05/31/2018 504939119

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4985865

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
DARREN DALE TREMELLING	09/28/2012
DEZHENG WU	09/28/2012
STEVEN CARL ENGLEBRETSON	09/28/2012
SIMONE E. MUSHI	09/28/2012
SE YOUNG YOON	09/28/2012
YUJING LU	09/28/2012

RECEIVING PARTY DATA

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PROPERTY NUMBERS Total: 1

Property Type	Number	
Application Number:	15994341	

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DATE SIGNED:	05/31/2018

PATENT REEL: 045953 FRAME: 0210 504939119

Total Attachments: 6 source=EXECUTED Assignment ABBI-116_22834434_1#page1.tif

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PATENT REEL: 045953 FRAME: 0211 US Application No.: 61/707,015 Attorney Docket No.: US-12014-SWH

ASSIGNMENT

This ASSIGNMENT, effective as of September 28, 2012, by Darren Dale Tremelling, Dezheng Wu, Steven Carl Englebretson, Simon E. Mushi, Se Young Yoon and Yujing Liu; and residing at 113 Canterstone Court, Cary, North Carolina 27518; Le Du Road 675-17-202, SongJiang District, Shanghai 201600, Peoples Republic of China; 6420 Daybrook Circle Apt. 103, Raleigh, North Carolina 27606; 4021 Falcon Street, Apt 211, San Diego, California 92103; 278 Peyton Court, Apt. 1, Charlottesville, Virginia 22903; and Fyrbaksvagen 10 Vasteras 72210, Sweden; respectively, (hereinafter referred to as the "Assignor"), have invented certain new and useful improvements described in the Application for Letters Patent of the United States entitled:

Rotors for Rotating Machines

which	i Applica	tion:			
(1)	\boxtimes	is a provisional application:			
	(a) (b)	having Serial No. 61/707,015, filed or to be filed with this Assignment; or	1 28-Sep-2012; o	r	
(2)	(a) (b)	is a non-provisional application: X having Serial No. 14/432,206 having an oath or declaration execution data.	ed on the same o	date as the executi	on date of this
invent		nd those execution dates are prior to th	ie filing of the	U.S. patent applic	ation for this
(3) Applic	ation(s)"	claims priority from	filed or		(the "Priority

For good and sufficient consideration, the receipt of which is hereby acknowledged, each Assignor agrees to assign, and hereby does assign, transfer and set over to ABB Research, Ltd. a corporation duly organized under the laws of Switzerland, and having a principal place of business at Affolternstrasse 44, CH-8050 Zurich, Switzerland, (hereinafter referred to as the Assignee) his or her entire right, title and interest in the invention or inventions as represented by the Application and any and all Priority Application(s) in the United States, its territories, dependencies and possessions, and for all other national jurisdictions and international entities that have the power to grant patents, wherever situated. The foregoing assignment includes, without limitation, all applications for patent which claim priority to and/or the benefit of the subject matter disclosed in the Application and any and all Priority Application(s), including any utility application and/or design application, as well as any continuation application, divisional application, continuation-in-part application, reissue application, reexamination application, patent interference proceeding, and any foreign national application and/or any application filed or to be filed under a patent treaty such as the International Convention for Protection of Industrial Property and/or the Patent Cooperation Treaty, and any Letters Patent which may be granted therefor

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US Application No.: 61/707,015 Attorney Docket No.: US-12014-SWH

in any jurisdiction.

Each Assignor agrees to execute all papers and documents and perform any act which maybe necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.

Each Assignor agrees to perform all affirmative acts which may be necessary to obtain a grant of a valid United States Patent to the Assignee.

Each Assignor agrees to and with the Assignee, its successors, legal representatives, and assigns that the Assignors will, whenever counsel of the Assignee, or the counsel of its successors, legal representatives, and assigns, shall advise that any proceeding in connection with said inventions or said applications for Letters Patent or Patents, or any proceeding in connection with Letters Patent or Patents for said inventions in any country, including interference proceedings, is lawful and desirable, or that any application claiming priority to said application, division, continuation, or continuation-in-part of any applications for Letters Patent or Patents, or any reissue or extension of any Letters Patent or Patents to be obtained thereon, is lawful and desirable, sign all papers and documents, take all lawful oaths, and do all acts necessary or required to be done for the procurement, maintenance, enforcement, and defense of Letters Patent or Patents for said inventions, without charge to the Assignee, its successors, legal representatives, and assigns, but at the cost and expense of the Assignee, its successors, legal representatives, and assigns.

Each Assignor hereby authorizes and requests the Director of the United States Patent and Trademark Office to issue any and all Letters Patent of the United States resulting from the Application or any divisions or continuing applications thereof to the Assignee of the entire interest in the inventions and hereby covenant that he or she has the full right to convey the entire interest herein assigned, and that he or she has not executed and will not execute, any agreement in conflict herewith.

Each Assignor hereby authorizes and requests the attorneys of the ABB Inc. Intellectual Property Law Department located in Wickliffe, OH to insert in this Assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office or with the rules of any other national or international Patent Office for recordation of this document or a true copy thereof.

Signature of Each Assignor Appears On The Following Page(s)

2.

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Signature of Assignor:	Dezheng Wu
Signature of Assignor:	Stand (and Consplicate) Steven Carl Englebretson
Signature of Assignor:	Simon E. Mushi
Signature of Assignor:	Se Young Yoon
iignature of Assignor	

Yujing Liu

US Application No.: 61/707,015 Attorney Docket No.: US-12014-SWH US Application No.: 61/707,015 Attorney Docket No.: US-12014-5WH

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Rotors for Rotating Machines

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(1)	×	Is a provisional application:
	(a) (b)	having Serial No. 61/707,015, filed on 28-Sep-2012; or to be filed with this Assignment; or
(2)	[X] (a) (b)	is a non-provisional application: X having Serial No.
Assigi Inven		and those execution dates are prior to the filing of the U.S. patent application for th
(3) Applic	cation(s)	claims priority from filed on (the "Priorit")

For good and sufficient consideration, the receipt of which is hereby acknowledged, each Assignor agrees to assign, and hereby does assign, transfer and set over to ABB Research, Ltd. a corporation duly organized under the laws of Switzerland, and having a principal place of business at Affolternstrasse 44, CH-8050 Zurich, Switzerland, (hereinafter referred to as the Assignee) his or her entire right, title and interest in the invention or inventions as represented by the Application and any and all Priority Application(s) in the United States, its territories, dependencies and possessions, and for all other national jurisdictions and international entities that have the power to grant patents, wherever situated. The foregoing assignment includes, without limitation, all applications for patent which claim priority to and/or the benefit of the subject matter disclosed in the Application and any and all Priority Application(s), including any utility application and/or design application, as well as any continuation application, divisional application, continuation-in-part application, reissue application, reexamination application, patent interference proceeding, and any foreign national application and/or any application filed or to be filed under a patent treaty such as the International Convention for Protection of Industrial Property and/or the Patent Cooperation Treaty, and any Letters Patent which may be granted therefor

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US Application No.: 61/707,015 Attorney Docket No.: US-12014-5WH

in any jurisdiction.

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Each Assignor agrees to and with the Assignee, its successors, legal representatives, and assigns that the Assignors will, whenever counsel of the Assignee, or the counsel of its successors, legal representatives, and assigns, shall advise that any proceeding in connection with said inventions or said applications for Letters Patent or Patents, or any proceeding in connection with Letters Patent or Patents for said inventions in any country, including interference proceedings, is lawful and desirable, or that any application claiming priority to said application, division, continuation, or continuation in part of any applications for Letters Patent or Patents, or any reissue or extension of any Letters Patent or Patents to be obtained thereon, is lawful and desirable, sign all papers and documents, take all lawful oaths, and do all acts necessary or required to be done for the procurement, maintenance, enforcement, and defense of Letters Patent or Patents for said inventions, without charge to the Assignee, its successors, legal representatives, and assigns, but at the cost and expense of the Assignee, its successors, legal representatives, and assigns.

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Signature of Each Assignor Appears On The Following Page(s)

2

US Application No.: Attorney Docket No.:	
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Signature of Assignor:	Simon E. Mushi
Signature of Assignor:	50 X000/8 (500)
	and the comment