

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT8060105

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	SECURITY INTEREST
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
COPELAND INDUSTRIAL LP	05/31/2023
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	WELLS FARGO BANK, NATIONAL ASSOCIATION, AS COLLATERAL AGENT
<b>Street Address:</b>	1800 CENTURY PARK EAST
<b>Internal Address:</b>	SUITE 1100
<b>City:</b>	LOS ANGELES
<b>State/Country:</b>	CALIFORNIA
<b>Postal Code:</b>	90067
<b>PROPERTY NUMBERS Total: 11</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	11677868
Application Number:	12054527
Application Number:	13673533
Application Number:	14032753
Application Number:	17412446
Application Number:	16331909
Application Number:	15913637
Application Number:	16190343
Application Number:	17471913
Application Number:	16242710
Application Number:	16665439
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(212)751-4864
<i>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.</i>	
<b>Phone:</b>	2129061209
<b>Email:</b>	jess.bajada-bartlett@lw.com
<b>Correspondent Name:</b>	LATHAM & WATKINS C/O JESSICA BAJADA-BARTLETT
<b>Address Line 1:</b>	1271 AVENUE OF THE AMERICAS

**Address Line 4:** NEW YORK, NEW YORK 10020

**ATTORNEY DOCKET NUMBER:** 049275-0244

**NAME OF SUBMITTER:** JESSICA BAJADA-BARTLETT

**SIGNATURE:** /s/ Jessica Bajada-Bartlett

**DATE SIGNED:** 07/17/2023

**Total Attachments: 87**

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PATENT SECURITY AGREEMENT

**Patent Security Agreement**, dated as of May 31, 2023 (the “**Patent Security Agreement**”), by Copeland Comfort Control LP, Copeland LP, Copeland Scroll Compressors LP, Copeland Corporation LLC, Copeland Cold Chain LP, and Copeland Industrial LP (each a “**Grantor**” and collectively, the “**Grantors**”), in favor of Royal Bank of Canada, in its capacity as Collateral Agent for the Secured Parties pursuant to the Credit Agreement (in such capacity, the “**Collateral Agent**”).

W I T N E S S E T H:

WHEREAS, the Grantor is party to a Security Agreement dated as of May 31, 2023 (as amended, amended and restated, supplemented or otherwise modified from time to time, the “**Security Agreement**”) in favor of the Collateral Agent pursuant to which the Grantor is required to execute and deliver this Patent Security Agreement.

NOW, THEREFORE, in consideration of the premises and to induce the Collateral Agent, for the benefit of the Secured Parties, to enter into the Credit Agreement, the Grantor hereby agrees with the Collateral Agent as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Security Agreement and used herein have the meaning given to them in the Security Agreement.

SECTION 2. Grant of Security Interest in Patent Collateral. As security for the payment or performance, as the case may be, in full of the Secured Obligations, including the Guaranty (as defined in the Credit Agreement), the Grantor hereby assigns and pledges to the Collateral Agent, for the benefit of the Secured Parties, and hereby grants to the Collateral Agent for the benefit of the Secured Parties, a security interest (the “**Security Interest**”) in, all right, title or interest in or to any and all of the following assets and properties now owned or at any time hereafter acquired by the Grantor or in which the Grantor now has or at any time in the future may acquire any right, title or interest:

- (a) all Patents of the Grantor, including those listed on Schedule I attached hereto,
- (b) all income, fees, royalties, damages, claims and payments now and hereafter due and/or payable with respect thereto, including damages and payments for past, present or future infringements or other violations thereof,
- (c) the right to sue for past, present and future infringements and other violations thereof, and
- (d) all other rights, priorities and privileges accruing thereunder or pertaining thereto throughout the world.

SECTION 3. The Security Agreement. The Security Interest granted pursuant to this Patent Security Agreement is granted in conjunction with the Security Interest granted to the Collateral Agent pursuant to the Security Agreement and the Grantor hereby acknowledges and affirms that the rights and remedies of the Collateral Agent with respect to the Security Interest in the Patents made and granted hereby are more fully set forth in the Security Agreement. In the event that any provision of this Patent Security Agreement is deemed to conflict with the Security Agreement, the provisions of the Security Agreement shall control unless the Collateral Agent shall otherwise determine.

SECTION 4. Termination. Upon the termination of the Security Agreement in accordance with Section 6.11 thereof, the Collateral Agent shall, at the expense of the Grantor, execute, acknowledge, and

deliver to the Grantor an instrument reasonably requested by the Grantor in writing in recordable form releasing the Lien on and Security Interest in the Patents under this Patent Security Agreement.

SECTION 5. Counterparts. This Patent Security Agreement may be executed in any number of counterparts, all of which shall constitute one and the same instrument, and any party hereto may execute this Patent Security Agreement by signing and delivering one or more counterparts. Delivery of an executed signature page to this Patent Security Agreement by facsimile or other electronic transmission shall be effective as delivery of a manually signed counterpart of this Patent Security Agreement.

SECTION 6. Intercreditor Agreements. Notwithstanding any provision to the contrary contained herein, the terms of this Patent Security Agreement, the Liens created under the Security Agreement and the rights and remedies of the Collateral Agent hereunder are subject to the terms of each applicable Intercreditor Agreement. In the event of any conflict or inconsistency between the terms of this Patent Security Agreement and an Intercreditor Agreement, the terms of that Intercreditor Agreement shall govern.

SECTION 7. Governing Law. THIS PATENT SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

[Signature pages follow.]

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the day and year first above written.

COPELAND LP, as Grantor

By: COPESUB GP 2, LLC, its General Partner

By: 

Name: John G. Shively

Title: Vice President & Secretary

[Signature Page to Emerald Patent Security Agreement]

**PATENT**  
**REEL: 064285 FRAME: 0755**

COPELAND SCROLL COMPRESSORS LP,  
as Grantor  
COPELAND COLD CHAIN LP, as Grantor  
COPELAND COMFORT CONTROL LP, as  
Grantor  
COPELAND INDUSTRIAL LP, as Grantor

By: COPESUB GP 1, LLC, its General Partner

By: \_\_\_\_\_

Name: John G. Shively

Title: Vice President & Secretary

[Signature Page to Emerald Patent Security Agreement]

**PATENT**  
**REEL: 064285 FRAME: 0756**

COPELAND CORPORATION LLC, as Grantor

By: COPELAND LP, its sole member

By: COPESUB GP 2, LLC, its General Partner

By: \_\_\_\_\_

Name: John G. Shively


Title: Vice President & Secretary

[Signature Page to Emerald Patent Security Agreement]

**PATENT**  
**REEL: 064285 FRAME: 0757**



**ROYAL BANK OF CANADA**, as Collateral  
Agent

By:   
Name: Susan Khokher  
Title: Manager, Agency

[Signature Page to Emerald Patent Security Agreement]

**PATENT**  
**REEL: 064285 FRAME: 0758**

**Schedule I**  
**to**  
**PATENT SECURITY AGREEMENT**  
**PATENTS AND PATENT APPLICATIONS**

U.S. Patents and Patent Applications

Title	Country	Application Number	Patent Number	Owner
Solenoid Valve For Fluid Flow	United States of America	10/903919	7163188	Copeland Comfort Control LP
Solenoid Valve For Fluid Flow	United States of America	11/653777	7367543	Copeland Comfort Control LP
Solenoid Valve	United States of America	11/933247	7828265	Copeland Comfort Control LP
Solenoid Valve	United States of America	11/512,741	7,422,193	Copeland Comfort Control LP
Thermostatic Expansion Valve With Check Valve	United States of America	11/706,789	7,441,563	Copeland Comfort Control LP
Reversible Flow Valve Assembly	United States of America	12/472931	8074678	Copeland Comfort Control LP
Reversible Flow Valve Assembly	United States of America	13/323390	8,230,878	Copeland Comfort Control LP
Control System for an Expansion Valve Regulating Refrigerant to an Evaporator of a Climate Control System	United States of America	12/486550	8,205,465	Copeland Comfort Control LP
Control Of An Expansion Valve Regulating Refrigerant To An Evaporator Of A Climate Control System	United States of America	13/532211	9250001	Copeland Comfort Control LP
HVAC System Grading Systems And Methods	United States of America	14/705263	9551495	Copeland LP

Title	Country	Application Number	Patent Number	Owner
HVAC Performance And Energy Usage Monitoring And Reporting System	United States of America	15/189790	10,739,027	Copeland LP
Adaptive Control For Motor Fan With Multiple Speed Taps	United States of America	15/374,525	10,309,405	Copeland Comfort Control LP
Adaptive Control For Motor Fan With Multiple Speed Taps	United States of America	16/430,281	11,118,590	Copeland Comfort Control LP
Systems And Methods For Mobile Application For HVAC Installation And Diagnostics	United States of America	15/483449	10,496,065	Copeland LP
Apparatus and Methods for Power Stealing by Controllers	United States of America	14/536922	9841203	Copeland Comfort Control LP
Single Phase Induction Motors Including Aluminum Windings And High Permeability Low Coreloss Steel	United States of America	17/006,118	N/A	Copeland Scroll Compressors LP
APPARATUS FOR CONNECTING ELECTRIC TERMINAL TO CONNECTO BLOCKS	United States of America	10/191586	6981313	Copeland Comfort Control LP
Electric Terminal Connector Block and Tooling Ensuring Terminal Insertion	United States of America	11/058548	7527530	Copeland Scroll Compressors LP
Interconnecting Method For Segmented Stator Electric Machines	United States of America	10/193515	6941638	Copeland Scroll Compressors LP
APPARATUS AND METHOD OF USING THE STATOR COILS OF AN ELECTRIC MOTOR TO MAGNETIZE PERMANENT MAGNETS OF THE MOTOR ROTOR WHEN THE SPAN OF EACH STATOR COIL IS SMALLER THAN THE WIDTH OF EACH PERMANENT MAGNET POLE	United States of America	10/269267	6903640	Copeland Scroll Compressors LP
Permanent Magnet Machine	United States of America	10/229506	6946766	Copeland Scroll Compressors LP

Title	Country	Application Number	Patent Number	Owner
SENSORLESS CONTROL SYSTEM AND METHOD FOR A PERMANENT MAGNET ROTATING MACHINE	United States of America	10/316333	6756753	Copeland LP
End Cap For Interconnecting Winding Coils Of A Segmented Stator To Reduce Phase-On-Phase Conditions And Associated Methods	United States of America	10/806561	7116023	Copeland Scroll Compressors LP
Methods of Stitching Interconnecting Wires on a Stator to Reduce Phase-On-Phase Conditions	United States of America	11/542033	7578047	Copeland Scroll Compressors LP
End Cap For Segmented Stator	United States of America	10/806560	7414347	Copeland Scroll Compressors LP
End Cap For Segmented Stator	United States of America	11/244350	7382075	Copeland Scroll Compressors LP
End Cap For Segmented Stator	United States of America	12/193476	7586231	Copeland Scroll Compressors LP
Electrical Connector And Sleeve Apparatus And Method Of Assembly	United States of America	10/881228	7066774	Copeland Scroll Compressors LP
Interior Magnet Machine With Reduced Cogging	United States of America	11/279872	7705502	Copeland Scroll Compressors LP
Interior Magnet Machine with Reduced Cogging	United States of America	12/718642	8350435	Copeland Scroll Compressors LP
Hermetic Motors With Windings Coupled To On-Winding Motor Protectors Via Welded Terminals	United States of America	11/471791	8076813	Copeland Scroll Compressors LP
Control Systems And Methods For Starting Permanent Magnet Rotating Machines	United States of America	11/728863	7375485	Copeland LP
Control Systems And Methods For Permanent Magnet Rotating Machines	United States of America	12/121392	7667423	Copeland LP
Sensorless Control Systems And Methods For Permanent Magnet Rotating Machines	United States of America	11/293744	7342379	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Sensorless Control Systems And Methods For Permanent Magnet Rotating Machines	United States of America	12/070593	7583049	Copeland LP
Offset PWM Signals for Multiphase Motor	United States of America	11/346027	7193388	Copeland LP
Protector Mounting Apparatus for Protector Mounted Adjacent the Windings of a Motor	United States of America	11/554907	8492943	Copeland Scroll Compressors LP
Two Speed Induction Motor With Tapped Auxiliary Winding	United States of America	12/193289	7911175	Copeland Scroll Compressors LP
End Turn Phase Insulator with a Lead Wire Restraining Tab and Method of Restraining Lead Wires on Dynamoelectric Devices	United States of America	12/176651	8125115	Copeland Scroll Compressors LP
Two Conductor Winding for an Induction Motor Circuit	United States of America	12/392404	7772737	Copeland Scroll Compressors LP
Electric Machine	United States of America	12/551966	8222788	Copeland Scroll Compressors LP
3T-Y Winding Connection for Three Phase Multiple-Speed Motor	United States of America	12/862617	8564167	Copeland Scroll Compressors LP
Lead End Cap for a Stator Segment of a Segmented Stator Assembly	United States of America	29/377461	D660234	Copeland Scroll Compressors LP
End Cap for Stator Segments of Segmented Stator Assemblies	United States of America	12/909579	8492948	Copeland Scroll Compressors LP
End Caps for Stator Segments of Segmented Stator Assemblies	United States of America	12/909592	8736129	Copeland Scroll Compressors LP
Phase Winding And Connection Methods For Three Phase Dynamoelectric Machines	United States of America	14/071089	9450463	Copeland Scroll Compressors LP
Three-Phase Dynamoelectric Machines And Stators With Phase Windings	United States of America	13/476568	9214839	Copeland Scroll Compressors LP

Title	Country	Application Number	Patent Number	Owner
Formed Of Different Conductor Material(s)				
Electric Machines, Stators And Compressors And Methods Of Manufacturing Same	United States of America	14/443839	10141801	Copeland Scroll Compressors LP
Rotors With Segmented Magnet Configurations And Related Dynamoelectric Machines And Compressors	United States of America	14/428296	9906083	Copeland Scroll Compressors LP
Rotors And Stators For Dynamoelectric Machines	United States of America	14/775307	9893579	Copeland Scroll Compressors LP
Rotor And A Motor And Compressor Comprising The Rotor	United States of America	14/163284	9866082	Copeland Scroll Compressors LP
Stator Assemblies for Three Phase Dynamoelectric Machines and Related Winding Methods	United States of America	14/727526	10103596	Copeland Scroll Compressors LP
Stator Assemblies for Three Phase Dynamoelectric Machines and Related Winding Methods	United States of America	16/130473	10,637,320	Copeland Scroll Compressors LP
Stator Assemblies For Three Phase Dynamoelectric Machines And Related Winding Methods	United States of America	15/278599	10256682	Copeland Scroll Compressors LP
Control Circuits For Compressor Motors Including Multiple Capacitors	United States of America	17/568,255	N/A	Copeland Scroll Compressors LP
Apparatus And Methods For Variable Furnace Control	United States of America	10/232609	7,101,172	Copeland Comfort Control LP
Apparatus And Methods For Variable Furnace Control	United States of America	11/453,305	7,735,743	Copeland Comfort Control LP
Bracket For Water Heater	United States of America	10/271366	6732677	Copeland Comfort Control LP
THERMOSTAT WITH AIR CONDITIONING LOAD MANAGEMENT FEATURE	United States of America	10/065427	6622926	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
BRACKET FOR MOUNTING IGNITER ON GAS WATER HEATER	United States of America	10/065575	6666421	Copeland Comfort Control LP
High Capacity Co-Axial Gas Valve	United States of America	10/747543	7011110	Copeland Comfort Control LP
Unitary Control For Air Conditioner And/Or Heat Pump	United States of America	10/836526	7100382	Copeland Comfort Control LP
Thermostat For Use With Compressor Health Indicator	United States of America	10/750,113	7032397	Copeland Comfort Control LP
Apparatus And Methods For Controlling A Water Heater	United States of America	10/863319	7032542	Copeland Comfort Control LP
Flammable Vapor Sensing Control For A Water Heater	United States of America	11/358,928	7,516,720	Copeland Comfort Control LP
Thermostat With One Button Programming Feature	United States of America	10/248778	6783079	Copeland Comfort Control LP
Thermostat With One Button Programming Feature	United States of America	10/604707	6814299	Copeland Comfort Control LP
MODULATING GAS VALVE WITH NATURAL/LP GAS CONVERSION CAPABILITY	United States of America	10/249906	6705342	Copeland Comfort Control LP
Thermostat Responsive To Inputs From External Devices	United States of America	11/023744	7261243	Copeland Comfort Control LP
Thermostat Responsive To Inputs From External Devices	United States of America	11/843380	7731098	Copeland Comfort Control LP
Climate Control System Including Responsive Controllers	United States of America	11/931749	8689572	Copeland Comfort Control LP
Apparatus And Method For Controlling A Variable Fuel Fired Appliance	United States of America	10/963381	7048537	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Controller For Fuel Fired Heating Appliance	United States of America	10/963362	7020543	Copeland Comfort Control LP
Controller For Fuel Fired Heating Appliance	United States of America	11/325652	7191039	Copeland Comfort Control LP
Thermostat Having Default Curtailment Temperature Settings	United States of America	11/156973	7364093	Copeland Comfort Control LP
Retrieving Diagnostic Information From An HVAC Component	United States of America	10/993646	7174239	Copeland Comfort Control LP
Apparatus And Method For Shutting Down Fuel Fired Appliance	United States of America	11/157477	7083408	Copeland Comfort Control LP
Thermostat Control System Providing Power Saving Transmissions	United States of America	10/990,897	7,537,171	Copeland Comfort Control LP
Control For A Heating And/Or Cooling Unit	United States of America	11/204,410	7,513,438	Copeland Comfort Control LP
System And Methods For Controlling A Water Heater	United States of America	11/052307	7290502	Copeland Comfort Control LP and AOS Holding Company
Systems And Methods For Controlling A Water Heater	United States of America	12/333625	8176881	Copeland Comfort Control LP
Systems And Methods For Controlling A Water Heater	United States of America	12/689687	8544423	Copeland Comfort Control LP
Systems And Methods For Controlling A Water Heater	United States of America	13/469723	9103550	Copeland Comfort Control LP
Interactive Control System For An HVAC System	United States of America	11/063806	7296426	Copeland Comfort Control LP
Interactive Control System For An HVAC System	United States of America	11/526,268	8,550,368	Copeland Comfort Control LP



Title	Country	Application Number	Patent Number	Owner
Interactive Control System For An HVAC System	United States of America	11/928270	7784291	Copeland Comfort Control LP
Interactive Control System For An HVAC System	United States of America	11/941673	7748225	Copeland Comfort Control LP
Interactive Control System For An HVAC System	United States of America	11/941669	8413454	Copeland Comfort Control LP
System And Method For Controlling A Multi-Zone Heating Or Cooling System	United States of America	11/063819	7448435	Copeland Comfort Control LP
Variable Capacity Climate Control System For Multi-Zone Space	United States of America	11/063818	7354005	Copeland Comfort Control LP
Thermostat Capable Of Displaying Received Information	United States of America	11/156,391	7,434,742	Copeland Comfort Control LP
Thermostat Capable Of Displaying Received Information	United States of America	12/250204	7703694	Copeland Comfort Control LP
Thermostat For A Heat Pump Or Conventional Heating System	United States of America	11/193550	7402780	Copeland Comfort Control LP
Controller For A Fuel Fired Water Heating Application	United States of America	11/197,390	7,469,840	Copeland Comfort Control LP
Thermostat With Touch Membrane Feature	United States of America	11/197391	7,556,207	Copeland Comfort Control LP
HVAC Twinning Control	United States of America	11/236768	7377120	Copeland Comfort Control LP
Ignition Control With Integral Carbon Monoxide Sensor	United States of America	12/485650	7854607	Copeland Comfort Control LP
Controller For Two-Stage Heat Source Usable With Single And Two Stage Thermostats	United States of America	11/265695	7731096	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Low Voltage Power Line Communication For Climate Control System	United States of America	12/250,209	7,979,164	Copeland Comfort Control LP
Relay Controller	United States of America	11/366157	7298148	Copeland Comfort Control LP
Relay Controller	United States of America	11/875341	7672095	Copeland Comfort Control LP
Water Heater With Dry Tank Or Sediment Detection Feature	United States of America	11/475,533	7,434,544	Copeland Comfort Control LP
Touch Screen Thermostat	United States of America	29/298371	D589822	Copeland Comfort Control LP
Apparatus And Method For Detecting Condition Of Heating Element	United States of America	12/692320	8258442	Copeland Comfort Control LP
Smart Energy Controlled Water Heater	United States of America	13/356779	9151516	Copeland Comfort Control LP
Smart Energy Controlled Water Heater	United States of America	13/800411	9188363	Copeland Comfort Control LP
Water Heater Control Using External Temperature Sensor	United States of America	13/826713	9310098	Copeland Comfort Control LP
Smart Energy Controlled Water Heater	United States of America	14/923791	9605872	Copeland Comfort Control LP
Water Heater Control Using External Temperature Sensor	United States of America	15/050548	9752798	Copeland Comfort Control LP
Valves, Pressure Sensing Devices, And Controllers For Heating Appliances	United States of America	13/983814	8,813,776	Copeland Comfort Control LP
Load Management Thermostat	United States of America	11/801855	7775454	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Load Management Thermostat	United States of America	12/857680	8177139	Copeland Comfort Control LP
Controlling a Climate Control Appliance in Response To a Reduced Operation Request	United States of America	13/471180	9423144	Copeland Comfort Control LP
Two Mode Thermostat with Set-Back Temperature and Humidity Set-Point Feature	United States of America	11/796,923	7,793,510	Copeland Comfort Control LP
Two Mode Thermostat with Set-Back Temperature and Humidity Set-Point Feature	United States of America	12/870,355	8,863,536	Copeland Comfort Control LP
Two Mode Thermostat With Set-Back Temperature and Humidity Set-Point Feature	United States of America	14/518309	10001291	Copeland Comfort Control LP
METHOD AND SYSTEM FOR CONTROLLING POWERED ANODE DRIVE LEVEL.	United States of America	15/858,268	10,738,385	Copeland Comfort Control LP
METHOD AND SYSTEM FOR MONITORING POWERED ANODE DRIVE LEVEL	United States of America	16/239,113	11,047,595	Copeland Comfort Control LP
Universal Apparatus And Method For Configurably Controlling A Heating Or Cooling System	United States of America	12/107755	7821218	Copeland Comfort Control LP
Universal Apparatus and Method for Configurably Controlling a Heating or Cooling System	United States of America	12/912245	8643315	Copeland Comfort Control LP
Thermostat with Lock for Inhibiting Removal and Access	United States of America	12/113661	7,569,777	Copeland Comfort Control LP
Stepper Motor Valve and Method of Control	United States of America	12/172444	8381760	Copeland Comfort Control LP
Stepper Motor Gas Valve And Method of Control	United States of America	13/775512	8752577	Copeland Comfort Control LP
Apparatus and Method for Control of a Thermostat	United States of America	12/268898	8190296	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Systems and Methods for Power Stealing	United States of America	13/409985	10191501	Copeland Comfort Control LP
Stepper Motor Gas Valve And Method Of Control	United States of America	12/729716	8275484	Copeland Comfort Control LP
Wireless Control of a Heating or Cooling Unit	United States of America	13/073286	9,213,342	Copeland Comfort Control LP
CONTROL OF STEPPER MOTOR OPERATED GAS VALVE	United States of America	13/031517	9,581,331	Copeland Comfort Control LP
Thermostat With Interchangeable Insert	United States of America	13/006041	8,644,009	Copeland Comfort Control LP
Thermostat Load Reduction Based On Percentage Change In Energy Price	United States of America	12/766155	8285419	Copeland Comfort Control LP
Load Reduction Based On Percentage Change In Energy Cost	United States of America	13/647216	8738186	Copeland Comfort Control LP
Load Reduction Based On Percentage Change in Energy Price	United States of America	14/263486	9230291	Copeland Comfort Control LP
System and Method for Internet Based Service Notification	United States of America	13/106060	9329903	Copeland Comfort Control LP
Air Cleaner Panel	United States of America	29/387683	D645132	Copeland Comfort Control LP
Thermostat	United States of America	29/367286	D646990	Copeland Comfort Control LP
Thermostat	United States of America	29/404204	D659560	Copeland Comfort Control LP
Programmable Thermostat	United States of America	12/858,594	8,770,490	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Programmable Thermostat	United States of America	14/325,291	10,152,067	Copeland Comfort Control LP
Control for Monitoring Flame Integrity in A Heating Appliance	United States of America	12/873560	9,366,433	Copeland Comfort Control LP
Control Housing	United States of America	29/384883	D658598	Copeland Comfort Control LP
Control Housing	United States of America	29/415695	D677635	Copeland Comfort Control LP
Providing Wireless Network Authentication Data to Climate Control System Devices	United States of America	14/559206	9,936,383	Copeland Comfort Control LP
Providing Wireless Network Authentication Data to Climate Control System Devices	United States of America	15/921716	10,129,750	Copeland Comfort Control LP
Refrigerant Charge Level Detection	United States of America	13/101516	8466798	Copeland Comfort Control LP
Refrigerant Charge Level Detection	United States of America	13/917781	8648729	Copeland Comfort Control LP
Apparatus and Method for Determining Load of Energy Consuming Appliances Within a Premises	United States of America	13/005306	8761944	Copeland Comfort Control LP
Thermostat	United States of America	29/417233	D672666	Copeland Comfort Control LP
Thermostat	United States of America	29/440051	D699130	Copeland Comfort Control LP
Compensating for Sensor Thermal Lag	United States of America	13/494524	9303897	Copeland Comfort Control LP
Field Adjustable Gas Valve And Method Of Control	United States of America	13/099772	9032991	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
System For Remote Control Of A Condition At A Site	United States of America	13/150840	8718826	Copeland Comfort Control LP
System For Remote Control Of A Condition At A Site	United States of America	14/270424	9292022	Copeland Comfort Control LP
Analog Signal Processing Using a Correlator Digital Filter	United States of America	14/486597	9927783	Copeland Comfort Control LP
Controller for a Climate Control System	United States of America	13/073628	8,494,681	Copeland Comfort Control LP
Controller for a Climate Control System	United States of America	13/948863	8,774,947	Copeland Comfort Control LP
Gas Valve and Method of Control	United States of America	13/181205	8746275	Copeland Comfort Control LP
Gas Valve And Method Of Control	United States of America	14/299629	9038658	Copeland Comfort Control LP
Gas Valve Unit With Bypass Flow	United States of America	13/099779	8539978	Copeland Comfort Control LP
Apparatus for Indicating Level of Pilot Flame Output	United States of America	13/207593	9080769	Copeland Comfort Control LP
HVAC Controls or Controllers Including Alphanumeric Displays and Push Buttons	United States of America	13/535396	9037303	Copeland Comfort Control LP
Multi-Stage Variable Output Valve Unit	United States of America	13/099763	8714460	Copeland Comfort Control LP
Climate Control Systems, and Methods Relating Thereto	United States of America	14/071,542	9,631,833	Copeland Comfort Control LP
Battery Power Management in a Thermostat With a Wireless Transceiver	United States of America	13/866118	9,122,283	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Battery Power Management in a Thermostat with a Wireless Transceiver	United States of America	14/835765	9,618,225	Copeland Comfort Control LP
Housing for a HVAC Contactor	United States of America	29/412350	D696208	Copeland Comfort Control LP
HVAC Contactor	United States of America	29/412351	D699688	Copeland Comfort Control LP
HVAC Systems, Controls, and Methods Including Switch Mode Power Supplies to Achieve Low Standby Power	United States of America	13/792319	10156858	Copeland Comfort Control LP
Connecting Split HVAC Systems To The Internet And/Or Smart Utility Meters	United States of America	13/548552	10013873	Copeland Comfort Control LP
Driving Controls And Diagnostic Methods For Communicating Motors	United States of America	14/075,372	9,494,333	Copeland Comfort Control LP
Driving Controls And Diagnostic Methods For Communicating Motors	United States of America	15/335,768	9,939,169	Copeland Comfort Control LP
Obtaining Elevated Output Voltages from Change Pump Circuits	United States of America	13/473673	8476964	Copeland Comfort Control LP
Controllers and Methods for Accepting Multiple Different Types of Input Signals	United States of America	13/467,791	9,013,343	Copeland Comfort Control LP
Relay Switch Control And Related Methods	United States of America	13/766551	10209751	Copeland Comfort Control LP
Control And Method For Operating An Electric Water Heater	United States of America	11/297753	7221862	Copeland Comfort Control LP
Method And Apparatus For Operating An Electric Water Heater	United States of America	11/328520	7257320	Copeland Comfort Control LP
Temperature Measuring Devices and Related Methods	United States of America	13/399171	9116052	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Provisioning a Wireless-Capable Device for a Wireless Network	United States of America	13/887,439	9,014,686	Copeland Comfort Control LP
Provisioning a Wireless-Capable Device for a Wireless Network	United States of America	14/690876	9088306	Copeland Comfort Control LP
Provisioning a Wireless-Capable Device for a Wireless Network	United States of America	14/803348	9531440	Copeland Comfort Control LP
Apparatus and Methods for Drying Material	United States of America	13/664522	8898927	Copeland Comfort Control LP
Providing Heat for Use Inside a Structure	United States of America	14/551199	9687022	Copeland Comfort Control LP
Speed Control Of Variable-Speed Multi-Phase Motors	United States of America	13/548560	9214890	Copeland Comfort Control LP
Speed Control Of Variable-Speed Multiple-Phase Motors	United States of America	14/967996	10084406	Copeland Comfort Control LP
Capacitive Touchscreens for Thermostats using Smaller Capacitors in Standby Mode	United States of America	13/670721	9207817	Copeland Comfort Control LP
Performing Integrity Checks On Climate Control System Components	United States of America	13/687346	9,518,763	Copeland Comfort Control LP
Performing Integrity Checks On Climate Control System Components	United States of America	15/375837	10,508,831	Copeland Comfort Control LP
Power Stealing for a Wireless-Enabled Thermostat	United States of America	13/886797	9405303	Copeland Comfort Control LP
Power Stealing for a Wireless-Enabled Thermostat	United States of America	15/219634	10025328	Copeland Comfort Control LP
Control Circuits For Motors And Related Methods	United States of America	14/087597	9178447	Copeland Comfort Control LP



Title	Country	Application Number	Patent Number	Owner
Line Communication With Twinned HVAC Units	United States of America	13/941667	9292021	Copeland Comfort Control LP
Dual-Mode Power Stealing For A Climate Control System Controller	United States of America	14/222847	9,739,499	Copeland Comfort Control LP
Facilitating Scheduling Of Comfort Controllers	United States of America	14/600389	10,024,565	Copeland Comfort Control LP
Facilitating Scheduling Of Comfort Controllers	United States of America	16/035,841	10,557,637	Copeland Comfort Control LP
Devices For Measuring Voltage Of A Power Supply, Detection Devices, And Temperature Controllers	United States of America	14/153334	9261540	Copeland Comfort Control LP
Systems and Methods for Controlling Multistage Electronic Controlled Gas Valves	United States of America	14/184748	9212821	Copeland Comfort Control LP
Coaxial Gas Valve Assemblies Including Electronically Controlled Solenoids	United States of America	16/579512	N/A	Copeland Comfort Control LP
AC Line Powered Relay Driving Circuits	United States of America	14/146878	9330870	Copeland Comfort Control LP
Energy Management Based On Location	United States of America	14/201458	9618227	Copeland Comfort Control LP
Selectively Connecting A Climate Control System Controller With More Than One Destination Server	United States of America	14/159,330	9,568,205	Copeland Comfort Control LP
Selectively Connecting A Climate Control System Controller With More Than One Destination Server	United States of America	15/431040	10,209,692	Copeland Comfort Control LP
Determining Power Stealing Capability Of A Climate Control System Controller	United States of America	14/066765	9,404,667	Copeland Comfort Control LP
HEAT PUMP CONTROLLER WITH USER-SELECTABLE DEFROST MODES AND REVERSING VALVE ENERGIZING MODES	United States of America	14/155575	9964345	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Systems and methods for selecting temperature setpoints.	United States of America	14/107926	9488993	Copeland Comfort Control LP
Optimizing Communication Modes In Wireless-Enabled Climate Control System Controllers	United States of America	14/014,193	9,689,584	Copeland Comfort Control LP
Controllers and Methods of Control of Water Heaters	United States of America	14/196049	9651955	Copeland Comfort Control LP
Facilitating Installation of a Controller and/or Maintenance of a Climate Control System	United States of America	14/280,103	9,683,753	Copeland Comfort Control LP
HVAC Communication Bus Decoders And Corresponding Methods	United States of America	14/134768	9377210	Copeland Comfort Control LP
Sensor Probe	United States of America	14/267367	9593984	Copeland LP
SYSTEMS AND METHODS FOR CONTROLLING WATER HEATERS	United States of America	14/171,416	9,829,897	Copeland Comfort Control LP
Thermostats	United States of America	29/485289	D715166	Copeland Comfort Control LP
Bad Ground and Reverse Polarity Detection for HVAC Controls	United States of America	14/169360	9372219	Copeland Comfort Control LP
Bad Ground and Reverse Polarity Detection for HVAC Controls	United States of America	15/186703	9851391	Copeland Comfort Control LP
DC Voltage-Limiting Circuits And Electronic Devices And Thermostats Including DC Voltage-Limiting Circuits	United States of America	14/271689	9,223,324	Copeland Comfort Control LP
Managing Charge of a Battery in a Climate Control Device to Prolong Battery Life	United States of America	14/594,323	10,536,017	Copeland Comfort Control LP
HVAC Controls Or Controllers Including Alphanumeric Displays	United States of America	14/156338	9412328	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
HVAC Controls And Controllers Including Alphanumeric Displays	United States of America	15/230,723	9,830,887	Copeland Comfort Control LP
Apparatus And Methods For Power Stealing By Controllers	United States of America	14/536922	9,841,203	Copeland Comfort Control LP
POWER GENERATION SYSTEM FOR GAS-FIRED APPLIANCES	United States of America	15/870029	10,684,013	Copeland Comfort Control LP
METHOD OF ASSEMBLING PILOT BURNER ASSEMBLY	United States of America	15/870078	10488044	Copeland Comfort Control LP
Connecting Electrical Equipment Through Wiring Harnesses	United States of America	14/747686	10249414	Copeland Comfort Control LP
Connecting Electrical Equipment Through Wiring Harnesses	United States of America	15/189661	9960563	Copeland Comfort Control LP
Systems And Methods For Limiting DC Voltage	United States of America	14/661116	9,870,008	Copeland Comfort Control LP
Dual Voltage Level Circuit for Driving a Latching Relay	United States of America	14/693067	9754746	Copeland Comfort Control LP
Universal Furnace Controller And Method of Installing Same.	United States of America	14/528,849	9,689,569	Copeland Comfort Control LP
Staging Climate Control System Controller Functions Based on Available Power	United States of America	14/634283	9,587,847	Copeland Comfort Control LP
Slow Opening and Fast Closing Gas Valves and Related Methods	United States of America	14/708,994	10,006,664	Copeland Comfort Control LP
Controller Set Point Adjustment Based On Outdoor Temperature	United States of America	14/678169	9,964,322	Copeland Comfort Control LP
GAS FLOW CONTROLLER INCLUDING VALVE DECOUPLING MECHANISM.	United States of America	14/725528	9945583	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Gas Flow Controller Including Over-Pressure Protection Features	United States of America	14/880200	10012384	Copeland Comfort Control LP
Apparatus And Methods For Arresting Flame At A Gas Burner	United States of America	15/068730	10,578,302	Copeland Comfort Control LP
Self-Learning Relay Turn-Off Control System and Method	United States of America	14/835917	9754744	Copeland Comfort Control LP
Remotely Testing Whether a Climate Control System Controller is Correctly Installed	United States of America	15/236211	10,401,830	Copeland Comfort Control LP
Remotely Testing Whether A Climate Control System Controller Is Correctly Installed	United States of America	16/556,480	11,366,461	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR FUNCTIONALLY CUSTOMIZABLE USER INTERFACES	United States of America	15/078,771	10,878,391	Copeland Comfort Control LP
Wirelessly Configuring Climate Control System Controls	United States of America	16/008,817	11,193,682	Copeland Comfort Control LP
Wirelessly Configuring Climate Control System Controls	United States of America	17/517,391	N/A	Copeland Comfort Control LP
Wirelessly Configuring Climate Control System Controls	United States of America	17/730,818	N/A	Copeland Comfort Control LP
Illuminating Substrate-Mountable Devices	United States of America	15/614,847	10,066,848	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CONTROLLING APPLIANCES	United States of America	15/173194	10156863	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CONTROLLING GAS POWERED APPLIANCES	United States of America	15/138745	10352588	Copeland Comfort Control LP
Solenoid Coil Including Bobbin with Moisture Barrier	United States of America	15/088939	10591081	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Control Circuits For Supplying Current To Actuate Gas Valves In HVAC Systems	United States of America	16/571431	10,605,478	Copeland Comfort Control LP
SAFETY GAS VALVE RELAY DRIVING CIRCUITS	United States of America	16/218232	10,480,811	Copeland Comfort Control LP
MULTI-THERMOSTAT MANAGEMENT AND CONTROL SYSTEM	United States of America	15/226536	10,718,541	Copeland Comfort Control LP
Providing a Motor Interface Compatible with Multiple Motor Types	United States of America	15/275,777	10,044,301	Copeland Comfort Control LP
HVAC Control Assemblies, and Corresponding Methods of Determining Equipment Wiring Harness Connections	United States of America	15/596245	10,571,150	Copeland Comfort Control LP
OIL DIFFERENTIAL CHECK VALVE FOR USE IN REFRIGERATION OIL RESERVOIRS	United States of America	29/599015	D872232	Copeland Comfort Control LP
OIL DIFFERENTIAL CHECK VALVE FOR USE IN REFRIGERATION OIL RESERVOIRS	United States of America	29/691933	D871544	Copeland Comfort Control LP
OIL DIFFERENTIAL CHECK VALVE FOR USE IN REFRIGERATION OIL RESERVOIRS	United States of America	29/691935	D872233	Copeland Comfort Control LP
TOUCHSCREEN WITH CURVED LENS FOR AN ELECTRONIC DEVICE	United States of America	29/602475	D830860	Copeland Comfort Control LP
TOUCHSCREEN WITH CURVED LENS FOR AN ELECTRONIC DEVICE	United States of America	29/659452	D860011	Copeland Comfort Control LP
GAS POWERED WATER HEATER CONTROLLER AND RELATED METHODS	United States of America	15/803,090	10,598,407	Copeland Comfort Control LP
METHOD OF MANUFACTURING AN ELECTROMAGNETIC ACTUATOR FOR A GAS POWERED WATER HEATER CONTROLLER	United States of America	16/529,057	11,313,587	Copeland Comfort Control LP
GAS VALVE CONTROL SYSTEM FOR A WATER HEATER	United States of America	15/842405	10,655,891	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Gas Valve Control System For A Water Heater	United States of America	16/796,431	11,371,751	Copeland Comfort Control LP
Gas Valve Control System For a Water Heater	United States of America	16/796,446	11,371,752	Copeland Comfort Control LP
FFT Flame Monitoring for Limit Condition	United States of America	16/036,327	10,801,722	Copeland Comfort Control LP
SYSTEM AND METHOD FOR THERMOSTAT DETECTION OF CONDENSATE SWITCH TRIPPING	United States of America	16/055,802	10,591,177	Copeland Comfort Control LP
Controlling Transmission Intervals In An HVAC System Based On Operational Modes Of The HVAC System	United States of America	16/005258	10,612,809	Copeland Comfort Control LP
SYSTEM AND METHOD FOR OFFSETS WITHIN SCHEDULE GROUPS FOR MULTIPLE THERMOSTATS	United States of America	16/116610	10,901,440	Copeland Comfort Control LP
Circulator Failure Detection in HVAC Systems	United States of America	16/128,043	11,268,719	Copeland Comfort Control LP
SYSTEM AND METHOD FOR DEMAND MITIGATION OF COMMONLY SCHEDULED THERMOSTATS	United States of America	16/156,667	10,712,039	Copeland Comfort Control LP
ENERGY MANAGEMENT AND SMART THERMOSTAT LEARNING METHODS AND CONTROL SYSTEMS	United States of America	63/260,719	N/A	Copeland Comfort Control LP
Automatic Pilot Lighting Systems	United States of America	16/571,441	11,098,898	Copeland Comfort Control LP
Multi-Voltage Contractors, Controls And Related Methods	United States of America	16/691,095	N/A	Copeland Comfort Control LP
Flame Sensor Assemblies and Methods of Replacing Flame Sensor Assemblies	United States of America	16/680,071	11,168,885	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Flame Sensor Assemblies and Methods of Replacing Flame Sensor Assemblies	United States of America	17/515,411	N/A	Copeland Comfort Control LP
Thermostatic Expansion Valves Including Interchangeable Metering Pins	United States of America	16/704,749	11,137,182	Copeland Comfort Control LP
Monitoring For And/Or Detecting Low Load Freeze-Up And/Or Paddle Wear Conditions Within Product Dispensers and Mixers	United States of America	17/028,279	N/A	Copeland Comfort Control LP
System For Fluid Pump Down Using Valves	United States of America	16/790,228	11,306,954	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR FLAME MONITORING IN GAS POWERED APPLIANCES	United States of America	16/750,468	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CHECKING STATUS OF A PRESSURE TRANSDUCER	United States of America	16/947,341	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CHECKING STATUS OF A PRESSURE TRANSDUCER	United States of America	16/947,342	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CONFIGURING CLIMATE CONTROL SYSTEM SPEED CONTROLS	United States of America	16/948,113	11,209,183	Copeland Comfort Control LP
Controls And Related Methods For Mitigating Liquid Migration And/Or Floodback	United States of America	16/859,725	N/A	Copeland Comfort Control LP
SPARK IGNITION MODULE AND METHODS	United States of America	16/853,095	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR WIRELESSLY CONFIGURING CLIMATE CONTROL SYSTEM CONTROLS	United States of America	17/199,902	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR WIRELESSLY CONFIGURING CLIMATE CONTROL SYSTEM CONTROLS	United States of America	17/806,405	N/A	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
CONTROL SYSTEM FOR AN HVAC SYSTEM INCLUDING MODULAR COMMUNICATION	United States of America	16/948,211	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR COMMUNICATION WITH MOTORS IN CLIMATE CONTROL SYSTEMS	United States of America	16/948,112	N/A	Copeland Comfort Control LP
Systems And Methods For Controlling Inducer Motor Speed	United States of America	17/481,859	N/A	Copeland Comfort Control LP
MANAGING TEMPERATURE OVERSHOOT	United States of America	17/229,544	N/A	Copeland Comfort Control LP
Method to Detect Ignitor Open Error and Inducer and Ignitor Relay Faults	United States of America	17/356,061	N/A	Copeland Comfort Control LP
Stepper Motor Control Valves For Refrigerant Expansion And/Or System Controls	United States of America	17/220,237	N/A	Copeland Comfort Control LP
Stepper Motor Control Valves For Refrigerant Expansion and/or System Controls	United States of America	17/220,185	N/A	Copeland Comfort Control LP
External Tank Level Monitor	United States of America	17/455,603	N/A	Copeland Comfort Control LP
Redundant Contactors with Data Based Preventive Maintenance Replacement Indicators	United States of America	63/296,146	N/A	Copeland Comfort Control LP
Systems and Methods For Controlling A Variable Gas Valve	United States of America	17/652,833	N/A	Copeland Comfort Control LP
Remote Sensor Ornamental Design	United States of America	29/831,696	N/A	Copeland Comfort Control LP
Thermostat Ornamental Design	United States of America	29/831,695	N/A	Copeland Comfort Control LP
HVAC System Remote Monitoring And Diagnosis	United States of America	14/209415	9551504	Copeland LP



Title	Country	Application Number	Patent Number	Owner
HVAC System Remote Monitoring And Diagnosis	United States of America	14/212632	9638436	Copeland LP
HVAC System Remote Monitoring And Diagnosis	United States of America	15/583942	10274945	Copeland LP
Monitoring Module	United States of America	29/449739	D725505	Copeland LP
HVAC System Mode Detection Based On Control Line Current	United States of America	14/716104	10,670,293	Copeland LP
Inhibiting Compressor Backspin Via A Condenser Motor	United States of America	12/773468	8855474	Copeland LP
HVAC Condenser Assemblies Having Controllable Input Voltages	United States of America	12/773490	8400090	Copeland LP
Sensorless Lost/Found Rotor Detection for Permanent Magnet Motors	United States of America	12/570,504	8432112	Copeland LP
Sensorless Lost/Found Rotor Detection for Permanent Magnet Motors	United States of America	13/871603	8,638,054	Copeland LP
Residential Solutions HVAC Monitoring And Diagnosis	United States of America	13/407,180	9,285,802	Copeland LP
HVAC System Remote Monitoring And Diagnosis	United States of America	13/780617	9741023	Copeland LP
Remote HVAC Monitoring And Diagnosis	United States of America	14/300782	9703287	Copeland LP
Remote HVAC Monitoring And Diagnosis	United States of America	15/645,970	10,234,854	Copeland LP
HVAC System Remote Monitoring And Diagnosis	United States of America	15/681,896	10,373,126	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Remote HVAC Monitoring And Diagnosis	United States of America	16/357235	10,884,403	Copeland LP
Adaptive Undervoltage Protection for 3-Phase Loads using Singe Current Sensor	United States of America	63/431,991	N/A	Copeland Comfort Control LP
Electronic Pressure Augmented Modulation	United States of America	18/114,542	N/A	Copeland Comfort Control LP
HVAC Control Assemblies And Corresponding Methods Of Automatic Detection Of Furnace Applications	United States of America	63/433,997	N/A	Copeland Comfort Control LP
HVAC Control Assemblies And Corresponding Methods Of Configuring Pinout Of Connectors For HVAC Control Assemblies	United States of America	63/433,995	N/A	Copeland Comfort Control LP
LOW PROFILE ELECTRONIC DEVICE	United States of America	29/872,140	N/A	Copeland Comfort Control LP
Method and Apparatus for Flame Current Measurement in HVAC System	United States of America	18/177,509	N/A	Copeland Comfort Control LP
Methods of adjusting a variable gas valve	United States of America	18/061,806	N/A	Copeland Comfort Control LP
Redundant Contactors with Data Based Preventive Maintenance Replacement Indicators	United States of America	18/077,089	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR BLOWER CONTROL IN AN HVAC SYSTEM	United States of America	18/308,833	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR CHECKING STATUS OF A PRESSURE TRANSDUCER	United States of America	18/151,593	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR COMMUNICATION WITH MOTORS IN CLIMATE CONTROL	United States of America	18/049,043	N/A	Copeland Comfort Control LP
Systems and Methods For Controlling A Variable Gas Valve	United States of America	18/061,812	N/A	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Systems and Methods For Controlling A Variable Gas Valve	United States of America	18/061,816	N/A	Copeland Comfort Control LP
Systems And Methods For Controlling Inducer Motor Speed	United States of America	18/118,311	N/A	Copeland Comfort Control LP
SYSTEMS AND METHODS FOR FLAME MONITORING IN GAS POWERED APPLIANCES	United States of America	18/305,813	N/A	Copeland Comfort Control LP
Thermostat Method to Manage Temperature Overshoot	United States of America	17/993,534	N/A	Copeland Comfort Control LP
THERMOSTATS, METHODS, AND SYSTEMS FOR CONTROLLING HVAC SYSTEMS	United States of America	18/302,271	N/A	Copeland Comfort Control LP
Universal solenoid coil and driver.	United States of America	17/954,661	N/A	Copeland Comfort Control LP
VALVES FOR FILTER DRIERS AND BI-FLOW FILTER DRIERS INCLUDING THE SAME	United States of America	17/952,660	N/A	Copeland Comfort Control LP
Compressor Protection And Diagnostic System	United States of America	11/027757	7290989	Copeland LP
Compressor Protection And Diagnostic System	United States of America	11/402318	7491034	Copeland LP
Compressor Protection And Diagnostic System	United States of America	11/402316	7648342	Copeland LP
Compressor Protection And Diagnostic System	United States of America	12/685375	8475136	Copeland LP
Sensor For Hermetic Machine	United States of America	11/134130	7866964	Copeland LP
Compressor Performance Calculator	United States of America	10/265220	6928389	Copeland Corporation LLC

Title	Country	Application Number	Patent Number	Owner
Compressor Performance Calculator	United States of America	11/043805	7451061	Copeland Corporation LLC
Scroll Compressor Having A Deflectable Bearing Housing For Shaft Alignment	United States of America	10/321236	6709247	Copeland LP
Compressor Having A Terminal Cluster Block With Locking End Fittings	United States of America	11/170177	7175448	Copeland Corporation LLC
Capacity Modulated Scroll Compressor	United States of America	10/619767	6821092	Copeland LP
Compressor Valve Plate	United States of America	10/374,385	7,040,877	Copeland LP
Compressor Valve Plate	United States of America	11/400,809	7,618,244	Copeland LP
Compressor Suction Reed Valve	United States of America	10/374388	6823891	Copeland Corporation LLC
Scroll Compressor With Discharge Valve	United States of America	12/103265	7896629	Copeland LP
Scroll Compressor With Rotary Discharge Valve	United States of America	13/036529	8393882	Copeland LP
Condensing Unit Performance Simulator And Method	United States of America	10/436601	6775995	Copeland Corporation LLC
Condensing Unit Performance Simulator And Method	United States of America	10/920140	7010926	Copeland Corporation LLC
Condensing Unit Configuration System	United States of America	10/866175	7716025	Copeland LP
Scroll Machine With Stepped Sleeve Guide	United States of America	10/800428	7070401	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Scroll Machine With Axially Compliant Mounting	United States of America	11/451645	7322807	Copeland LP
Compressor Discharge Valve Retainer	United States of America	10/374242	6840271	Copeland LP
Scroll Machine Having Counterweights With Changeable Cavity	United States of America	11/020004	7390179	Copeland LP
Scroll Machine Having Counterweights With Changeable Cavity	United States of America	12/124554	7934914	Copeland LP
Scroll Machine	United States of America	12/351536	RE42371	Copeland LP
Scroll Machine Having A Discharge Valve Assembly	United States of America	11/108661	7429167	Copeland LP
Plural Compressors	United States of America	10/600106	7201567	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	15/613375	10335906	Copeland LP
Compressor Diagnostic and Protection System	United States of America	11/059646	7412842	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	11/098575	7905098	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	11/098583	7484376	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	11/098582	7878006	Copeland LP
Compressor Configuration System And Method	United States of America	11/098577	7458223	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Diagnostic And Protection System And Method	United States of America	13/030549	8474278	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	13/932611	9121407	Copeland LP
Compressor Diagnostic And Protection System And Method	United States of America	14/841058	9669498	Copeland LP
Motor Compressor Lubrication	United States of America	10/925648	7179069	Copeland LP
Inclined Scroll Machine Having A Special Oil Sump	United States of America	11/046573	7186099	Copeland Corporation LLC
Scroll Machine With Brushless Permanent Magnet Motor	United States of America	11/016526	7435067	Copeland LP
Cooling System Design Simulator	United States of America	10/765820	7606683	Copeland LP
Distributed Cooling System	United States of America	11/079519	7287395	Copeland LP
Condensing Unit Configuration System	United States of America	11/150594	7503182	Copeland LP
Method And Apparatus For Monitoring Refrigerant-Cycle Systems	United States of America	10/916222	7275377	Copeland LP
Method And Apparatus For Monitoring Refrigeration-Cycle Systems	United States of America	13/767479	9046900	Copeland LP
Method And Apparatus For Monitoring A Refrigeration-Cycle System	United States of America	13/835742	9081394	Copeland LP
Method And Apparatus For Monitoring A Refrigeration-Cycle System	United States of America	13/835810	9021819	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Method And Apparatus For Monitoring A Refrigeration-Cycle System	United States of America	13/835621	9023136	Copeland LP
Method And Apparatus For Monitoring a Refrigeration-Cycle System	United States of America	13/836043	9017461	Copeland LP
Method And Apparatus For Monitoring A Refrigeration-Cycle System	United States of America	13/836244	8974573	Copeland LP
Method And Apparatus For Monitoring A Refrigeration-Cycle System	United States of America	13/836453	9086704	Copeland LP
Method And Apparatus For Monitoring Refrigeration-Cycle Systems	United States of America	14/727756	9690307	Copeland LP
Method And Apparatus For Monitoring Refrigeration-Cycle Systems	United States of America	15/633657	10,558,229	Copeland LP
Method And Apparatus For Monitoring Air-Exchange Evaporation In A Refrigerant-Cycle System	United States of America	11/130871	7201006	Copeland LP
Method And Apparatus For Monitoring A Condenser Unit In A Refrigerant-Cycle System	United States of America	11/130601	7114343	Copeland LP
Intelligent Thermostat System For Monitoring A Refrigerant-Cycle Apparatus	United States of America	11/130562	7331187	Copeland LP
Method And Apparatus For Monitoring A Calibrated Condenser Unit In A Refrigerant-Cycle System	United States of America	11/417701	7469546	Copeland LP
Intelligent Thermostat System For Load Monitoring A Refrigerant-Cycle Apparatus	United States of America	11/417609	7343751	Copeland LP
Air Filter Monitoring System	United States of America	11/779203	8034170	Copeland LP
Air Filter Monitoring System	United States of America	13/269188	9304521	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Method And Apparatus For Load Reduction In An Electric Power System	United States of America	10/916223	7424343	Copeland LP
Control And Protection System For A Variable Capacity Compressor	United States of America	11/439514	8156751	Copeland LP
Cooling System Design Simulator	United States of America	11/414745	7908126	Copeland LP
Compressor Information Network And Method	United States of America	11/474865	7647201	Copeland LP
Compressor Memory System And Method	United States of America	11/474798	7752014	Copeland LP
Horizontal Scroll Compressor	United States of America	11/255140	7566210	Copeland LP
Scroll Compressor Including Deflection Compensation For Non-Orbiting Scroll	United States of America	12/420519	7837452	Copeland LP
Scroll Compressor Including Lubrication Features	United States of America	12/938848	8226387	Copeland LP
Scroll Compressor With Fluid Injection Feature	United States of America	13/528285	8764423	Copeland LP
Scroll Compressor Having Biasing System	United States of America	14/319756	9458847	Copeland LP
Vapor Compression Circuit And Method Including A Thermoelectric Device	United States of America	11/342984	7240494	Copeland LP
Vapor Compression Circuit And Method Including A Thermoelectric Device	United States of America	11/342929	7296416	Copeland LP
Vapor Compression Circuit And Method Including A Thermoelectric Device	United States of America	11/342983	7752852	Copeland LP



Title	Country	Application Number	Patent Number	Owner
Vapor Compression Circuit And Method Including A Thermoelectric Device	United States of America	12/813149	8307663	Copeland LP
Refrigeration System Including Thermoelectric Module	United States of America	11/272109	7310953	Copeland LP
Refrigeration System Including Thermoelectric Module	United States of America	11/402322	7278269	Copeland LP
Refrigeration System Including Thermoelectric Module	United States of America	11/402315	7284379	Copeland LP
Parallel Condensing Unit Control System And Method	United States of America	11/299285	7878014	Copeland LP
Flash Tank Design And Control For Heat Pumps	United States of America	11/930889	8020402	Copeland LP
Flash Tank Design And Control For Heat Pumps	United States of America	11/930947	7827809	Copeland LP
Flash Tank Design And Control For Heat Pumps	United States of America	11/930983	7484374	Copeland LP
Flash Tank Design And Control For Heat Pumps	United States of America	13/032202	8505331	Copeland LP
Vapor Injection System For A Scroll Compressor	United States of America	11/645288	7771178	Copeland LP
Refrigeration System	United States of America	11/541951	8181478	Copeland LP
Injection System And Method For Refrigeration System Compressor	United States of America	11/707628	7647790	Copeland LP
Injection System And Method For Refrigeration System Compressor	United States of America	11/865706	8769982	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Improved Valve Plate	United States of America	12/244396	8197240	Copeland LP
Compressor Sensor Module	United States of America	12/261643	9140728	Copeland LP
Compressor Sensor Module	United States of America	13/770123	9194894	Copeland LP
Compressor Sensor Module	United States of America	14/949090	10,458,404	Copeland LP
Compressor Sensor Module	United States of America	12/261677	8160827	Copeland LP
Compressor Sensor Module	United States of America	13/176021	8335657	Copeland LP
Protection And Diagnostic Module For A Refrigeration System	United States of America	11/776879	8590325	Copeland LP
Protection And Diagnostic Module For A Refrigeration System	United States of America	14/080473	9885507	Copeland LP
Compressor Data Module	United States of America	14/255519	9823632	Copeland LP
Compressor Assembly Having Vibration Attenuating Structure	United States of America	11/854863	8002528	Copeland LP
Dual Chamber Discharge Muffler	United States of America	11/998441	9404499	Copeland LP
Scroll Compressor With Capacity Modulation	United States of America	11/949382	7547202	Copeland LP
Tandem Compressor System And Method	United States of America	12/139670	8118563	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Scroll Compressor With Compliant Retainer	United States of America	11/728331	7717687	Copeland LP
Scroll Machine	United States of America	12/355206	8025492	Copeland LP
Scroll Machine Having Axially Biased Scroll	United States of America	13/206669	8506271	Copeland LP
Compressor Hermetic Terminal	United States of America	12/115651	8262372	Copeland LP
Compressor Including Valve Assembly	United States of America	13/032179	8517703	Copeland LP
Capacity Modulation System For Compressor And Method	United States of America	12/177,528	8,157,538	Copeland LP
Capacity Modulation System For Compressor And Method	United States of America	13/426,094	8,807,961	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/993207	7988434	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/474633	7976295	Copeland LP
Compressor Having Capacity Modulation System	United States of America	13/167192	8628316	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/474806	8313318	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/909303	8529232	Copeland LP
Compressor Having Capacity Modulation System	United States of America	13/367950	8517704	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Wire Retainer	United States of America	12/365,655	8,262,373	Copeland LP
Compressor Having Wire Retainer	United States of America	13/569732	8777594	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/474736	7967582	Copeland LP
Scroll Compressor for Carbon Dioxide Refrigerant	United States of America	12/257869	7811071	Copeland LP
Refrigeration Monitoring System And Method	United States of America	12/054011	8393169	Copeland LP
Refrigeration Monitoring System And Method	United States of America	13/784890	9651286	Copeland LP
Molded Plug For A Compressor	United States of America	12/199467	8939734	Copeland LP
Variable Speed Compressor Protection System And Method	United States of America	12/246959	8459053	Copeland LP
Variable Speed Compressor Protection System And Method	United States of America	13/893493	9494158	Copeland LP
Variable Speed Compressor Protection System And Method	United States of America	15/346220	10077774	Copeland LP
Variable Speed Compressor Protection System And Method	United States of America	16/131585	10,962,009	Copeland LP
Vibration Protection In A Variable Speed Compressor	United States of America	12/244528	7895003	Copeland LP
Vibration Protection In A Variable Speed Compressor	United States of America	12/983615	8849613	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Vibration Protection In A Variable Speed Compressor	United States of America	14/499849	9683563	Copeland LP
Compressor Assembly Having Electronics Cooling System And Method	United States of America	12/244387	8950206	Copeland LP
Compressor Assembly Having Electronics Cooling System And Method	United States of America	14/480350	9021823	Copeland LP
System And Method For Calculating Parameters For A Refrigeration System With A Variable Speed Compressor	United States of America	12/246927	8418483	Copeland LP
System And Method For Calculating Parameters For A Refrigeration System With A Variable Speed Compressor	United States of America	13/845784	9494354	Copeland LP
System and Method For Calibrating Parameters For A Refrigeration System With A Variable Speed Compressor	United States of America	12/247001	9541907	Copeland LP
System And Method For Evaluating Parameters For A Refrigeration System With A Variable Speed Compressor	United States of America	12/247020	8448459	Copeland LP
System And Method For Monitoring Overheat Of A Compressor	United States of America	12/247033	8539786	Copeland LP
System And Method For Monitoring Compressor Floodback	United States of America	14/031905	9057549	Copeland LP
System And Method For Monitoring Compressor Floodback	United States of America	14/739207	9476625	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	12/388972	8045302	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	13/281078	8228648	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	13/549994	8605393	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Protection And Grid Fault Detection Device	United States of America	14/101155	9130370	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	14/846876	9472944	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	15/295633	9941688	Copeland LP
Compressor Protection And Grid Fault Detection Device	United States of America	15/948864	10418800	Copeland LP
Support Member For Optimizing Dynamic Load Distribution And Attenuating Vibration	United States of America	12/428751	8342795	Copeland LP
Compressor Having Output Adjustment Assembly Including Piston Actuation	United States of America	12/474868	7972125	Copeland LP
Compressor Having Output Adjustment Assembly	United States of America	13/165306	8790098	Copeland LP
Compressor Having Capacity Modulation System	United States of America	12/474954	7967583	Copeland LP
Compressor Alignment Method and Device	United States of America	13/440315	8702406	Copeland LP
Compressor Having Counterweight Cover	United States of America	12/852757	8974198	Copeland LP
Scroll Compressor Having Capacity Modulation System	United States of America	12/629432	7976296	Copeland LP
Compressor Including Biasing Passage Located Relative To Bypass Porting	United States of America	13/453491	9267501	Copeland LP
Portable Method And Apparatus For Monitoring Refrigerant-Cycle Systems	United States of America	13/369067	9310094	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Portable Method And Apparatus For Monitoring Refrigerant-Cycle Systems	United States of America	15/096186	10352602	Copeland LP
Compressor Shell Assembly	United States of America	14/875294	10006287	Copeland LP
Compressor Having Terminal Plug Assembly	United States of America	12/684386	9331420	Copeland LP
Scroll Compressor Including Oldham Coupling Having Keys That Are Slidingly Received In Slots Of A Non-Orbiting Scroll And/Or An Orbiting Scroll	United States of America	14/529219	9638036	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	17/176,080	N/A	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	12/754920	7988433	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	13/181065	8585382	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	14/081390	9303642	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	14/946824	9879674	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	15/881016	10,954,940	Copeland LP
Compressor Having Piston Assembly	United States of America	12/788786	8568118	Copeland LP
Compressor Mounting Structure and Assembly Method	United States of America	12/612232	8348218	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Plug Assembly	United States of America	12/730782	8939735	Copeland LP
Crankcase Heater Systems And Methods For Variable Speed Compressors	United States of America	12/888823	8734125	Copeland LP
Crankcase Heater Systems And Methods For Variable Speed Compressors	United States of America	14/286132	9810218	Copeland LP
Unloader System And Method For A Compressor	United States of America	12/694,488	8,308,455	Copeland LP
Unloader System And Method For A Compressor	United States of America	13/672,902	8,496,454	Copeland LP
Scroll Compressor With Oil-Cooled Motor	United States of America	14/063056	9239054	Copeland LP
Diagnostic System	United States of America	12/781044	10024321	Copeland LP
Diagnostic System	United States of America	16/036331	10,697,458	Copeland LP
Compressor Valve System And Assembly	United States of America	14/060102	9651043	Copeland LP
Compressor Valve System And Assembly	United States of America	15/587735	10,495,086	Copeland LP
Compressor Having Capacity Modulation Or Fluid Injection Systems	United States of America	12/789105	8616014	Copeland LP
Compressor Having Capacity Modulation Or Fluid Injection Systems	United States of America	14/041839	8857200	Copeland LP
System And Method For Power Factor Correction	United States of America	12/852553	8358098	Copeland LP



Title	Country	Application Number	Patent Number	Owner
Power Factor Correction With Variable Bus Voltage	United States of America	12/852557	8508166	Copeland LP
Power Factor Correction With Variable Bus Voltage	United States of America	13/964595	9088232	Copeland LP
Power Factor Correction With Variable Bus Voltage	United States of America	14/804040	9564846	Copeland LP
Controller And Method For Transitioning Between Control Angles	United States of America	12/852,625	8,264,192	Copeland LP
Controller And Method For Transitioning Between Control Angles	United States of America	13/585,961	8,547,051	Copeland LP
Controller And Method For Transitioning Between Control Angles	United States of America	14/042,050	9,154,061	Copeland LP
Controller And Method For Transitioning Between Control Angles	United States of America	14/875,676	9,705,433	Copeland LP
Controller And Method For Transitioning Between Control Angles	United States of America	15/645,983	9,912,263	Copeland LP
Controller And Method For Minimizing Phase Advance Current	United States of America	12/852,619	8,698,433	Copeland LP
Controller And Method For Estimating, Managing, And Diagnosing Motor Parameters	United States of America	12/852961	8493014	Copeland LP
System And Method For Current Balancing	United States of America	12/852565	8476873	Copeland LP
System And Method For Rejecting DC Current In Power Factor Correction Systems	United States of America	12/852585	8344706	Copeland LP
System And Method For Power Factor Correction Frequency Tracking And Reference Generation	United States of America	12/852549	8264860	Copeland LP

Title	Country	Application Number	Patent Number	Owner
System And Method For Reducing Line Current Distortion	United States of America	12/852578	8406021	Copeland LP
Scroll Compressor Having Hub Plate	United States of America	17/157,588	11434910	Copeland LP
Compressor	United States of America	14/060240	9249802	Copeland LP
Compressor	United States of America	14/757407	10094380	Copeland LP
Compressor	United States of America	16/154406	10,907,633	Copeland LP
Compressor Having Sound Isolation Feature	United States of America	14/553502	9689391	Copeland LP
Compressor Having Sound Isolation Feature	United States of America	15/633513	10,544,786	Copeland LP
Compressor Having Sound Isolation Feature	United States of America	15/633537	10,570,901	Copeland LP
Variable Volume Ratio Compressor	United States of America	14/663073	9790940	Copeland LP
Variable Volume Ratio Compressor	United States of America	15/784458	10323638	Copeland LP
Variable Volume Ratio Compressor	United States of America	15/784540	10323639	Copeland LP
Climate-Control System Having Multiple Compressors	United States of America	14/267224	9353980	Copeland LP
Injection Molded Seals For Compressors	United States of America	13/948,226	9,121,276	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Scroll Compressor With Variable Volume Ratio Port In Orbiting Scroll	United States of America	14/073293	9435340	Copeland LP
Scroll Compressor With Variable Volume Ratio Port In Orbiting Scroll	United States of America	15/156400	9777730	Copeland LP
Systems And Methods For Protecting Three-Phase Motors	United States of America	13/242725	8390221	Copeland LP
Systems And Methods For Protecting Three-Phase Motors	United States of America	13/738191	8604737	Copeland LP
Heat Pump System	United States of America	14/527963	10156384	Copeland LP
An Alignment Feature For A Lower Bearing Assembly For A Scroll Compressor	United States of America	14/356063	9528517	Copeland LP
Compressor Seal Assembly	United States of America	13/283,097	8,932,036	Copeland LP
Capacity-Modulated Scroll Compressor	United States of America	14/278325	9739277	Copeland LP
Capacity-Modulated Scroll Compressor	United States of America	15/682044	9976554	Copeland LP
Conduit Adaptor	United States of America	13/478235	8721371	Copeland LP
Compressor With Capacity Modulation And Variable Volume Ratio	United States of America	14/073246	9127677	Copeland LP
Compressor With Capacity Modulation And Variable Volume Ratio	United States of America	14/846877	9494157	Copeland LP
Compressor And Enclosure Assembly For Electrical Components	United States of America	13/293201	9502873	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Capacity Modulated Scroll Compressor	United States of America	14/450748	9638191	Copeland LP
Refrigeration Compressor Lubricant	United States of America	13/526971	9187682	Copeland LP
Refrigeration Compressor Lubricant	United States of America	13/837649	9255219	Copeland LP
Direct-Suction Compressor	United States of America	13/610274	8814537	Copeland LP
Capacity Modulated Scroll Compressor	United States of America	13/958904	9022759	Copeland LP
Discharge Valve For Reciprocating Compressor Having Inner And Outer Flow Areas	United States of America	13/929131	9347443	Copeland LP
Compressor Staking Arrangement And Method	United States of America	13/863744	9964122	Copeland LP
Compressor Staking Arrangement And Method	United States of America	15/971678	10,883,519	Copeland LP
System And Method For Compressor Motor Protection	United States of America	13/737566	8964338	Copeland LP
System And Method For Compressor Motor Protection	United States of America	14/617451	9590413	Copeland LP
System And Method For Compressor Motor Protection	United States of America	15/450404	9876346	Copeland LP
Compressor Including Suction Baffle	United States of America	13/930834	9057270	Copeland LP
Method And Apparatus For Scroll Alignment	United States of America	13/856891	9404497	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Anti-Wear Coatings For Scroll Compressor Wear Surfaces	United States of America	13/948458	9605677	Copeland LP
Scroll Compressor With Unloader Assembly	United States of America	13/869567	9188124	Copeland LP
Scroll Compressor With Unloader Assembly	United States of America	14/941827	10156236	Copeland LP
System For Refrigerant Charge Verification Using Two Condenser Coil Temperatures	United States of America	14/193568	9803902	Copeland LP
System For Refrigerant Charge Verification	United States of America	14/208,636	10,488,090	Copeland LP
System For Refrigerant Charge Verification	United States of America	15/798081	10,775,084	Copeland LP
Compressor Having Counterweight Assembly	United States of America	15/136151	10,954,944	Copeland LP
System Including High-Side And Low-Side Compressors	United States of America	14/189200	9360011	Copeland LP
System Including High-Side And Low-Side Compressors	United States of America	14/189248	9611849	Copeland LP
System Including High-Side And Low-Side Compressors	United States of America	15/156977	10378539	Copeland LP
Compressor Assembly With Liquid Sensor	United States of America	14/470234	9341187	Copeland LP
Compressor Assembly With Liquid Sensor	United States of America	15/151884	10041487	Copeland LP
Compressor Assembly With Liquid Sensor	United States of America	15/153922	9784274	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Contacting Housing	United States of America	29/411541	D673509	Copeland LP
Heat-Pump System With Refrigerant Charge Diagnostics	United States of America	14/244967	9765979	Copeland LP
Heat Pump System With Refrigerant Charge Diagnostics	United States of America	14/607782	10060636	Copeland LP
Heat-Pump System With Refrigerant Charge Diagnostics	United States of America	16/113271	10443863	Copeland LP
Variable Speed Scroll Compressor	United States of America	14/282323	9605676	Copeland LP
Compressor with Fluid Cavity for Cooling	United States of America	16/743,794	11,371,497	Copeland LP
Compressor Cooling System	United States of America	14/172155	10047987	Copeland LP
Compressor Cooling System	United States of America	14/172234	9562709	Copeland LP
Compressor Cooling System	United States of America	15/426983	10,539,351	Copeland LP
Compressor Cooling System	United States of America	16/058,339	10,746,443	Copeland LP
Compressor Bearing And Unloader Assembly	United States of America	14/159526	9115718	Copeland LP
Compressor Bearing And Unloader Assembly	United States of America	14/832371	10,830,236	Copeland LP
Compressor Assembly With Directed Suction	United States of America	14/025887	9366462	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Assembly With Directed Suction	United States of America	15/180570	10094600	Copeland LP
Compressor Assembly With Directed Suction	United States of America	16/154364	10,995,974	Copeland LP
Compressor Assembly With Directed Suction	United States of America	16/154097	10,928,108	Copeland LP
Compressor Crankcase Heating Control Systems and Methods	United States of America	14/079271	9181939	Copeland LP
Compressor Crankcase Heating Control Systems and Methods	United States of America	14/936117	9851135	Copeland LP
Compressor Crankcase Heating Control Systems and Methods	United States of America	15/848924	10,801,764	Copeland LP
System And Method for Permanent Magnet Motor Control	United States of America	13/871598	9634593	Copeland LP
System And Method for Permanent Magnet Motor Control	United States of America	15/494591	9991834	Copeland LP
System And Method for Permanent Magnet Motor Control	United States of America	15/494595	10075116	Copeland LP
Compressor With Service Valve Assembly	United States of America	14/068857	9581161	Copeland LP
Variable Capacity Reciprocating Compressor	United States of America	15/332728	10145372	Copeland LP
Capacity Modulated Scroll Compressor	United States of America	14/173983	9541084	Copeland LP
Compressor Protection Module	United States of America	13/930403	9480177	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Protection Module	United States of America	15/099071	10028399	Copeland LP
Compressor Protection Module	United States of America	16/036275	10,485,128	Copeland LP
Reciprocating Compressor With Vapor Injection System	United States of America	14/132,490	10,352,308	Copeland LP
Reciprocating Compressor With Vapor Injection System	United States of America	15/142915	10280918	Copeland LP
Motor Drive Control Using Pulse-Width Modulation Pulse Skipping	United States of America	13/963317	9240749	Copeland LP
Motor Drive Control Using Pulse-Width Modulation Pulse Skipping	United States of America	14/997900	9853588	Copeland LP
Compressor Crankcase Heating Control Systems And Methods	United States of America	14/461796	9353738	Copeland LP
Compressor Crankcase Heating Control Systems And Methods	United States of America	15/167227	9879894	Copeland LP
Compressor Having A Control And Diagnostic Module	United States of America	14/033604	9310439	Copeland LP
Compressor Having A Control And Diagnostic Module	United States of America	15/096196	9762168	Copeland LP
Compressor Oil Separation and Assembly Method	United States of America	15/453469	10,634,142	Copeland LP
HVAC System Remote Monitoring And Diagnosis Of Refrigerant Line Obstruction	United States of America	14/713,308	10,156,378	Copeland LP
System And Method For Protection Of A Compressor With An Aluminum Winding Motor	United States of America	14/193049	9407194	Copeland LP



Title	Country	Application Number	Patent Number	Owner
Rotary Compressor With Vapor Injection System	United States of America	14/509103	9322405	Copeland LP
Rotary Compressor With Vapor Injection System	United States of America	15/935608	10344761	Copeland LP
Head Pressure Control	United States of America	14/535392	9,470,445	Copeland LP
Compressor With Flooded Start Control	United States of America	16/670,709	11,067,074	Copeland LP
Compressor With Flooded Start Control	United States of America	14/250704	9194393	Copeland LP
Compressor With Flooded Start Control	United States of America	14/947121	10066617	Copeland LP
Compressor With Flooded Start Control	United States of America	14/947146	10,519,947	Copeland LP
Compressor With Flooded Start Control	United States of America	14/947169	10385840	Copeland LP
Compressor Shell Assembly	United States of America	14/875100	9850901	Copeland LP
Compressor And Bearing Assembly	United States of America	14/551,515	9,790,941	Copeland LP
Compressor And Bearing Assembly	United States of America	15/785,241	10,801,498	Copeland LP
Components For Compressors Having Electroless Coatings On Wear Surfaces	United States of America	14/527484	9885347	Copeland LP
Controlled-Dispersion Of Solid Lubricious Particles In A Metallic Alloy Matrix	United States of America	15/652,980	10,974,317	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor With Thermal Protection System	United States of America	15/186092	10378542	Copeland LP
Compressor With Thermally-Responsive Injector	United States of America	15/186151	10,598,180	Copeland LP
Suction Arrangement For A Refrigeration Compressor	United States of America	13/699,207	8,992,186	Copeland LP (jointly owned by EMBRACO INDÚSTRIA DE COMPRESSORES E SOLUÇÕES EM REFRIGERAÇÃO LTDA.)
Reciprocating Compressor System	United States of America	14/880867	9938967	Copeland LP
Reciprocating Compressor System	United States of America	15/948427	10,815,979	Copeland LP
Compressor With Oil Pump Assembly	United States of America	14/994352	9938977	Copeland LP
Compressor With Oil Pump Assembly	United States of America	15/948760	10378541	Copeland LP
Scroll Compressor Having An Insulated High-Strength Partition Assembly	United States of America	15/095886	10337514	Copeland LP
Leak Detector Sensor Systems Using Tag-Sensitized Refrigerants	United States of America	15/265157	10151663	Copeland LP
Compressor High-Side Axial Seal And Seal Assembly Retainer	United States of America	15/222361	10215175	Copeland LP
Building Envelope And Interior Grading Systems And Methods	United States of America	14/705,317	10,352,783	Copeland LP
Current Based Air Filter Diagnostics And Monitoring	United States of America	14/709,658	10,670,488	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Heat Pump And Air Conditioning Grading Systems And Methods	United States of America	14/705340	10344997	Copeland LP
Heat Pump And Air Conditioning Grading Systems And Methods	United States of America	16/453384	10,634,378	Copeland LP
Compressor Having Lubricant Management System For Bearing Life	United States of America	15/065522	10302340	Copeland LP
Compressor Having Sound Control System	United States of America	15/413984	10436226	Copeland LP
Compressor Temperature Control Systems And Methods	United States of America	15/034483	10180138	Copeland LP
Refrigerant Charge Detection For Ice Machines	United States of America	14/824826	9951985	Copeland LP
Refrigerant Charge Detection For Ice Machines	United States of America	15/960077	10180272	Copeland LP
Compressor With Cooling System	United States of America	15/339012	10,465,962	Copeland LP
Variable Volume Ratio Scroll Compressor	United States of America	14/294458	9989057	Copeland LP
Compressor Having Oldham Keys	United States of America	16/404,124	11,136,977	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	14/674980	10371426	Copeland LP
System And Method Of Controlling A Variable Capacity Compressor	United States of America	15/196084	10436490	Copeland LP
Compressor With Cooling Pump	United States of America	17/369,730	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Scroll Compressor Lower Bearing	United States of America	15/092402	10047799	Copeland LP
Scroll Compressor Lower Bearing	United States of America	16/058429	10344804	Copeland LP
High-Strength Light-Weight Lattice-Cored Additive Manufactured Compressor Components	United States of America	15/366871	10,982,672	Copeland LP
System And Method For Controlling A Variable-Capacity Compressor	United States of America	14/734115	10018392	Copeland LP
Variable Speed Compressor Control With Sound-Controlled Defrost Mode	United States of America	14/837991	10240838	Copeland LP (jointly owned by Control Techniques Ltd.)
Variable Speed Compressor Control With Lost Rotor Mitigation	United States of America	14/838071	9476626	Copeland LP (jointly owned by Control Techniques Ltd.)
Compressor And Crankshaft-Connecting Rod Assembly	United States of America	14/879694	10132301	Copeland LP
Suction Line Arrangement For Multiple Compressor System	United States of America	15/445137	10,941,772	Copeland LP
THERMAL AND SOUND OPTIMIZED LATTICE-CORED ADDITIVE MANUFACTURED COMPRESSOR COMPONENTS	United States of America	16/819,415	N/A	Copeland LP
Thermal And Sound Optimized Lattice-Cored Additive Manufactured Compressor Components	United States of America	15/366,885	10,634,143	Copeland LP
Lattice-Cored Additive Manufactured Compressor Components With Fluid Delivery Features	United States of America	16/719,161	11,248,595	Copeland LP
Lattice-Cored Additive Manufactured Compressor Components With Fluid Delivery Features	United States of America	15/366967	10,557,464	Copeland LP
Capacity Modulated Scroll Compressor	United States of America	14/958524	9850903	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Co-Rotating Compressor	United States of America	15/425,266	11,111,921	Copeland LP
Multiple Compressor Configuration With Oil-Balancing System	United States of America	15/232094	10,641,268	Copeland LP
Co-Rotating Compressor With Multiple Compression Mechanisms	United States of America	15/425374	10215174	Copeland LP
Co-Rotating Compressor With Multiple Compression Mechanisms	United States of America	16/284653	10,718,330	Copeland LP
Co-Rotating Compressor	United States of America	15/877870	10,995,754	Copeland LP
Co-Rotating Compressor With Multiple Compression Mechanisms and System Having Same	United States of America	15/425319	10,465,954	Copeland LP
Compressor Having Capacity Modulation System	United States of America	15/646654	10087936	Copeland LP
Compressor With Flooded Start Control	United States of America	15/951,919	10,480,495	Copeland LP
Compressor Floodback Protection System	United States of America	16/780,270	N/A	Copeland LP
Compressor Floodback Protection System	United States of America	15/428410	10,801,762	Copeland LP
Cylinder Head Assembly For A Reciprocating Compressor Including A Cylinder Head With An Integral Valve Plate	United States of America	15/583,424	10,920,762	Copeland LP
Single Piece Valve Plate Assembly For A Reciprocating Compressor	United States of America	15/583,491	11,105,326	Copeland LP
SINGLE PIECE VALVE PLATE ASSEMBLY FOR A RECIPROCATING COMPRESSOR, THE VALVE PLATE ASSEMBLY	United States of America	17/461,256	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
INCLUDING A VALVE PLATE AND A SUCTION VALVE RETAINER THAT ARE INTEGRALLY FORMED AS A UNITARY BODY				
Scroll Compressor With Axial Flux Motor	United States of America	15/425428	10280922	Copeland LP
Scroll Compressor With Axial Flux Motor	United States of America	16/114912	10415567	Copeland LP
Compressor With Oldham Assembly	United States of America	15/252579	10400770	Copeland LP
Compressor With Oldham Assembly	United States of America	16/555413	11,002,275	Copeland LP
Compressor With Oil Management System	United States of America	15/604150	10,519,954	Copeland LP
Oil Flow Through The Bearings Of A Scroll Compressor	United States of America	15/692844	10,801,495	Copeland LP
Cylinder Head Assembly For Reciprocating Compressor	United States of America	15/270,458	10,436,187	Copeland LP
Cylinder Head Assembly For Reciprocating Compressor	United States of America	16/551,054	11,225,959	Copeland LP
Scroll Unloading Detection System	United States of America	15/848063	10240840	Copeland LP
Scroll Unloading Detection System	United States of America	16/363341	10,571,177	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	16/593,121	11,105,546	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	15/138551	9,709,311	Copeland LP

Title	Country	Application Number	Patent Number	Owner
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	15/138,771	10,488,092	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	15/138,981	10,197,319	Copeland LP
Diagnostics For Variable-Capacity Compressor Control Systems And Methods	United States of America	15/138937	9562710	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	15/651942	10132543	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	16/193310	10436491	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor	United States of America	16/266,932	10,830,517	Copeland LP
Carbon Dioxide Co-Fluid	United States of America	15/496268	9885002	Copeland LP
Compressor Having Capacity Modulation System	United States of America	15/651471	10066622	Copeland LP
Compressor	United States of America	15/682599	10,890,186	Copeland LP
Buck-Converter-Based Drive Circuits For Driving Motors Of Compressors And Condenser Fans	United States of America	15/487,226	11387729	Copeland LP
Filtering Systems And Methods For Voltage Control	United States of America	15/419464	10,277,115	Copeland LP
Switch Off Time Control Systems And Methods	United States of America	15/419423	10,763,740	Copeland LP
Input Reference Signal Generation Systems And Methods	United States of America	15/419394	10,305,373	Copeland LP

Title	Country	Application Number	Patent Number	Owner
ICE MACHINE INCLUDING VAPOR-COMPRESSSION SYSTEM	United States of America	16/686,759	N/A	Copeland LP
Variable Volume Ratio Compressor	United States of America	16/147,920	11,022,119	Copeland LP
Ammonia And Hydrogen Electrochemical Climate Control Systems	United States of America	16/043,985	10,782,050	Copeland LP
Variable Volume Ratio Compressor	United States of America	16/177,902	10,962,008	Copeland LP
Plug Assembly For A Compressor Including A Conduit Adaptor	United States of America	15/229836	9929497	Copeland LP
Variable-Capacity Compressor Controller With Two-Wire Configuration	United States of America	15/602328	10,760,814	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor And A Variable Speed Fan Using A Two-Stage Thermostat	United States of America	15/457,418	10,408,517	Copeland LP
System And Method Of Controlling A Variable-Capacity Compressor And A Variable-Capacity Fan Using A Two-Stage Thermostat	United States of America	16/564558	11,092,371	Copeland LP
Multiple-Compressor System With Suction Valve And Method of Controlling Suction Valve	United States of America	16/387694	N/A	Copeland LP
Liquid Slugging Detection And Protection	United States of America	15/783,517	10,627,146	Copeland LP
Heat Rejection System For Electrochemical Climate Control System	United States of America	15/899024	10211469	Copeland LP
Heat Rejection System For Electrochemical Climate Control System	United States of America	16/278354	10,818,940	Copeland LP



Title	Country	Application Number	Patent Number	Owner
System And Method Of Controlling Compressor, Evaporator Fan, and Condenser Fan Speeds During A Battery Mode Of A Refrigeration System For A Container Of A Vehicle	United States of America	15/635760	10315495	Copeland LP
System And Method Of Controlling Passage Of Refrigerant Through Eutectic Plates And An Evaporator Of A Refrigeration System For A Container Of A Vehicle	United States of America	15/635483	10300766	Copeland LP
System And Method Of Controlling Passage Of Refrigerant Through Eutectic Plates And An Evaporator Of A Refrigeration System For A Container Of A Vehicle	United States of America	16/420,800	10,654,341	Copeland LP
System And Method Of Mode-Based Compressor Speed Control For Refrigerated Vehicle Compartment	United States of America	15/635,444	10,828,963	Copeland LP
Startup Control Systems And Methods To Reduce Flooded Startup Conditions	United States of America	16/798,040	11,046,152	Copeland LP
Startup Control Systems And Methods To Reduce Flooded Startup Conditions	United States of America	17/354,847	N/A	Copeland LP
Startup Control Systems And Methods To Reduce Flooded Startup Conditions	United States of America	15/635,688	10,569,620	Copeland LP
Battery Life Prediction And Monitoring	United States of America	15/635,249	10,562,377	Copeland LP
Startup Control Systems And Methods For High Ambient Conditions	United States of America	15/635,779	10,532,632	Copeland LP
Systems And Methods For Capacity Modulation Through Eutectic Plates	United States of America	15/635372	10414241	Copeland LP
Systems And Methods For Capacity Modulation Through Eutectic Plates	United States of America	16/568964	11,014,427	Copeland LP

Title	Country	Application Number	Patent Number	Owner
System And Method Of Controlling An Oil Return Cycle For A Refrigerated Container Of A Vehicle	United States of America	15/635239	10328771	Copeland LP
Microcontroller Architecture For Power Factor Correction Converter	United States of America	15/487,426	9,933,842	Copeland LP
Microcontroller Architecture For Power Factor Correction Converter	United States of America	15/943,660	10,437,317	Copeland LP
Microcontroller Architecture For Power Factor Correction Converter	United States of America	16/595,277	10,928,884	Copeland LP
Switch Actuation Measurement Circuit For Voltage Converter	United States of America	15/487101	10320322	Copeland LP
Power Factor Correction Circuits And Methods Including Partial Power Factor Correction Operation For Boost And Buck Power Converters	United States of America	15/487151	10,312,798	Copeland LP
Power Factor Correction Circuit and Method Including Dual Bridge Rectifiers	United States of America	15/487,175	10,770,966	Copeland LP
Driver For High-Frequency Switching Voltage Converters	United States of America	15/487027	10284132	Copeland LP
System And Method For Displaying Messages In A Column-By-Column Format Via An Array Of LEDs Connected To A Circuit Of A Compressor	United States of America	15/430,978	9,965,928	Copeland LP
Temperature Sensing Circuit For Transmitting Data Across Isolation Barrier	United States of America	15/419,349	10,656,026	Copeland LP
Choke And EMI Filter Circuits For Power Factor Correction Circuits	United States of America	15/487201	10075065	Copeland LP
System And Method Of Adjusting Compressor Modulation Range Based On Balance Point Detection Of The Conditioned Space	United States of America	16/178291	10,670,296	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor With Floating Seal	United States of America	16/025050	10,975,868	Copeland LP
Compressor Having Damped Scroll	United States of America	16/886,145	11,353,022	Copeland LP
Compressor Having Damped Scroll	United States of America	17/574,022	N/A	Copeland LP
Compressor Discharge Valve Assembly	United States of America	15/831,423	10,753,352	Copeland LP
Micro Booster Supermarket Refrigeration Architecture	United States of America	17/093,245	N/A	Copeland LP
Micro Booster Supermarket Refrigeration Architecture	United States of America	15/868,636	10,969,165	Copeland LP
Oil Management For Micro Booster Supermarket Refrigeration System	United States of America	15/868,712	10,634,424	Copeland LP
Capacity Staging System For Multiple Compressors	United States of America	15/988759	10,704,817	Copeland LP
Control System For Multiple Compressors	United States of America	15/988654	10,830,516	Copeland LP
Low Charge Detection System For Cooling Systems	United States of America	16/799,156	11,085,679	Copeland LP
Low Charge Detection System For Cooling Systems	United States of America	15/878,927	10,571,171	Copeland LP
Control Mechanism For Climate Control Unit With Multiple Stages	United States of America	16/176331	10,788,247	Copeland LP
Climate-Control System Having Thermal Storage Tank	United States of America	16/245641	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Climate-Control System With Thermal Storage Device	United States of America	16/280758	11,149,971	Copeland LP
Vehicle Air Conditioning Control Systems	United States of America	16/123359	10,668,783	Copeland LP
Scroll Compressor With Scroll Bolt Clamp Joint	United States of America	16/173351	10,927,835	Copeland LP
Polymeric Composite Insert Component For A Scroll Compressor	United States of America	16/435033	11,149,735	Copeland LP
Compressor Capacity Stage Profile Systems And Methods For Multi-Compressor Circuits, Each Having Multiple Compressors	United States of America	16/630,366	N/A	Copeland LP
Compressor Having Bushing	United States of America	16/252997	11,002,276	Copeland LP
Humidifier Control Systems And Methods	United States of America	16/196703	10,760,803	Copeland LP
Compressor Having Bushing	United States of America	16/253030	11,015,598	Copeland LP
Evaporator Freeze Prevention Systems And Methods	United States of America	16/123,425	10,807,437	Copeland LP
Compressor Discharge Pressure Based Control Systems And Methods	United States of America	16/123500	10,857,851	Copeland LP
Battery Power Management Systems And Methods For Engine Off	United States of America	16/123,541	10,870,326	Copeland LP
Drive Cooling Systems And Methods For Engine Off	United States of America	16/123,588	10,870,327	Copeland LP
HVAC Filter Usage Analysis System	United States of America	17/048,993	N/A	Copeland Comfort Control LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Capacity Modulation Assembly	United States of America	17/196,119	N/A	Copeland LP
Compressor Having Capacity Modulation Assembly	United States of America	16/154844	10,995,753	Copeland LP
Ice Maker And Method Of Making And Harvesting Ice	United States of America	15/924,824	10,641,535	Copeland LP
Climate-Control System Having Vapor-Injection Compressors	United States of America	16/447,468	11,346,583	Copeland LP
Climate-Control System Having Pump	United States of America	16/413,117	11,073,311	Copeland LP
Refrigeration System Having Drain Pan	United States of America	16/527,967	N/A	Copeland LP
Climate-Control System With Ground Loop	United States of America	16/412,838	10,598,395	Copeland LP
Particulate-Matter-Size-Based Fan Control System	United States of America	17/078,031	11,371,726	Copeland LP
Computerized HVAC Filter Evaluation System	United States of America	17/048,910	N/A	Copeland LP
Humidifier Control Systems And Methods	United States of America	16/196744	10,760,804	Copeland LP
Indoor Air Quality And Occupant Monitoring Systems And Methods	United States of America	17/048,798	11,226,128	Copeland LP
COMPRESSOR HAVING SHELL FITTING	United States of America	16/941,060	11,248,605	Copeland LP
Particulate-Matter-Size-Based Fan Control System	United States of America	17/048,866	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Humidifier Control Systems And Methods	United States of America	16/196770	10,767,878	Copeland LP
Coordinated Control Of Standalone And Building Indoor Air Quality Devices And Systems	United States of America	17/048,887	11421901	Copeland LP
Carbon Dioxide Refrigerant System	United States of America	16/399149	10,976,079	Copeland LP
Indoor Air Quality Sensor Calibration Systems And Methods	United States of America	17/048,967	N/A	Copeland LP
Climate-Control System With Absorption Chiller	United States of America	16/811,657	11,333,412	Copeland LP
Systems And Methods For Adjusting Mitigation Thresholds	United States of America	17/048,946	N/A	Copeland LP
Compressor Having Suction Fitting	United States of America	15/930,785	N/A	Copeland LP
FOIL BEARING ASSEMBLY	United States of America	16/783,369	11391291	Copeland LP
Oil Control For Climate-Control System	United States of America	16/719,491	11,300,328	Copeland LP
Climate-Control System Having Oil Cooling Control System	United States of America	16/252,035	11,236,648	Copeland LP
Compressor Having Directed Suction	United States of America	16/803,576	11,236,748	Copeland LP
Climate-Control System Having Valve Assembly	United States of America	16/814,487	N/A	Copeland LP
Compressor Having Capacity Modulation	United States of America	16/508,894	11,209,000	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Capacity Modulation	United States of America	17/498,817	N/A	Copeland LP
FOIL BEARING ASSEMBLY AND COMPRESSOR INCLUDING SAME	United States of America	16/809,836	11,306,726	Copeland LP
Container Refrigeration Monitoring Systems And Methods	United States of America	16/773,119	N/A	Copeland LP
Oil Control For Climate-Control System	United States of America	16/668,603	11,378,308	Copeland LP
Co-Rotating Scroll Compressor	United States of America	17/097,478	11,359,631	Copeland LP
Oil Control For Climate-Control System	United States of America	16/719,347	N/A	Copeland LP
Refrigerated Food Container	United States of America	16/778,819	N/A	Copeland LP
Systems And Methods With Variable Mitigation Thresholds	United States of America	17/078,019	N/A	Copeland LP
Systems And Methods With Variable Mitigation Thresholds	United States of America	17/048,982	N/A	Copeland LP
Systems and Methods for Manufacturing a Shrouded Impeller	United States of America	16/947,680	N/A	Copeland LP
Dual Oldham Coupling for Co-Rotating Scroll Compressor	United States of America	17/519,876	N/A	Copeland LP
Multi-Phase Converter Control System And Method For Interleaving Multi-Phase Converters	United States of America	16/938,219	11,362,582	Copeland LP
Electronics Enclosure With Heat-Transfer Element	United States of America	16/935,786	11,206,743	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Electronics Enclosure With Heat-Transfer Element	United States of America	17/643,991	N/A	Copeland LP
Compressor With Compliant Seal	United States of America	16/883,323	N/A	Copeland LP
Compressor Having Muffler Plate	United States of America	15/930,616	N/A	Copeland LP
Compressor Having Floating Seal Assembly	United States of America	16/864,987	N/A	Copeland LP
Mass Flow Interpolation Systems and Methods for Dynamic Compressors	United States of America	17/243,787	N/A	Copeland LP
START-STOP CONTROL OF GAS FOIL BEARING MACHINE	United States of America	17/009,535	N/A	Copeland LP
Compressor Having Bushing Assembly	United States of America	17/352,074	N/A	Copeland LP
Surge Control Systems and Methods for Dynamic Compressors	United States of America	17/247,724	11428233	Copeland LP
Surge Control Systems and Methods for Dynamic Compressors	United States of America	17/247,725	N/A	Copeland LP
High-Speed Optocoupler Circuits	United States of America	17/102,624	N/A	Copeland LP
Multi-Phase EMI And Transient Protection Circuits And Synchronous Rectification Control For Compressors Of Refrigeration Systems	United States of America	16/993,710	11,277,003	Copeland LP
MOTOR DRIVE CONTROL INCLUDING VARYING DC BUS VOLTAGES, CONVERTER AND INVERTER SWITCHING FREQUENCIES, AND MOTOR SPEED FOR THERMAL MITIGATION	United States of America	17/453,802	N/A	Copeland LP



Title	Country	Application Number	Patent Number	Owner
COMPRESSOR DRIVESHAFT ASSEMBLY AND COMPRESSOR INCLUDING SAME	United States of America	16/946,173	N/A	Copeland LP
Climate-Control System And Method Of Controlling The System	United States of America	17/065,117	N/A	Copeland LP
Mitigation State Verification Systems And Methods	United States of America	17/168,850	N/A	Copeland LP
Refrigerant Leak Sensor Power Control Systems And Methods	United States of America	17/036,448	N/A	Copeland LP
Refrigeration Leak Detection	United States of America	16/988,269	N/A	Copeland LP
Co-Rotating Scroll Compressor Having Synchronization Mechanism	United States of America	17/519,721	N/A	Copeland LP
Refrigeration Leak Detection	United States of America	16/940,808	N/A	Copeland LP
Refrigerant Leak Sensor And Mitigation Device And Methods	United States of America	16/930,993	11,125,457	Copeland LP
Refrigeration System Leak Detection	United States of America	16/921,535	11,359,846	Copeland LP
Refrigeration Leak Detection	United States of America	16/940,843	11,131,471	Copeland LP
Refrigeration Leak Detection	United States of America	17/470,739	N/A	Copeland LP
Multistage Drive and System Controller	United States of America	16/987,574	11,131,491	Copeland LP
Systems And Methods For Multi-Stage Operation Of A Compressor	United States of America	17/398,396	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Seal Assembly	United States of America	17/154,716	N/A	Copeland LP
Refrigerant Charging Systems And Methods	United States of America	16/992,872	N/A	Copeland LP
Refrigerant Leak Sensor With Extended Life	United States of America	17/306,337	N/A	Copeland LP
Compressor Having Directed Suction	United States of America	17/159,692	N/A	Copeland LP
Refrigerant Leak Sensor Measurement Adjustment Systems And Methods	United States of America	17/077,479	N/A	Copeland LP
Heat-Pump System With Multiway Valve	United States of America	17/210,095	N/A	Copeland LP
Sealing Egress for Fluid Heat Exchange in the Wall of a Structure	United States of America	17/211,664	N/A	Copeland LP
Mechanism to Increase Impeller Optimum Range: Economization & VIGV	United States of America	17/585,736	N/A	Copeland LP
Modulated Compressor And Valve Assembly	United States of America	17/835,048	N/A	Copeland LP
Cooling System For Centrifugal Compressor and Refrigeration System Including Same	United States of America	17/248,166	N/A	Copeland LP
Variable Speed Drive Integrated HVAC/R System Controller	United States of America	17/737,584	N/A	Copeland LP
Refrigerant Isolation Using A Reversing Valve	United States of America	17/019,946	N/A	Copeland LP
Plastic Film Heat Exchanger for Low Pressure and Corrosive Fluids	United States of America	17/193,293	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Climate-Control System With Sensible And Latent Cooling	United States of America	17/346,007	N/A	Copeland LP
Conditioning System Including Vapor Compression System and Humidity Control System	United States of America	17/644,887	N/A	Copeland LP
CONDITIONING SYSTEM INCLUDING VAPOR COMPRESSION SYSTEM AND EVAPORATIVE COOLING SYSTEM	United States of America	17/732,934	N/A	Copeland LP
SYSTEMS AND METHODS FOR A NON-PRESSURIZED, CLOSED LOOP WATER SUB-SYSTEM	United States of America	17/033,416	11385000	Copeland LP
SYSTEMS AND METHODS FOR A REFRIGERANT SUB-SYSTEM FOR A HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM	United States of America	17/033,409	N/A	Copeland LP
Refrigerant Charge Monitoring Systems And Methods For Multiple Evaporators	United States of America	17/494,274	N/A	Copeland LP
Compressor Having Lubrication System	United States of America	17/076,582	N/A	Copeland LP
Hybrid Heat-Pump System	United States of America	17/210,160	N/A	Copeland LP
Compressor Modulation System With Multi-Way Valve	United States of America	17/388,923	N/A	Copeland LP
Compressor Cooling Systems and Methods Including Coolant Damping Chamber	United States of America	18/186,386	N/A	Copeland LP
Refrigeration System Having High-Efficiency Loop	United States of America	17/324,696	N/A	Copeland LP
Magnetic High Voltage Interlock Loop (HVIL) for Variable Frequency Drives in Transport Applications	United States of America	17/580,441	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
FOIL BEARING ASSEMBLY INCLUDING SEGMENTED INNER FOIL ASSEMBLY AND COMPRESSOR INCLUDING SAME	United States of America	17/167,611	N/A	Copeland LP
Co-Rotating Compressor with Suction Through the Shaft	United States of America	17/519,953	N/A	Copeland LP
Climate Control Systems For Use With High Glide Working Fluids And Methods For Operation Thereof	United States of America	17/507,403	N/A	Copeland LP
VARIABLE INLET GUIDE VANE APPARATUS AND COMPRESSOR INCLUDING SAME	United States of America	17/656,260	N/A	Copeland LP
Open Cycle Cooling System	United States of America	17/402,250	N/A	Copeland LP
Compressor With Oil Pump	United States of America	17/854,908	N/A	Copeland LP
Induction Motors Including Speed Sensing Circuits For Motor Control	United States of America	17/568,273	N/A	Copeland LP
Perforated Top Foil Bearing	United States of America	18/162,396	N/A	Copeland LP
Compressor Flow Restrictor	United States of America	17/749,997	N/A	Copeland LP
THERMAL BATTERY AND HEAT EXCHANGER ASSEMBLY USING PHASE CHANGE MATERIAL	United States of America	17/520,187	N/A	Copeland LP
Climate-Control System With Thermal Storage	United States of America	17/830,026	N/A	Copeland LP
Combined Cooling, Heating, and Power for Netzero Electric Cooling and Higher Heating COP	United States of America	17/729,582	N/A	Copeland LP
Desiccant Heat Exchanger For High Efficiency Dehumidification	United States of America	17/659,769	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Startup Pressure Ratio	United States of America	17/804,317	N/A	Copeland LP
SOLAR ENERGY SYSTEMS	United States of America	12/775,982	9,130,503	Copeland LP
METHODS AND SYSTEMS FOR DESICCANT AIR CONDITIONING	United States of America	13/115,686	9,273,877	Copeland LP
METHODS AND SYSTEMS FOR DESICCANT AIR CONDITIONING	United States of America	13/115,745	9,243,810	Copeland LP
DESICCANT AIR CONDITIONING METHODS AND SYSTEMS USING EVAPORATIVE CHILLER	United States of America	13/115,776	9,429,332	Copeland LP
WATER RECOVERY METHODS AND SYSTEMS	United States of America	13/115,783	9,377,207	Copeland LP
METHODS AND SYSTEMS FOR DESICCANT AIR CONDITIONING	United States of America	14/843,334	9,709,286	Copeland LP
METHODS AND SYSTEMS FOR DESICCANT AIR CONDITIONING	United States of America	14/869,504	9,631,823	Copeland LP
DESICCANT AIR CONDITIONING METHODS AND SYSTEMS USING EVAPORATIVE CHILLER	United States of America	15/177,755	10,168,056	Copeland LP
DESICCANT AIR CONDITIONING METHODS AND SYSTEMS USING EVAPORATIVE CHILLER	United States of America	16/189,518	10,753,624	Copeland LP
LIQUID DESICCANT AIR CONDITIONING SYSTEMS AND METHODS	United States of America	17/002,371	N/A	Copeland LP
METHODS AND SYSTEMS FOR TURBULENT, CORROSION RESISTANT HEAT EXCHANGERS	United States of America	13/915,199	9,308,490	Copeland LP
METHODS AND SYSTEMS FOR TURBULENT, CORROSION RESISTANT HEAT EXCHANGERS	United States of America	13/915,222	9,101,874	Copeland LP

Title	Country	Application Number	Patent Number	Owner
METHODS AND SYSTEMS FOR TURBULENT, CORROSION RESISTANT HEAT EXCHANGERS	United States of America	13/915,262	9,101,875	Copeland LP
METHODS AND SYSTEMS FOR TURBULENT, CORROSION RESISTANT HEAT EXCHANGERS	United States of America	15/799,456	10,443,868	Copeland LP
METHODS AND SYSTEMS FOR TURBULENT, CORROSION RESISTANT HEAT EXCHANGERS	United States of America	16/653,397	11,098,909	Copeland LP
DESICCANT AIR CONDITIONING SYSTEMS WITH CONDITIONER AND REGENERATOR HEAT TRANSFER FLUID LOOPS	United States of America	14/193,781	9,631,848	Copeland LP
DESICCANT AIR CONDITIONING METHODS AND SYSTEMS	United States of America	15/457,506	10,760,830	Copeland LP
METHODS AND SYSTEMS FOR COOLING BUILDINGS WITH LARGE HEAT LOADS USING DESICCANT CHILLERS	United States of America	14/096,445	9,506,697	Copeland LP
METHODS AND SYSTEMS FOR LIQUID DESICCANT AIR CONDITIONING SYSTEM RETROFIT	United States of America	14/212,263	9,709,285	Copeland LP
METHODS AND SYSTEMS FOR MINI-SPLIT LIQUID DESICCANT AIR CONDITIONING	United States of America	15/880,275	10,619,867	Copeland LP
IN-CEILING LIQUID DESICCANT AIR CONDITIONING SYSTEM	United States of America	14/303,397	9,470,426	Copeland LP
IN-CEILING LIQUID DESICCANT AIR CONDITIONING SYSTEM	United States of America	15/271,785	10,619,868	Copeland LP
ROOFTOP LIQUID DESICCANT SYSTEMS AND METHODS	United States of America	14/664,219	10,323,867	Copeland LP
ROOFTOP LIQUID DESICCANT SYSTEMS AND METHODS	United States of America	16/399,165	10,619,895	Copeland LP

Title	Country	Application Number	Patent Number	Owner
METHODS AND SYSTEMS FOR MINI-SPLIT LIQUID DESICCANT AIR CONDITIONING	United States of America	16/037,675	10,731,876	Copeland LP
Methods and Apparatus for Distribution of Liquid Desiccant in Membrane Modules in Liquid Desiccant Air-Conditioning Systems	United States of America	16/177,768	10,921,001	Copeland LP
TANK SYSTEM FOR LIQUID DESICCANT AIR CONDITIONING SYSTEM	United States of America	16/178,270	10,941,948	Copeland LP (jointly owned by Alliance for Sustainable Energy, LLC)
TANK SYSTEM FOR LIQUID DESICCANT AIR CONDITIONING SYSTEM	United States of America	17/193,708	N/A	Copeland LP (jointly owned by Alliance for Sustainable Energy, LLC)
THREE-WAY HEAT EXCHANGERS FOR LIQUID DESICCANT AIR-CONDITIONING SYSTEMS AND METHODS OF MANUFACTURE	United States of America	15/983,653	11,022,330	Copeland LP
LIQUID DESICCANT AIR-CONDITIONING SYSTEMS USING ANTIFREEZE-FREE HEAT TRANSFER FLUIDS	United States of America	16/702,126	N/A	Copeland LP
LIQUID DESSICANT AIR CONDITIONING SYSTEM WITH WATER ADDITION	United States of America	62/994,413	N/A	Copeland LP
Thermally Compensated Scroll Machine	United States of America	11/647463	8007261	Copeland LP
Thermally Compensated Scroll Machine	United States of America	12/974850	8641393	Copeland LP
Refrigeration Control System	United States of America	10/925,899	7,290,398	Copeland Cold Chain LP
Evaporator Pressure Regulator Control And Diagnostics	United States of America	11/081,083	7,287,396	Copeland Cold Chain LP
Fixed And Variable Compressor System Capacity Control	United States of America	11/086,787	7,918,655	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
Fixed And Variable Compressor System Capacity Control	United States of America	12/885,778	8,287,230	Copeland Cold Chain LP
Enterprise Control And Monitoring System And Method	United States of America	11/394,380	7,885,961	Copeland Cold Chain LP
Enterprise Controller Display Method	United States of America	11/497,579	7,885,959	Copeland Cold Chain LP
Refrigeration System Controller And Method	United States of America	11/732,120	7,814,758	Copeland Cold Chain LP
Refrigeration System Capacity Controller And Method	United States of America	11/732,119	7,861,546	Copeland Cold Chain LP
Refrigeration System And Method Using Multiple Variable Capacity Devices	United States of America	12/125754	8,047,012	Copeland Cold Chain LP
Control System And Method For Multi-Stage Heating And Cooling System With Minimum On Time And Off Time	United States of America	13/852,465	9,494,953	Copeland Cold Chain LP
Building Device Cluster Data Display With Thumbnail Graphical Display Interface	United States of America	13/867,719	9,513,643	Copeland Cold Chain LP
Pipe Probe	United States of America	10/606073	6,779,919	Copeland Cold Chain LP
Strap-On Pipe Probe	United States of America	10/643,410	6,834,993	Copeland Cold Chain LP
System For Verifying Temperature Measurement	United States of America	13/373,859	8,708,553	Copeland Cold Chain LP
Multi-Tag Identification Devices, Variable-Power Standoff Readers For Same, And Related Systems	United States of America	14/804612	9,542,663	Copeland Cold Chain LP
Multi-Tag Medical-Patient Identification Devices	United States of America	15/359888	10,127,356	Copeland Cold Chain LP



Title	Country	Application Number	Patent Number	Owner
Solid Thermal Simulator Sensing Device	United States of America	13/969,141	9,470,587	Copeland Cold Chain LP
Method For Calibrating A Solid Thermal Simulator Sensing Device	United States of America	15/260397	9,714,872	Copeland Cold Chain LP
Bracket for Temperature Sensor	United States of America	17/681,998	N/A	Copeland Cold Chain LP
Variable Display	United States of America	11/402660	7,522,067	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	10/688,798	7,057,495	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	11/221540	7,248,147	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	11/880394	7532106	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	11/880539	7675424	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	90/020060	7,532,106	Copeland Cold Chain LP
Perishable Product Electronic Label Including Time And Temperature Measurement	United States of America	90/020,061	7,675,424	Copeland Cold Chain LP
System And Method For Monitoring Environmental Conditions	United States of America	11/318115	7,461,973	Copeland Cold Chain LP
System And Method For Monitoring Environmental Conditions	United States of America	12/313110	7878707	Copeland Cold Chain LP
Environmental Sensing	United States of America	11/712075	7675409	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
Environmental Data Collection	United States of America	12/255332	8947224	Copeland Cold Chain LP
Environmental Data Collection	United States of America	14/599777	9767656	Copeland Cold Chain LP
Redundant Monitoring	United States of America	11/999785	7760084	Copeland Cold Chain LP
Environmental Sensing And Communication	United States of America	12/255,295	8224576	Copeland Cold Chain LP
Environmental Sensing And Communication	United States of America	13/422827	8494773	Copeland Cold Chain LP
Environmental Sensing And Communication	United States of America	13/949005	9761126	Copeland Cold Chain LP
Environmental And Product Sensing	United States of America	15/790757	10,215,644	Copeland Cold Chain LP
Systems And Methods For Monitoring Transported Cargo	United States of America	15/057,887	10,748,109	Copeland Cold Chain LP
Systems And Methods For Monitoring Transported Cargo	United States of America	15/057,899	N/A	Copeland Cold Chain LP
Systems And Methods For Monitoring Vibrations During Transportation Of Goods	United States of America	15/254,449	9,965,939	Copeland Cold Chain LP
Systems And Methods For Monitoring Vibrations During Transportation Of Goods	United States of America	15/971,697	10,311,702	Copeland Cold Chain LP
Systems And Methods For Environmental Monitoring Of Supply Chains	United States of America	16/380,560	11,263,585	Copeland Cold Chain LP
Systems And Methods For Environmental Monitoring Of Supply Chains	United States of America	17/682,499	N/A	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
SYSTEMS AND METHODS FOR A BATTERY PROTECTION SYSTEM	United States of America	16/949,492	N/A	Copeland Cold Chain LP
SYSTEMS AND METHODS FOR QUALITY MONITORING OF PALLETS	United States of America	63/273,293	N/A	Copeland Cold Chain LP
Compressor Having A Sleeve Guide Assembly	United States of America	15/597425	10,458,409	Copeland LP
Compressor Having Oil Allocation Member	United States of America	16/829,303	11,125,233	Copeland LP
Compressor Oil Management System	United States of America	17/279,047	N/A	Copeland LP
System For Remote Refrigeration Monitoring And Diagnostics	United States of America	10/061964	6892546	Copeland Cold Chain LP
System For Monitoring Optimal Equipment Operating Parameters	United States of America	10/286419	6889173	Copeland Cold Chain LP
System And Method For Monitoring A Condenser Of A Refrigeration System	United States of America	10/833,259	7,490,477	Copeland Cold Chain LP
System And Method For Monitoring A Compressor Of A Refrigeration System	United States of America	12/327,273	7,845,179	Copeland Cold Chain LP
Refrigerant Monitoring System And Method	United States of America	11/153796	7493773	Copeland Cold Chain LP
Condenser Fan Control System	United States of America	11/260877	8,051,668	Copeland Cold Chain LP
Dispatch Management Model	United States of America	11/214179	8150720	Copeland Cold Chain LP
Dispatch Management Model	United States of America	13/435543	8380556	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
Monitoring A Condenser In A Refrigeration System	United States of America	11/256659	7752854	Copeland Cold Chain LP
Monitoring Compressor Performance In A Refrigeration System	United States of America	11/256660	7596959	Copeland Cold Chain LP
Monitoring Refrigerant In A Refrigeration System	United States of America	11/256637	7752853	Copeland Cold Chain LP
Proofing A Refrigeration System Operating State	United States of America	11/256640	7665315	Copeland Cold Chain LP
Monitoring Refrigerant In A Refrigeration System	United States of America	11/256641	7,594,407	Copeland Cold Chain LP
Variable Speed Condenser Fan Control System	United States of America	11/827,411	7,845,183	Copeland Cold Chain LP
System And Method For Monitoring And Evaluating Equipment Operating Parameter Modifications	United States of America	12/789,562	8,473,106	Copeland Cold Chain LP
System And Method For Monitoring And Evaluating Equipment Operating Parameter Modifications	United States of America	13/908,625	8,761,908	Copeland Cold Chain LP
System And Method For Monitoring And Evaluating Equipment Operating Parameter Modifications	United States of America	14/310,196	9,395,711	Copeland Cold Chain LP
System And Method For Control Of A Transcritical Refrigeration System	United States of America	14/162792	9,625,183	Copeland Cold Chain LP
Menu And Firmware Management For Equipment	United States of America	14/712,473	10,067,482	Copeland Cold Chain LP
Object Detection For Equipment Control	United States of America	15/158,322	10,053,354	Copeland Cold Chain LP
Object Detection For Equipment Control	United States of America	16/046315	10,752,487	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
Energy Management For Refrigeration Systems	United States of America	15/197,121	10,240,836	Copeland Cold Chain LP
Energy Management For Refrigeration Systems	United States of America	15/819,046	10,775,085	Copeland Cold Chain LP
Energy Management For Refrigeration Systems	United States of America	17/019,738	N/A	Copeland Cold Chain LP
Maintenance And Diagnostics For Refrigeration Systems	United States of America	15/197,169	11,009,250	Copeland Cold Chain LP
Maintenance And Diagnostics For Refrigeration Systems	United States of America	15/819,742	10,371,406	Copeland Cold Chain LP
Dynamic Coefficient Of Performance Calculation For Refrigeration Systems	United States of America	15/961,323	10,345,038	Copeland Cold Chain LP
System And Method For Selectively De-Activating A Transmitter Mode Of A Cargo Monitoring Device	United States of America	16/113,466	10,390,323	Copeland Cold Chain LP
Flexible Sensor Label System	United States of America	16/420,758	N/A	Copeland Cold Chain LP
Systems And Methods For Smart Thermocouple Temperature Probe	United States of America	16/368,408	11,274,973	Copeland Cold Chain LP
Systems And Methods For Smart Thermocouple Temperature Probe	United States of America	17/585,659	N/A	Copeland Cold Chain LP
Systems And Methods For Optical Detection Of Refrigeration System Abnormalities	United States of America	16/394,314	11,085,683	Copeland Cold Chain LP
Floating Evaporator Saturated Suction Temperature Systems And Methods	United States of America	17/031,980	N/A	Copeland Cold Chain LP
Floating Evaporator Saturated Suction Temperature Systems And Methods	United States of America	17/846,766	N/A	Copeland Cold Chain LP

Title	Country	Application Number	Patent Number	Owner
Refrigeration Control	United States of America	10/195839	6672090	Copeland LP
Cooling System With Isolation Valve	United States of America	10/752309	6931867	Copeland LP
Vapor Injection System	United States of America	10/875064	7299649	Copeland LP
Scroll Machine With Seal	United States of America	12/017217	7568897	Copeland LP
Compressor With Fluid Injection System	United States of America	11/494270	7815423	Copeland LP
Compressor With Vapor Injection System	United States of America	13/237154	8695369	Copeland LP
Compressor Capacity Modulation System And Method	United States of America	11/256636	7584625	Copeland LP
Scroll Machine Having Improved Discharge Valve Assembly	United States of America	11/939886	8052406	Copeland LP
Compressor Having A Shutdown Valve	United States of America	12/207089	7959421	Copeland LP
Compressor Having A Shutdown Valve	United States of America	13/155021	8668478	Copeland LP
Compressor With Retaining Mechanism	United States of America	12/207,072	8,356,987	Copeland LP
Compressor Having Shell With Alignment Features	United States of America	12/207036	7914268	Copeland LP
Compressor Having Shell With Alignment Features	United States of America	13/034803	8793870	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Sealing Arrangement	United States of America	12/207051	8043078	Copeland LP
Capacity Modulated Scroll Compressor System And Method	United States of America	12/121856	8485789	Copeland LP
Three-Phase Detection Module	United States of America	12/270139	8107204	Copeland LP
Three-Phase Detection Module	United States of America	13/361167	8724275	Copeland LP
Three-Phase Detection Module	United States of America	14/275239	9557389	Copeland LP
Condensing Unit Having Fluid Injection	United States of America	12/705030	8,539,785	Copeland LP
Condensing Unit Having Fluid Injection	United States of America	14/025889	9494356	Copeland LP
Compressor Having Bearing Assembly	United States of America	12/713805	8419393	Copeland LP
Compressor And Oil-Cooling System	United States of America	12/776773	8590324	Copeland LP
Compressor And Oil-Cooling System	United States of America	14/082697	9316227	Copeland LP
Thrust Plate For A Horizontal Scroll Compressor And A Horizontal Scroll Compressor Having The Same	United States of America	13/996881	9004887	Copeland LP
Compressor Having Drive Shaft With Fluid Passages	United States of America	13/445611	9217434	Copeland LP
Radially Compliant Scroll Compressor	United States of America	14/072920	9377022	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Scroll Compressor With Oil Management System	United States of America	14/413204	10036388	Copeland LP
Scroll Compressor With Oil Management System	United States of America	16/047675	10,605,243	Copeland LP
COMPRESSOR HAVING A DUAL SLIDE VALVE ASSEMBLY	United States of America	11/677868	7891955	Copeland Industrial LP
COMPRESSOR HAVING A HIGH PRESSURE SLIDE VALVE ASSEMBLY	United States of America	12/054,527	8,202,060	Copeland Industrial LP
SINGLE SCREW COMPRESSOR WITH HIGH OUTPUT	United States of America	13/673,533	9057373	Copeland Industrial LP
APPARATUS AND METHOD FOR ENHANCING COMPRESSOR EFFICIENCY	United States of America	14/032,753	9163634	Copeland Industrial LP
HIGH SUCTION PRESSURE SINGLE SCREW COMPRESSOR	United States of America	17/412446	N/A	Copeland Industrial LP
HIGH SUCTION PRESSURE SINGLE SCREW COMPRESSOR WITH THRUST BALANCING LOAD USING SHAFT SEAL PRESSURE AND RELATED METHODS	United States of America	16/331,909	11,136,978	Copeland Industrial LP
CASCADE SYSTEM FOR USE IN ECONOMIZER COMPRESSOR AND RELATED METHODS	United States of America	15/913,637	11,378,318	Copeland Industrial LP
CRANKCASE OIL SEPARATION FOR HIGH PRESSURE RECIPROCATING COMPRESSORS	United States of America	16/190,343	11,054,178	Copeland Industrial LP
3D-PRINTED OIL SEPARATION FOR RECIPROCATING COMPRESSORS	United States of America	17/471913	N/A	Copeland Industrial LP
DUAL CASCADE HEAT EXCHANGER REFRIGERATION SYSTEM AND RELATED METHOD OF OPERATION	United States of America	16/242,710	11,339,995	Copeland Industrial LP



Title	Country	Application Number	Patent Number	Owner
SEAL ASSEMBLY FOR HIGH PRESSURE SINGLE SCREW COMPRESSOR	United States of America	16/665,439	N/A	Copeland Industrial LP
FOIL BEARING AND DRIVESHAFT ASSEMBLIES AND COMPRESSOR INCLUDING SAME	United States of America	18/056,218	N/A	Copeland LP
BEARING AND UNLOADER ASSEMBLY FOR COMPRESSORS	United States of America	17/935,422	N/A	Copeland LP
SYSTEMS AND METHODS FOR QUALITY MONITORING OF PALLETS	United States of America	17/975,732	N/A	Copeland Cold Chain LP
Scroll Compressor with Switching Radial Compliancy	United States of America	18/175,147	N/A	Copeland LP
Loss Reducing Reversing Valve	United States of America	18/161,503	N/A	Copeland LP
Drive Assemblies and Compressors Including the Same	United States of America	18/186,281	N/A	Copeland LP
Condensing Unit Compressor Mounting	United States of America	18/093,555	N/A	Copeland LP
Compressor Modulation System With Multi-Way Valve	United States of America	17/980,798	N/A	Copeland LP
Climate Control Systems Having Ejector Cooling For Use With Moderate To High Glide Working Fluids And Methods For Operation Thereof	United States of America	17/989,271	N/A	Copeland LP
Compressor Having Floating Seal Assembly	United States of America	18/083,723	N/A	Copeland LP
Retrofit for Fan Control in Refrigeration Cases	United States of America	63/441,014	N/A	Copeland LP
Systems and Methods for a Refrigerant Sub-System for a Heating, Ventilation, and Air Conditioning System	United States of America	18/145,130	N/A	Copeland LP

Title	Country	Application Number	Patent Number	Owner
Compressor Having Lubrication System	United States of America	18/082,043	N/A	Copeland LP
Flexible Sensor Label System	United States of America	18/173,411	N/A	Copeland Cold Chain LP
Compressor With Funnel Assembly	United States of America	63/434,703	N/A	Copeland LP
Demand Defrost	United States of America	63/446,758	N/A	Copeland Cold Chain LP
Variable Inlet Guide Vane Apparatus Combined with Compressor End Cap	United States of America	18/186,273	N/A	Copeland LP
Refrigerant Charging Systems And Methods	United States of America	18/108,139	N/A	Copeland LP
Compressor And Valve Assembly	United States of America	18/115,355	N/A	Copeland LP
Co-Rotating Scroll Compressor With Oldham Couplings	United States of America	18/117,787	N/A	Copeland LP
Vapor Compression System With An Atomization Mechanism	United States of America	63/493,878	N/A	Copeland LP