PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2

EPAS ID: PAT4571257

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
MICHAEL HAAS	04/03/2017
ADAM W. KIDD	04/03/2017
JEFFREY DAVID SELWYN DIWAKAR ABRAHAM	04/03/2017

RECEIVING PARTY DATA

Name:	CUMMINS INC.
Street Address:	500 JACKSON STREET
City:	COLUMBUS
State/Country:	INDIANA
Postal Code:	47201

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15456810

CORRESPONDENCE DATA

Fax Number: (202)672-5399

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent

using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 202-672-5300

Email: IPDocketing@foley.com, bgesiakowski@foley.com DAVID M. GOLUB - FOLEY & LARDNER, LLP **Correspondent Name:**

Address Line 1: 3000 K STREET, NW

Address Line 2: SUITE 600

Address Line 4: WASHINGTON, D.C. 20007

ATTORNEY DOCKET NUMBER:	106389-3967
NAME OF SUBMITTER:	DAVID M. GOLUB
SIGNATURE:	/David M. Golub/
DATE SIGNED:	08/29/2017

Total Attachments: 5

source=106389-3967 Executed Assignment#page1.tif source=106389-3967 Executed Assignment#page2.tif source=106389-3967 Executed Assignment#page3.tif

PATENT REEL: 043437 FRAME: 0977 504524551

source=106389-3967 Executed Assignment#page4.tif source=106389-3967 Executed Assignment#page5.tif

PATENT REEL: 043437 FRAME: 0978

ASSIGNMENT - WORLDWIDE

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, each undersigned inventor (hereinafter referred to singly and collectively as "ASSIGNOR") has sold, assigned, and transferred, and by these presents hereby sells, assigns, and transfers, unto

Cummins Inc. 500 Jackson Street Columbus, Indiana 47201

(hereinafter referred to as "ASSIGNEE") its successors and assigns, the full and exclusive right, title and interest for the United States, its territories and possessions, and all foreign countries in and to this invention relating to

SYSTEMS AND METHODS FOR CONTROLLING AN ENGINE BASED ON AFTERTREATMENT SYSTEM CHARACTERISTICS

check one	[] executed concurrently herewith,	
	[] executed on	~

as set forth in this United States Patent Application

as well as in and to (a) all improvements and modifications of the above-identified invention or inventions, (b) the above-identified application and all other applications for Letters Patent of the United States and countries foreign thereto for above-identified invention or inventions and all improvements and modifications thereof, (c) all Letters Patent which may issue from said applications in the United States and countries foreign thereto, (d) all divisions, continuations, reissues, and extensions of said applications and Letters Patent, and (e) the right to claim for any of said applications the full benefits and priority rights under the Patent Cooperation Treaty, the Paris Convention and any other international agreement; such right, title, and interest to be held and enjoyed by ASSIGNEE, its successors and assigns, to the full end of the term or terms for which any and all such Letters Patent may be granted as fully and entirely as would have been held and enjoyed by ASSIGNOR had this Assignment not been made.

ASSIGNOR HEREBY AUTHORIZES ASSIGNEE to file patent applications in any or all countries on the above-identified invention or inventions in the name of the undersigned or in the name of ASSIGNEE or otherwise as ASSIGNEE may deem advisable under the International Convention or otherwise.

ASSIGNOR HEREBY AUTHORIZES AND REQUESTS the Commissioner of Patents and Trademarks to issue said Letters Patent to ASSIGNEE as assignee of the entire interest, for the sole use and benefit of ASSIGNEE, its successors and assigns.

Page 1 of 5

ASSIGNOR HEREBY AGREES (a) to communicate to ASSIGNEE, its successors and assigns, or their representative or agents, all facts and information known or available to ASSIGNOR respecting said invention or inventions, improvements, and modifications including evidence for interference, reexamination, reissue, opposition, revocation, extension, or infringement purposes or other legal, judicial, or administrative proceedings, whenever requested by ASSIGNEE; (b) to testify in person or by affidavit as required by ASSIGNEE, its successors and assigns, in any such proceeding in the United States or a country foreign thereto; (c) to execute and deliver, upon request by ASSIGNEE, all lawful papers including, but not limited to, original, divisional, continuation, and reissue applications, renewals, assignments, powers of attorney, oaths, affidavits, and declarations, depositions; and (d) to provide all reasonable assistance to ASSIGNEE, its successors and assigns, in obtaining and enforcing proper title in and protection for said invention or inventions, improvements, and modifications under the intellectual property laws of the United States and countries foreign thereto.

ASSIGNOR HEREBY REPRESENTS AND WARRANTS that ASSIGNOR has the full and unencumbered right to sell, assign, and transfer the interests sold, assigned, and transferred herein, and that ASSIGNOR has not executed and will not execute any document or instrument in conflict herewith.

ASSIGNOR HEREBY GRANTS to the law firm of Foley & Lardner LLP the power and authority to insert in this Assignment any further identification which may be necessary or desirable to comply with the rules of the U.S. Patent and Trademark Office for recordation of this Assignment.

ASSIGNOR UNDERSTANDS AND AGREES that the attorneys and agents of the law firm of Foley & Lardner LLP do not personally represent ASSIGNOR OR ASSIGNOR's legal interests, but instead represent the interests of ASSIGNEE; since said attorneys and agents cannot provide legal advice to ASSIGNOR with respect to this Assignment, ASSIGNOR acknowledges its right to seek its own independent legal counsel.

Executed this 3 th day of April 2017.
Michael Hass
MICHAEL HAAS
State of
On April 3, 2017, before me, TOBY REECE JOHNSON, NOTTARY LEBLIC, Date Here insert Name and Title of the Officer (Notary Public)
personally appeared MICHAEL HAAS Name(s) of Signer(s)
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/their executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.
I certify under PENALTY OF PERJURY that the foregoing paragraph is true and correct.
WITNESS my Hand and of Freight seed of the
Signature of Nothry Public
TOBY REECE JOHNSON Notary Public - Seal State of Indiana Bartholomew County My Commission Expires Sep 10, 2022

Executed this 3 day of April	, 20 <u>{7</u>
	adam W. Kalal
	ATS AS ASSESSED.
State of <u>INDIANA</u>) County of <u>BARTHOLOFIEW</u>)	
On <i>April 3, 2017</i> , before me,	TOBY REECE TOHNSON, NOTARY PUBLIC, Here insert Name and Title of the Officer (Notary Public)
Date	Here insert Name and Title of the Officer (Notary Public)
to the within instrument and acknowledged to me tha	ry evidence to be the person(s) whose name(s) is/are subscribed at he/she/their executed the same in his/her/their authorized the instrument the person(s), or the entity upon behalf of
I certify under PENALTY OF PERJURY th	nat the foregoing paragraph is true and correct.
WITNESS my hand and official seal. Signature Signature of Notary Public	TOBY REECE JOHNSON Notary Public - Seal State of Indiana Bartholomew County My Commission Expires Sep 10, 2022
Place Notary Seal Above Spanish to state young wordened at	

Executed this 63 day of APRIL , 2017.	
	4
JEFI	FREY DAVID SELWYN DIWAKAR ABRAHAM
State of $\overline{BARTHOLOMEW}$ County of $\overline{BARTHOLOMEW}$	
On APKIL 3, 2017, before me, TOBY K Date Here inser	EECE TOHNSON, NOTARY Public Name and Title of the Officer (Notary Public)
personally appeared <u>JEFFREY DAVID SELWYN DI</u> Name(s) of Signer(s)	WAKAR ABRAHAM
who proved to me on the basis of satisfactory evidence to the within instrument and acknowledged to me that he/she/the capacity(ies), and that by his/her/their signature(s) on the instrument which the person(s) acted, executed the instrument.	eir executed the same in his/her/their authorized
I certify under PENALTY OF PERJURY that the foreg	oing paragraph is true and correct.
WITNESS my hand and official seal.	
Signature of Notary Public	TOBY REECE JOHNSON Notary Public - Seal State of Indiana Bartholomew County My Commission Expires Sep 10, 2022

Place Notary Seal Above

RECORDED: 08/29/2017