

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT7812406

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
CHANGSHENG C. SU	02/18/2019
A. CARL MCDONALD	02/18/2019
RAMAKRISHNA GOPAL DONTA	02/20/2019
NIKLAS M. SCHMIDT	02/20/2019
NATHAN A. OTTINGER	02/19/2019
Z. GERALD LIU	02/20/2019
JAMES C. CLERC	02/19/2019
YUJUN WANG	02/19/2019
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	CUMMINS EMISSION SOLUTIONS INC.
<b>Street Address:</b>	500 JACKSON STREET
<b>City:</b>	COLUMBUS
<b>State/Country:</b>	INDIANA
<b>Postal Code:</b>	47201
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	18075031
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<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>	2026725300
<b>Email:</b>	ipdocketing@foley.com, craposa@foley.com, SOGorman@foley.com
<b>Correspondent Name:</b>	FOLEY & LARDNER LLP
<b>Address Line 1:</b>	3000 K ST NW
<b>Address Line 4:</b>	WASHINGTON DC, D.C. 20007
<b>ATTORNEY DOCKET NUMBER:</b>	106389-7826
<b>NAME OF SUBMITTER:</b>	YUCHEN HUO
<b>SIGNATURE:</b>	/Yuchen Huo/

<b>DATE SIGNED:</b>	02/23/2023
<b>Total Attachments: 10</b> source=106389-7826-Executed-Assignment#page1.tif source=106389-7826-Executed-Assignment#page2.tif source=106389-7826-Executed-Assignment#page3.tif source=106389-7826-Executed-Assignment#page4.tif source=106389-7826-Executed-Assignment#page5.tif source=106389-7826-Executed-Assignment#page6.tif source=106389-7826-Executed-Assignment#page7.tif source=106389-7826-Executed-Assignment#page8.tif source=106389-7826-Executed-Assignment#page9.tif source=106389-7826-Executed-Assignment#page10.tif	

### 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 EMISSION SOLUTIONS INC.  
500 Jackson Street  
Columbus, IN 47201  
US

(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

#### METHOD AND APPARATUS TO ENHANCE FRACTIONAL EFFICIENCY OF DIESEL AND GASOLINE PARTICULATE FILTERS

as set forth in this PCT Patent Application

check one    ☐ executed concurrently herewith,  
                  ☐ executed on \_\_\_\_\_,  
                  ☒ Serial No. PCT/US2019/018163 Filed 2/15/2019

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.

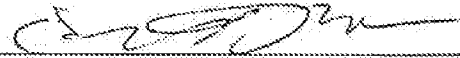
ASSIGNOR HEREBY AGREES (a) to communicate to ASSIGNEE, its successors and assigns, or their representative or agents, all facts and information known or available to ASSIGNOR respecting said invention or inventions, improvements, and modifications including evidence for interference, reexamination, reissue, 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 18th day of Feb, 2019.

  
CHANGSHENG C. SU

State of Indiana )  
County of Bartholomew

On February 18, 2019 before me, Carmelita Kay Kohl-Smith/Notary Public  
*Date Here insert Name and Title of the Officer (Notary Public)*

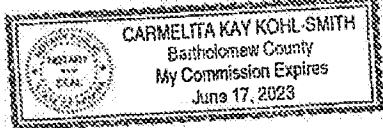
personally appeared CHANGSHENG C. SU  
Name(s) of Signer(s)

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 official seal.

Signature Carmelita Kay Kohl-Smith  
Signature of Notary Public



Place Notary Seal Above

Executed this 18 day of Feb., 2019.

A. Carl McDonald  
A. CARL MCDONALD

State of Indiana )  
County of Bartholomew

On February 18, 2019, before me, Carmelita Kay Kohl-Smith/Notary Public  
*Date Here insert Name and Title of the Officer (Notary Public)*

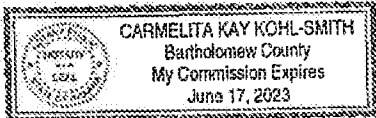
personally appeared A. CARL MCDONALD  
Name(s) of Signer(s)

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.

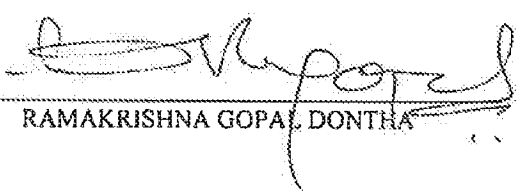
WITNESS my hand and official seal.

Signature Carmelita Kay Kohl-Smith  
Signature of Notary Public



Place Notary Seal Above

Executed this 20<sup>th</sup> day of Feb, 2019.

  
RAMAKRISHNA GOPAL DONTA

State of Indiana

County of Bartholomew

On February 20, 2019, before me, Carmelita Kay Kohl-Smith/Notary Public  
Date Here insert Name and Title of the Officer (Notary Public)

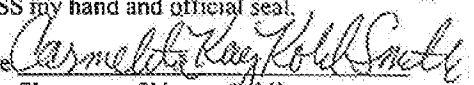
personally appeared RAMAKRISHNA GOPAL DONTA  
Name(s) of Signer(s)

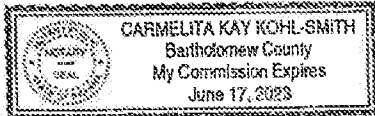
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/their executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), 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 official seal.

Signature

  
Signature of Notary Public



Place Notary Seal Above

Executed this 20th day of February, 2019

  
\_\_\_\_\_  
NIKLAS M. SCHMIDT

State of Wisconsin  
County of Dane

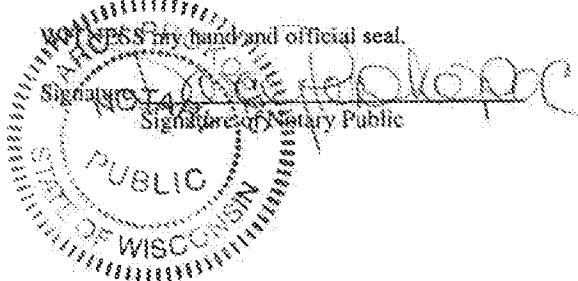
On 2/20/19, before me, Darcy Prokopenko, Admin Asst.  
Date Here insert Name and Title of the Officer (Notary Public)

personally appeared NIKLAS M. SCHMIDT  
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 official seal.



Place Notary Seal Above



Executed this 19<sup>th</sup> day of February, 2019



NATHAN A. OTTINGER

State of Wyoming  
County of Laramie

On February 19, 2019, before me, Katherine Mead, Notary  
Date Here insert Name and Title of the Officer (Notary Public)

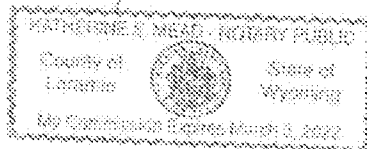
personally appeared NATHAN A. OTTINGER  
Name(s) of Signer(s)

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 official seal.

Signature Katherine Mead  
Signature of Notary Public



Place Notary Seal Above

Executed this 20<sup>th</sup> day of Feb, 2019.

Z. Gerald Liu

Z. GERALD LIU

State of Indiana  
County of Bartholomew

On February 20, 2019, before me, Carmelita Kay Kohl Smith / Notary Public  
Date Here insert Name and Title of the Officer (Notary Public)

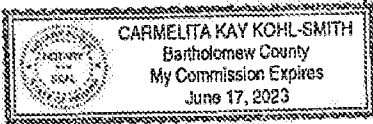
personally appeared Z. GERALD LIU  
Name(s) of Signer(s)

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 official seal.

Signature Carmelita Kay Kohl Smith  
Signature of Notary Public



Place Notary Seal Above

Executed this 19<sup>th</sup> day of February, 2019.

James C. Clerc  
JAMES C. CLERC

State of Indiana

County of Bartholomew

On February 19, 2019 before me, Carmelita Kay Kohl-Smith/Notary Public  
Date Here insert Name and Title of the Officer (Notary Public)

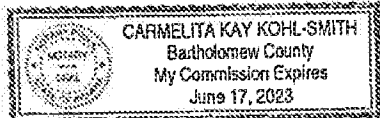
personally appeared JAMES C. CLERC  
Name(s) of Signer(s)

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.

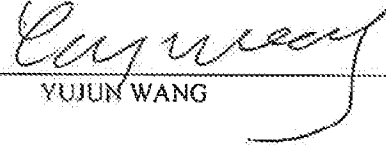
WITNESS my hand and official seal.

Signature Carmelita Kay Kohl-Smith  
Signature of Notary Public



Place Notary Seal Above

Executed this 19 day of February 2019

  
YUJUN WANG

State of Indiana  
County of Bartholomew

On February 19, 2019 before me, Carmelita Kay Kohl-Smith/Notary Public  
Date Here insert Name and Title of the Officer (Notary Public)

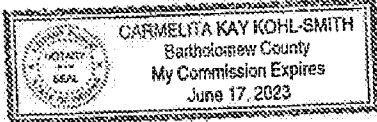
personally appeared YUJUN WANG  
Name(s) of Signer(s)

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 official seal.

Signature Carmelita Kay Kohl-Smith  
Signature of Notary Public



Place Notary Seal Above