR1120130161760	03/02/2021	BR112013016176 0	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
China	12/21/2011	201180062413.7	08/10/2016	201180062413.7	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Germany	12/21/2011	11811610.2	05/17/2017	602011038114.8	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Great Britain	12/21/2011	11811610.2	05/17/2017	EP2655949	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
India	12/21/2011	1956/KOLNP/2013	03/31/2021	363907	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Italy	12/21/2011	502017000085427	05/17/2017	EP2655949	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Japan	12/21/2011	2013-546368	07/15/2016	5969501	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Mexico	12/21/2011	MX/a/2013/007060			FLUID CONNECTOR WITH A HOSE CUTTING CLIP
New Zealand	12/21/2011	611896	02/03/2015	611896	FLUID CONNECTOR WITH A HOSE CUTTING CLIP
Russia	12/21/2011	2013134231	08/10/2016	2596410	FLUID CONNECTOR WITH A HOSE CUTTING CLIP

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	05/07/2019	1906359.3			NEW METHOD OF MANUFACTURING SPIRAL HOSE
Patent Cooperation Treaty	12/10/2019	PCT/EP2019/084494			NEW METHOD OF MANUFACTURING SPIRAL HOSE
United States of America	2019-12-10	17/312973			NEW METHOD OF MANUFACTURING SPIRAL HOSE
Patent Cooperation Treaty	08/24/2020	PCT/EP2020/073625			NEW METHOD OF IMPROVING LIFE FOR HIGH ABRASION HOSE
India	07/06/2019	201911027129			CONNECT UNDER WORKING PRESSURE - NON ISO 16028 PROFILE DESIGN
Patent Cooperation Treaty	08/20/2019	PCT/EP2019/072238			CONNECT UNDER WORKING PRESSURE - NON ISO 16028 PROFILE DESIGN

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	06/28/2013	13737748.7	05/03/2017	EP2867642	ABRASION MONITORING SYSTEM FOR HOSE ASSEMBLY
Italy	06/28/2013	502017000074516	05/03/2017	EP2867642	ABRASION MONITORING SYSTEM FOR HOSE ASSEMBLY
United States	06/28/2013	13/930986	04/07/2015	8997792	ABRASION MONITORING SYSTEM FOR HOSE ASSEMBLY
Australia	03/13/2013	2013293560	06/14/2018	2013293560	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
Canada	03/13/2013	2880036	01/15/2019	2880036	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
European Patent Convention	03/13/2013	13714392.1	07/18/2018	EP2877768	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING
France	03/13/2013	13714392.1	07/18/2018	EP2877768	QUICK CONNECT COUPLING WITH SWAGED VALVE COMPONENTS AND METHOD FOR ASSEMBLING

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	09/24/2013	13774308.4	10/31/2018	60201304610.8	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
Great Britain	09/24/2013	13774308.4	10/31/2018	EP2897800	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
Turkey	09/24/2013	13774308.4	10/31/2018	2019 01261	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
United States	09/24/2013	14/035424	09/12/2017	9759353	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
United States	09/07/2017	15/698388	02/25/2020	10571050	AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
United States	02/21/2020	16/797645			AIR BRAKE TUBING AND COMPOSITIONS FOR MAKING THE SAME
United States	08/22/2012	29/430183	09/09/2014	D712769	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
European Community Design	02/06/2013	001359962.0001	07/04/2013	001359962.0001	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
Australia	02/18/2013	107542013	03/07/2013	347490	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
South Africa	02/21/2013	A2013/00357	11/27/2013	A2013/00357	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE
Australia	02/18/2013	201310753	03/07/2013	347489	SENSOR HOUSING ASSEMBLY FOR HYDRAULIC HOSE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United Kingdom	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM
India	11/14/2016	201817019926			HYDRAULIC PUMP CONTROL SYSTEM
Japan	11/14/2016	2018-525411			HYDRAULIC PUMP CONTROL SYSTEM
Mexico	11/14/2016	MX/a/2018/006025			HYDRAULIC PUMP CONTROL SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
China	12/23/2013	201380067743.4	08/04/2017	201380067743.4	FAULT ISOLATION AND RESTORING PROCEDURES FOR ELECTROHYDRAULIC VALVES
European Patent Convention	12/23/2013	13821369.9			FAULT ISOLATION AND DECONTAMINATION PROCEDURES FOR ELECTROHYDRAULIC VALVES
United States	12/23/2013	14/138386	05/23/2017	9658626	FAULT ISOLATION AND DECONTAMINATION PROCEDURES FOR ELECTROHYDRAULIC VALVES
China	12/13/2013	201380064721.2	08/08/2017	201380064721.2	IN-SITU SENSOR CALIBRATION FOR ELECTROHYDRAULIC VALVES
European Patent Convention	12/13/2013	13815901.7			ONLINE SENSOR CALIBRATION FOR ELECTROHYDRAULIC VALVES
United States	12/13/2013	14/105532	07/05/2016	9383287	ONLINE SENSOR CALIBRATION FOR ELECTROHYDRAULIC VALVES
United States	06/28/2016	15/195450	11/27/2018	10139216	ONLINE SENSOR CALIBRATION FOR ELECTROHYDRAULIC VALVES
European Patent Convention	08/08/2014	14833989.8	10/24/2018	EP3030877	METHOD FOR DETECTING A BURST HOSE IN A HYDRAULIC SYSTEM
Germany	08/08/2014	14833989.8	10/24/2018	602014034807.6	METHOD FOR DETECTING A BURST HOSE IN A HYDRAULIC SYSTEM
Great Britain	08/08/2014	14833989.8	10/24/2018	EP3030877	METHOD FOR DETECTING A BURST HOSE IN A HYDRAULIC SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Canada	09/09/2008	2698893	10/21/2014	2698893	COUPLING ASSEMBLY
China	09/09/2008	200880114947.8	04/02/2014	200880114947.8	COUPLING ASSEMBLY
Great Britain	09/09/2008	08807021.4	01/18/2012	EP2198177	COUPLING ASSEMBLY
India	09/09/2008	946/KOLNP/2010	06/30/2020	340044	COUPLING ASSEMBLY
United States	07/25/2008	12/220515	08/26/2014	8813936	FORCE TRANSMITTING ASSEMBLY
Australia	07/24/2009	2009275217	09/11/2014	2009275217	FORCE TRANSMITTING ASSEMBLY
Canada	07/24/2009	2731795	06/23/2015	2731795	FORCE TRANSMITTING ASSEMBLY
China	07/24/2009	200980137348.2	03/02/2016	200980137348.2	FORCE TRANSMITTING ASSEMBLY
India	07/24/2009	389/KOLNP/2011	4/29/2020	336250	FORCE TRANSMITTING ASSEMBLY
United States	07/08/2009	12/499477	05/22/2012	8183872	HOSE WITH FAULT DETECTION CAPABILITY
Australia	07/09/2009	2009269684	11/07/2013	2009269684	HOSE WITH FAULT DETECTION CAPABILITY
Brazil	07/09/2009	PI0910805.0	04/24/2019	PI0910805.0	HOSE WITH FAULT DETECTION CAPABILITY
Canada	07/09/2009	2730535	08/25/2015	2730535	HOSE WITH FAULT DETECTION CAPABILITY
China	07/09/2009	200980134844.2	07/10/2013	200980134844.2	HOSE WITH FAULT DETECTION CAPABILITY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	03/14/2014	14721136.1	12/26/2018	EP2971379	HOSE VOLTAGE CARRIER
Turkey	03/14/2014	14721136.1	12/26/2018	2019 02743	HOSE VOLTAGE CARRIER
United States	03/14/2014	14/213775	05/09/2017	9643550	HOSE VOLTAGE CARRIER
Canada	02/21/2014	2902176	09/18/2018	2902176	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
China	02/21/2014	201480021318.6	06/09/2017	201480021318.6	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
European Patent Convention	02/21/2014	14708440.4	05/23/2018	EP2959202	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
France	02/21/2014	14708440.4	05/23/2018	EP2959202	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
Germany	02/21/2014	14708440.4	05/23/2018	602014025821.2	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
Great Britain	02/21/2014	14708440.4	05/23/2018	EP2959202	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
Japan	02/21/2014	2015-558983	02/15/2019	6478925	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
Turkey	02/21/2014	14708440.4	05/23/2018	2018 11762	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
United States	02/21/2014	14/186501	02/07/2017	9562822	FLEXIBLE CONTACT ARRANGEMENT FOR HOSE ASSEMBLY
China	12/13/2013	201380064717.6	06/09/2017	201380064717.6	SYSTEM AND METHOD FOR CONTROLLED LOWERING AND LIFTING OF A LOAD
European Patent Convention	12/13/2013	13815332.5	09/19/2018	EP2931983	SYSTEM AND METHOD FOR CONTROLLED LOWERING OF A LOAD

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	03/31/2015	15/300333	05/19/2020	10655764	SLEEVE FOR PREVENT AND DETECT LEAKAGE ON HYDRAULIC HOSE ASSEMBLIES
Germany	11/25/2015	102015120447.9			FORMED ONE-PIECE CONNECTION END FOR HYDRAULIC HOSE FITTING
European Patent Convention	06/17/2014	14813658.3	07/29/2020	EP3010785	FLUID CONTROLLER WITH LOAD SENSE AND FLOW AMPLIFICATION
Germany	06/17/2014	14813658.3	07/29/2020	EP3010785	FLUID CONTROLLER WITH LOAD SENSE AND FLOW AMPLIFICATION
Great Britain	06/17/2014	14813658.3	07/29/2020	EP3010785	FLUID CONTROLLER WITH LOAD SENSE AND FLOW AMPLIFICATION
United States	06/17/2014	14/306657	03/20/2018	9920776	FLUID CONTROLLER WITH LOAD SENSE AND FLOW AMPLIFICATION
United States	03/11/2014	14/203851	12/06/2016	9512838	TORQUE-GENERATING STEERING DEVICE
United States	06/12/2014	14/303275	02/06/2018	9886872	HYDRAULIC TRAINING SYSTEM AND METHOD
United States	05/07/2014	14/889615	11/27/2018	10138909	MULTI-CYLINDER ASSEMBLY
China	04/19/2015	201580035192.2	08/24/2018	201580035192.2	MANUAL OVERRIDE ASSEMBLY
European Patent Convention	04/29/2015	15785581.8	08/21/2019	EP3137775	MANUAL OVERRIDE ASSEMBLY
Germany	04/29/2015	15785581.8	08/21/2019	EP3137775	MANUAL OVERRIDE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	12/09/2019	16/707782	06/08/2021	11028861	HYDRAULIC SYSTEM AND METHOD FOR REDUCING BOOM BOUNCE WITH COUNTER-BALANCE PROTECTION
China	08/29/2014	201480047744.7	06/19/2018	201480047744.7	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
European Patent Convention	08/29/2014	14840792.7	10/03/2018	EP3039301	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
Germany	08/29/2014	14840792.7	10/03/2018	EP3039301	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
Great Britain	08/29/2014	14840792.7	10/03/2018	EP3039301	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
Italy	08/29/2014	14840792.7	10/03/2018	502018000042259	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
United States	08/29/2014	14/915449	07/31/2018	10036407	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
United States	07/27/2018	16/047630	07/28/2020	10724552	CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	01/08/2015	14/592045	12/29/2015	9222242	FAULT DETECTION, ISOLATION AND RECONFIGURATION SYSTEMS AND METHODS FOR CONTROLLING ELECTROHYDRAULIC SYSTEMS USED IN CONSTRUCTION EQUIPMENT
European Patent Convention	09/23/2015	15186440.2	05/01/2019	EP2990544	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS
China	06/22/2016	201610457043.1	08/09/2019	201610457043.1	METHODS AND SYSTEMS OF FAULT DETECTION, ISOLATION AND RECONFIGURATION OF VALVES FOR HYDRAULIC SYSTEMS (COMBINED DISCLOSURES 10-CLP-251; 10-CLP-527; 10-CLP-528; 10-CLP-529; 11-CLP-042; 11-CLP-043; 11-CLP-055)
United States	12/21/2015	14/976749	06/12/2018	9995020	FAULT DETECTION, ISOLATION AND RECONFIGURATION SYSTEMS AND METHODS FOR CONTROLLING ELECTROHYDRAULIC SYSTEMS USED IN CONSTRUCTION EQUIPMENT
United States	09/28/2012	13/630751	12/01/2015	9200647	PRE- AND POST- COMPENSATIONAL VALVE ARRANGEMENT
China	05/25/2012	201280025464.7	02/10/2016	201280025464.7	VALVE ASSEMBLY WITH INTEGRAL SENSORS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	10/16/2009	1601/KOLNP/2011	12/23/2019	328007	MOTION CONTROL OF WORK VEHICLE
Italy	10/16/2009	09740812.4	06/26/2019	502019000074123	MOTION CONTROL OF WORK VEHICLE
Japan	10/16/2009	2011/532300	07/24/2015	5780963	MOTION CONTROL OF WORK VEHICLE
United States	10/16/2009	12/581005	01/08/2013	8352129	MOTION CONTROL OF WORK VEHICLE
China	07/20/2010	201080032825.1	03/23/2016	201080032825.1	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
France	07/20/2010	10737534.7	11/13/2013	2456985	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
Germany	07/20/2010	107375347	11/13/2013	602010011730.8	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
Great Britain	07/20/2010	10737534.7	11/13/2013	EP2456985	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
Italy	07/20/2010	502014902226218	11/13/2013	2456985	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
Sweden	07/20/2010	10737534.7	11/13/2013	2456985	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
United States	07/20/2010	13/386281	04/05/2016	9303661	ELECTRONIC FORCE FEEDBACK CONTROL AND HIGH INERTIA CONTROL
United States	02/04/2011	13/020848	10/23/2012	8292044	PNEUMATIC CONSTRICTING DRUM BRAKE ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
France	09/12/2017	17190730.6	09/04/2019	EP3296607	HOSE ALIGNMENT SUBASSEMBLIES
Germany	09/12/2017	17190730.6	09/04/2019	EP3296607	HOSE ALIGNMENT SUBASSEMBLIES
Great Britain	09/12/2017	17190730.6	09/04/2019	EP3296607	HOSE ALIGNMENT SUBASSEMBLIES
Turkey	09/12/2017	17190730.6	09/04/2019	EP3296607	HOSE ALIGNMENT SUBASSEMBLIES
United States	09/14/2017	15/704123	07/13/2021	11060772	HOSE ALIGNMENT SUBASSEMBLIES
European Patent Convention	02/09/2018	18156192.9			NON CONDUCTIVE RUBBER HOSE
United States	02/09/2018	15/892985			NON CONDUCTIVE RUBBER HOSE
European Patent Convention	06/19/2020	18830149.3			SELF-HEALING CORE TUBE MATERIAL TO ELONGATE LIFETIME OF HYDRAULIC HOSES
United States	06/19/2020	16/955795			SELF-HEALING CORE TUBE MATERIAL TO ELONGATE LIFETIME OF HYDRAULIC HOSES
United States	12/04/2017	15/830690	06/09/2020	10677271	HYDRAULIC CYLINDER
United States	06/05/2020	16/893837			HYDRAULIC CYLINDER

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Germany	02/06/2009	09708835.5	07/10/2013	602009017015.5	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
Great Britain	02/06/2009	09708835.5	07/10/2013	EP2250068	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
Italy	02/06/2009	502013902187539	07/10/2013	EP2250068	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
Spain	02/06/2009	09708835.5	07/10/2013	EP2250068	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
United States	06/29/2009	12/493687	07/19/2011	7982459	HYDRAULIC CYLINDER ROD POSITION SENSING METHOD
United States	06/13/2008	12/138573	06/03/2014	8742750	SPEED-SENSOR PICK-UP FOR FLUID DEVICE
Germany	03/16/2006	102006012493.6	06/14/2007	102006012493.6	CONNECTION ARRANGEMENT (WALRING II)
France	03/08/2007	07711848.7	05/19/2010	EP2002166	CONNECTING ASSEMBLY
Great Britain	03/08/2007	07711848.7	05/19/2010	EP2002166	CONNECTING ASSEMBLY
Italy	03/08/2007	502010901863905	05/19/2010	EP2002166	CONNECTING ASSEMBLY
Japan	03/08/2007	2008/558685	04/13/2012	4968548	CONNECTING ASSEMBLY
Spain	03/08/2007	07711848.7	05/19/2010	EP2002166	CONNECTING ASSEMBLY
United States	09/10/2007	11/900119	08/05/2014	8794414	COUPLING ASSEMBLY

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Argentina	07/15/2014	P140102607	06/30/2020	096919B1	WATER COOLED BRAKE
China	07/31/2014	201420429486.6	04/08/2015	CN204253693U	WATER COOLED BRAKE
United States	04/14/2014	14/252335	03/13/2018	9915295	DUAL TORQUE BAR DRUM ELEMENT
Argentina	04/14/2015	P150101133	09/07/2016	100084	DUAL TORQUE BAR DRUM ELEMENT
China	04/14/2015	201510176013.9	02/19/2019	201510176013.9	DUAL TORQUE BAR DRUM ELEMENT
China	06/15/2016	201620581717.4	03/29/2017	CN206054594	AN IMPROVED CONSTRICTING DRUM BRAKE ASSEMBLY AND AN IMPROVED DRUM
United States	08/28/2014	14/914394	12/06/2016	9511473	HOSE END CLEAN-UP FIXTURE
European Patent Convention	11/07/2014	14862731.8	04/22/2020	EP3069439	ENERGY COMBINER
Germany	11/07/2014	14862731.8	04/22/2020	EP3069439	ENERGY COMBINER
France	11/07/2014	14862731.8	04/22/2020	EP3069439	ENERGY COMBINER

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	04/29/2015	15/307678	08/06/2019	10371276	MANUAL OVERRIDE ASSEMBLY
European Patent Convention	04/29/2015	19191564.4			MANUAL OVERRIDE ASSEMBLY
China	04/29/2015	201580033669.3	04/17/2020	CN106463880	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
European Patent Convention	04/29/2015	15785483.7	11/04/2020	EP3138163	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
Germany	04/29/2015	15785483.7	11/04/2020	EP3138163	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
France	04/29/2015	15785483.7	11/04/2020	EP3138163	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
Great Britain	04/29/2015	15785483.7	11/04/2020	EP3138163	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
United States	04/29/2015	15/307718	07/02/2019	10340627	HIGH PRESSURE SEALED ELECTRICAL CONNECTOR
China	11/05/2014	201480072165.8	02/07/2020	CN105874218	HIGH OUTPUT HYDRAULIC CYLINDER AND PISTON ARRANGEMENT
United States	11/05/2014	15/034563	11/27/2018	10138912	HIGH OUTPUT HYDRAULIC CYLINDER AND PISTON ARRANGEMENT
United States	07/14/2014	14/904598	09/10/2019	10408211	HYDRAULIC SYSTEM FOR PRESSURIZATION OF GAS WITH REDUCTION OF DEAD VOLUME
United States	03/18/2014	14/217636	10/13/2015	9156465	BRAKE-ASSIST-STEERING SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Australia	01/31/2008	2008200477	06/05/2014	2008200477	BRAIDED HOSE AND METHOD OF MAKING THE SAME
Japan	02/01/2008	2008/022769	10/25/2013	5392643	BRAIDED HOSE AND METHOD OF MAKING THE SAME
United States	01/05/2007	11/650267	04/14/2009	7518523	SYSTEM AND METHOD FOR CONTROLLING ACTUATOR POSITION
Germany	01/02/2008	08702175.4	04/06/2011	602008006021.7	SYSTEM AND METHOD FOR CONTROLLING ACTUATOR POSITION
Italy	01/02/2008	502011901956400	04/06/2011	EP2109718	SYSTEM AND METHOD FOR CONTROLLING ACTUATOR POSITION
United States	09/22/2006	11/525702	04/20/2010	7701314	SOLENOID ASSEMBLY WITH OVER-MOLDED ELECTRONICS
United States	02/02/2009	12/363845	07/24/2012	8225603	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
Denmark	02/06/2009	09708835.5	07/10/2013	EP2250068	FLUID CONTROLLER WITH MULTIPLE FLUID METERS
France	02/06/2009	09708835.5	07/10/2013	EP2250068	FLUID CONTROLLER WITH MULTIPLE FLUID METERS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	06/17/2020	16/954560			TUBE CONNECTION WITH A SPECIAL CONICAL SELF-TAPPING INTERNAL THREAD
United States	07/13/2016	15/208786	06/05/2018	9989107	HYDRAULIC FORCE TRANSMITTING ASSEMBLY FOR BRAKES AND CLUTCHES
United States	06/15/2015	14/739247	11/06/2018	10118180	SHAFT DRIVE COUPLING AND METHOD OF RELEASING
China	06/13/2016	201620567029.2	01/04/2017	201620567029.2	A RELEASABLE SHAFT COUPLING FOR AN INDUSTRIAL DRIVE AND A DRIVE SYSTEM FOR AN INDUSTRIAL GRINDING MILL
China	03/10/2020	2018800586211			FORMED FEMALE BSP CONNECTION
European Patent Convention	02/19/2020	18755725.1			FORMED FEMALE BSP CONNECTION
Japan	01/30/2020	2020-505250			FORMED FEMALE BSP CONNECTION
United States	01/29/2020	16/634903			FORMED FEMALE BSP CONNECTION
China	09/22/2016	201680055632.5			SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
European Patent Convention	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
France	09/22/2016	16770022.8	11/14/2018	EP3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR RUBBER HOSE
Germany	09/22/2016	16770022.8	11/14/2018	3317344	SPECIAL FORMULATED HIGH PERFORMING INNER TUBE FOR

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	08/08/2006	06776672.5	09/14/2016	EP1913299	O-RING NIPPLE FOR HIGH PRESSURE HYDRAULIC HOSE
Italy	08/08/2006	502017000000249	09/14/2016	EP1913299	O-RING NIPPLE FOR HIGH PRESSURE HYDRAULIC HOSE
United States	08/08/2006	12/063541	01/30/2018	9879806	DEVICE AND METHOD FOR CONNECTING A HYDRAULIC HOSE TO A CONNECTING NIPPLE
China	09/21/2006	200680039054.2	12/08/2010	200680039054.2	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
Denmark	09/21/2006	06795531.0	07/03/2013	EP1934477	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
France	09/21/2006	06795531.0	07/03/2013	EP1934477	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
Germany	09/21/2006	06795531.0	07/03/2013	602006037136.5	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
Great Britain	09/21/2006	06795531.0	07/03/2013	EP1934477	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
Italy	09/21/2006	502013902185816	07/03/2013	EP1934477	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
Japan	09/21/2006	2008-531809	08/17/2012	5062492	MULTI-LEVEL CONTROL OF HYDRAULIC MOTORS AND PUMPS
United States	09/21/2006	12/067711	08/07/2012	8235676	NET-DISPLACEMENT CONTROL OF HYDRAULIC MOTORS AND PUMPS
United States	05/27/2014	14/287689	06/28/2016	9377020	NET-DISPLACEMENT CONTROL OF FLUID
United States	04/04/2006	11/397217	04/14/2009	7516758	SPOOL-TYPE MANUAL VALVE WITH POSITION-ADJUSTABLE LEVER

Country	Application Date	Application Number	Grant Date	Patent Number	Title
Great Britain	04/22/2011	11716796.5	03/23/2016	EP2564072	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
India	04/22/2011	3259/KOLNP/2012	02/15/2021	358573	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
Italy	04/22/2011	502016000049287	03/23/2016	EP2564072	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
Japan	04/22/2011	2013-508109	08/14/2015	5791703	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
Mexico	04/22/2011	MX/a/2012/012644			MULTIPLE FLUID PUMP COMBINATION CIRCUIT
South Korea	04/22/2011	2012-7028399	08/11/2017	1769644	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
United States	04/27/2011	13/095613	02/21/2017	9574579	MULTIPLE FLUID PUMP COMBINATION CIRCUIT
United States	05/19/2011	13/111228	03/19/2013	8397858	HYDRO-MECHNICAL STEERING UNIT WITH INTEGRATED EMERGENCY STEERING CAPABILITY
Germany	06/01/2011	11724904.5	01/06/2016	602011022452.2	HYDRO-MECHNICAL STEERING UNIT WITH INTEGRATED EMERGENCY STEERING CAPABILITY
Great Britain	06/01/2011	11724904.5	01/06/2016	EP2576322	HYDRO-MECHNICAL STEERING UNIT WITH INTEGRATED EMERGENCY STEERING CAPABILITY
Italy	06/01/2011	502016000016666	01/06/2016	EP2576322	HYDRO-MECHNICAL STEERING UNIT WITH INTEGRATED EMERGENCY STEERING CAPABILITY
China	10/14/2011	201180049902.9	07/22/2015	201180049902.9	HYBRID SYSTEM FOR HIGH EFFICIENCY INDUSTRIAL PROCESSES

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	07/01/2013	13/932572	08/04/2015	9097268	HYDRAULIC SYSTEM INCLUDING PRIORITY BASED VALVE SEQUENCING
United States	04/13/2009	12/422893	07/24/2012	8226370	HYDRAULIC SYSTEM AND METHOD FOR CONTROLLING VALVE PHASING
United States	04/13/2009	12/422899	08/13/2013	8505291	HYDRAULIC SYSTEM HAVING LOAD SENSING CAPABILITIES
United States	04/13/2009	12/422911	05/07/2013	8434302	HYDRAULIC SYSTEM INCLUDING OPEN LOOP AND CLOSED LOOP VALVE CONTROL SCHEMES
United States	02/28/2008	12/039599	07/26/2011	7984785	CONTROL VALVE ASSEMBLY FOR ELECTRO-HYDRAULIC STEERING SYSTEM
United States	07/26/2011	13/191119	02/18/2014	8651225	CONTROL VALVE ASSEMBLY FOR ELECTRO-HYDRAULIC STEERING SYSTEM
United States	03/24/2010	12/731002	03/25/2014	8678033	PROPORTIONAL VALVE EMPLOYING SIMULTANEOUS AND HYBRID ACTUATION
United States	12/16/2009	12/639528	08/20/2013	8511079	PIECEWISE HYDRAULIC POWER TRANSMISSION SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	01/14/2020	16/631060			INTELLIGENT RIDE CONTROL
Brazil	11/14/2016	BR112018009773-0			HYDRAULIC PUMP CONTROL SYSTEM
Canada	11/14/2016	3005333			HYDRAULIC PUMP CONTROL SYSTEM
China	11/14/2016	201680076431.3	12/06/2019	CN108431417	HYDRAULIC PUMP CONTROL SYSTEM
European Patent Convention	11/14/2016	16865219.6	12/30/2020	EP3374639	HYDRAULIC PUMP CONTROL SYSTEM

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	03/30/2007	11/694591	12/07/2010	7845919	BRAKE RELEASING MECHANISM AND BRAKE SYSTEM
China	05/16/2007	200780052335.6	03/20/2013	200780052335.6	BRAKE RELEASING MECHANISM AND BRAKE SYSTEM
Japan	05/16/2007	2010-500374	12/07/2012	5146787	BRAKE RELEASING MECHANISM AND BRAKE SYSTEM
South Korea	05/16/2007	1020097020346	05/26/2014	101402515	BRAKE RELEASING MECHANISM AND BRAKE SYSTEM
United States	05/10/2007	11/746990	03/23/2010	7681392	HYDRAULIC DRIVE SYSTEM WITH AGGRESSIVE CLUTCHING
United States	05/10/2007	11/747015	03/16/2010	7677037	HYDRAULIC DRIVE SYSTEM WITH PRECHARGE LOGIC
United States	05/10/2007	11/747022	03/09/2010	7673451	HYDRAULIC DRIVE SYSTEM WITH NEUTRAL DRIFT COMPENSATION
United States	05/10/2007	11/747034	08/31/2010	7784277	HYDRAULIC DRIVE SYSTEM WITH TEMPERATURE COMPENSATION FOR PRESSURE LIMIT
United States	01/06/2009	12/349200	09/10/2013	8528767	HYDRAULIC RESERVOIR PRESSURE RELIEF MECHANISM
Japan	05/10/2007	2010/59884	11/15/2013	5408554	HYDRAULIC DRIVE SYSTEM WITH NEUTRAL DRIFT COMPENSATION AND TEMPERATURE COMPENSATION FOR PRESSURE LIMITS
South Korea	05/10/2007	1020097027410	07/02/2014	101417185	HYDRAULIC DRIVE SYSTEM WITH NEUTRAL DRIFT COMPENSATION AND TEMPERATURE COMPENSATION FOR PRESSURE LIMITS

Country	Application Date	Application Number	Grant Date	Patent Number	Title
United States	07/24/2020	16/938221			CONTROL METHOD AND SYSTEM FOR USING A PAIR OF INDEPENDENT HYDRAULIC METERING VALVES TO REDUCE BOOM OSCILLATIONS
United States	10/02/2014	15/027057	06/05/2018	9989442	HYDRAULIC SYSTEM SENSOR
China	11/07/2014	201480062160.7	11/20/2018	201480062160.7	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
European Patent Convention	11/07/2014	14862808.4	02/27/2019	EP3069043	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
Germany	11/07/2014	14862808.4	02/27/2019	60214042079.6	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
Great Britain	11/07/2014	14862808.4	02/27/2019	EP3069043	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
Italy	11/07/2014	14862808.4	02/27/2019	502019000003443 0	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
United States	11/07/2014	15/036749	06/11/2019	10316929	CONTROL STRATEGY FOR REDUCING BOOM OSCILLATION
United States	09/24/2015	14/864172	11/14/2017	9816377	HYDRAULIC AXIAL-PISTON DEVICE WITH FEATURES TO ENHANCE EFFICIENCY AND POWER DENSITY
China	11/07/2014	201480062159.4	01/15/2019	201480062159.4	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
European Patent Convention	11/07/2014	14861695.6	12/30/2020	EP3069030	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION
Germany	11/07/2014	14861695.6	12/30/2020	EP3069030	PILOT CONTROL MECHANISM FOR BOOM BOUNCE REDUCTION

Country	Application Date	Application Number	Grant Date	Patent Number	Title
India	02/24/2020	202017007786			CONTROL SYSTEM FOR HYDRAULI AXIAL DISPLACEMENT MACHINES
United States	02/08/2020	16/639999			CONTROL SYSTEM FOR HYDRAULI AXIAL DISPLACEMENT MACHINES
United States	09/17/2019	16/573048	12/29/2020	10876552	HYDRAULIC FLUID PRESSURE COMPENSATOR UNIT WITH INTEGRATED LOAD SENSE AND REVERSE FLOW CHECKS
China	09/19/2019	201910888209.9			HYDRAULIC FLUID PRESSURE COMPENSATOR UNIT WITH INTEGRATED LOAD SENSE AND REVERSE FLOW CHECKS
Germany	09/19/2019	102019125301.2			HYDRAULIC FLUID PRESSURE COMPENSATOR UNIT WITH INTEGRATED LOAD SENSE AND REVERSE FLOW CHECKS
India	02/17/2020	202017006820			HYDRAULIC CYLINDER FOR ACTUATING A PRE-FILL VALVE
United States	12/13/2018	16/218575	02/23/2021	10927866	LEAKAGE MODULCAITON IN HYDRAULIC SYSTEMS CONTAINING A THREE-WAY SPOOL VALVE

Country	Application Date	Application Number	Grant Date	Patent Number	Title
European Patent Convention	08/09/2016	16835785.3	07/01/2020	EP3334930	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
Germany	08/09/2016	16835785.3	07/01/2020	EP3334930	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
Italy	08/09/2016	16835785.3	07/01/2020	EP3334930	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
United Kingdom	08/09/2016	16835785.3	07/01/2020	EP3334930	ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP
India	08/09/2016	201817006262			ELECTRO-HYDRAULIC PROPORTIONAL PRESSURE CONTROL FOR OPEN CIRCUIT PUMP