

**PATENT ASSIGNMENT**

Electronic Version v1.1  
 Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT										
NATURE OF CONVEYANCE:	ASSIGNMENT										
<b>CONVEYING PARTY DATA</b>											
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Hoisan Kim</td> <td>05/07/2010</td> </tr> <tr> <td>Mark Sommars</td> <td>05/07/2010</td> </tr> <tr> <td>Martin Willi</td> <td>05/07/2010</td> </tr> <tr> <td>Scott Fiveland</td> <td>06/02/2010</td> </tr> </tbody> </table>		Name	Execution Date	Hoisan Kim	05/07/2010	Mark Sommars	05/07/2010	Martin Willi	05/07/2010	Scott Fiveland	06/02/2010
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Hoisan Kim	05/07/2010										
Mark Sommars	05/07/2010										
Martin Willi	05/07/2010										
Scott Fiveland	06/02/2010										
<b>RECEIVING PARTY DATA</b>											
Name:	Caterpillar Inc.										
Street Address:	100 NE Adams Street										
City:	Peoria										
State/Country:	ILLINOIS										
Postal Code:	61629-9510										
<b>PROPERTY NUMBERS Total: 1</b>											
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>12795166</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	12795166						
Property Type	Number										
Application Number:	12795166										
<b>CORRESPONDENCE DATA</b>											
Fax Number:	(309)675-1236										
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>											
Phone:	309-675-5140										
Email:	US_Docket_Clerk@cat.com										
Correspondent Name:	CATERPILLAR c/o LIELL, MCNEIL & HARPER I										
Address Line 1:	AH9510										
Address Line 2:	100 N.E. Adams										
Address Line 4:	Peoria, ILLINOIS 61629-9510										
ATTORNEY DOCKET NUMBER:	09-457										
NAME OF SUBMITTER:	Jonathan F. Yates										
Total Attachments: 4											

OP \$40.00 12795166

**501197151**

**PATENT  
 REEL: 024495 FRAME: 0621**

source=09-457-Assign-Kim#page1.tif  
source=09-457-Assgn-Sommars#page1.tif  
source=09-457-Assgn-Willi#page1.tif  
source=09-457-Assgn-Fiveland#page1.tif

ASSIGNMENT

WHEREAS, Hoisan Kim, residing at Dunlap, Illinois, hereinafter referred to as ASSIGNOR has invented together with Mark Sommars, Scott Fiveland and Martin Willi a new and useful

INTERNAL COMBUSTION ENGINE, COMBUSTION CHARGE FORMATION SYSTEM, AND METHOD

for which ASSIGNOR is about to file an international application and/or make application for Letters Patent in the United States of America, such invention being described and identified by said application having an attached International Application Request and/or an attached Declaration and Power of Attorney executed by ASSIGNOR on May 7, 2010; and

WHEREAS, Caterpillar Inc., a Delaware corporation having a place of business at Peoria, State of Illinois, United States of America, hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to said invention and any Letters Patent granted thereon by the United States of America and any foreign country;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and for other good and valuable consideration received by ASSIGNOR from ASSIGNEE, the receipt of which is hereby acknowledged by ASSIGNOR;


1. ASSIGNOR hereby sells, assigns, transfers and conveys unto ASSIGNEE the entire right, title and interest in and to said invention, any application therefor, and any Letters Patent granted thereon by the United States of America and any foreign country, including any continuing application, reissue or extension thereof, together with the right to file applications and obtain patents for said invention in any foreign country, and covenant that ASSIGNOR has the full right to do so.

2. At the request and expense of ASSIGNEE, ASSIGNOR agrees to communicate to ASSIGNEE any facts known respecting said invention, to execute all papers necessary to file any application on said invention necessary or desirable to aid ASSIGNEE in obtaining and enforcing proper protection for said invention in the United States of America and any foreign country.

3. ASSIGNOR hereby authorizes and requests the COMMISSIONER OF PATENTS AND TRADEMARKS to issue the United States Letters Patent on said invention, when granted, to Caterpillar Inc.

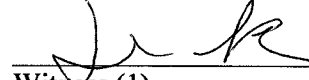
4. This assignment shall inure to the benefit of ASSIGNEE, its successors, assigns and other legal representatives, and shall be binding upon ASSIGNOR, ASSIGNOR'S heirs and legal representatives.

IN TESTIMONY WHEREOF, ASSIGNOR has executed this instrument.

  
\_\_\_\_\_  
HOISAN KIM

05/07/2010  
\_\_\_\_\_  
Date

IN WITNESS OF the execution hereof by HOISAN KIM we have hereunto set our hands.

  
\_\_\_\_\_  
Witness (1)  
Date 05/07/2010  
Address: 2302 W Riviera Dr  
Peoria, IL 61614

Xiangdong Ding (JFA)  
\_\_\_\_\_  
Witness (2)  
Date 5/7/2010  
Address: 6811 N Terra Vista Dr Apt 405  
Peoria, IL 61614

ASSIGNMENT

WHEREAS, Mark Sommars, residing at Sparland, Illinois, hereinafter referred to as ASSIGNOR has invented together with Scott Fiveland, Martin Willi and Hoisan Kim a new and useful

INTERNAL COMBUSTION ENGINE, COMBUSTION CHARGE FORMATION SYSTEM, AND METHOD

for which ASSIGNOR is about to file an international application and/or make application for Letters Patent in the United States of America, such invention being described and identified by said application having an attached International Application Request and/or an attached Declaration and Power of Attorney executed by ASSIGNOR on 5/7/2010; and

WHEREAS, Caterpillar Inc., a Delaware corporation having a place of business at Peoria, State of Illinois, United States of America, hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to said invention and any Letters Patent granted thereon by the United States of America and any foreign country;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and for other good and valuable consideration received by ASSIGNOR from ASSIGNEE, the receipt of which is hereby acknowledged by ASSIGNOR;

1. ASSIGNOR hereby sells, assigns, transfers and conveys unto ASSIGNEE the entire right, title and interest in and to said invention, any application therefor, and any Letters Patent granted thereon by the United States of America and any foreign country, including any continuing application, reissue or extension thereof, together with the right to file applications and obtain patents for said invention in any foreign country, and covenant that ASSIGNOR has the full right to do so.

2. At the request and expense of ASSIGNEE, ASSIGNOR agrees to communicate to ASSIGNEE any facts known respecting said invention, to execute all papers necessary to file any application on said invention necessary or desirable to aid ASSIGNEE in obtaining and enforcing proper protection for said invention in the United States of America and any foreign country.

3. ASSIGNOR hereby authorizes and requests the COMMISSIONER OF PATENTS AND TRADEMARKS to issue the United States Letters Patent on said invention, when granted, to Caterpillar Inc.

4. This assignment shall inure to the benefit of ASSIGNEE, its successors, assigns and other legal representatives, and shall be binding upon ASSIGNOR, ASSIGNOR'S heirs and legal representatives.

IN TESTIMONY WHEREOF, ASSIGNOR has executed this instrument.

Mark Sommars  
MARK SOMMARS

5/7/2010  
Date

IN WITNESS OF the execution hereof by MARK SOMMARS we have hereunto set our hands.

Xiangdong Ding (JAL) 5/7/2010  
Witness (1) Date  
Address: 6211 N Terra Vista Dr  
Apt 405, Peoria IL  
61614

Karhan Liu 5/7/2010  
Witness (2) Date  
Address: 2302 W Riviera Dr  
Peoria, IL 61614

ASSIGNMENT

WHEREAS, Martin Willi, residing at Dunlap, Illinois, hereinafter referred to as ASSIGNOR has invented together with Hoisan Kim, Mark Sommars and Scott Fiveland a new and useful

INTERNAL COMBUSTION ENGINE, COMBUSTION CHARGE FORMATION SYSTEM, AND METHOD

for which ASSIGNOR is about to file an international application and/or make application for Letters Patent in the United States of America, such invention being described and identified by said application having an attached International Application Request and/or an attached Declaration and Power of Attorney executed by ASSIGNOR on May 7, 2010; and

WHEREAS, Caterpillar Inc., a Delaware corporation having a place of business at Peoria, State of Illinois, United States of America, hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to said invention and any Letters Patent granted thereon by the United States of America and any foreign country;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and for other good and valuable consideration received by ASSIGNOR from ASSIGNEE, the receipt of which is hereby acknowledged by ASSIGNOR;

1. ASSIGNOR hereby sells, assigns, transfers and conveys unto ASSIGNEE the entire right, title and interest in and to said invention, any application therefor, and any Letters Patent granted thereon by the United States of America and any foreign country, including any continuing application, reissue or extension thereof, together with the right to file applications and obtain patents for said invention in any foreign country, and covenant that ASSIGNOR has the full right to do so.

2. At the request and expense of ASSIGNEE, ASSIGNOR agrees to communicate to ASSIGNEE any facts known respecting said invention, to execute all papers necessary to file any application on said invention necessary or desirable to aid ASSIGNEE in obtaining and enforcing proper protection for said invention in the United States of America and any foreign country.

3. ASSIGNOR hereby authorizes and requests the COMMISSIONER OF PATENTS AND TRADEMARKS to issue the United States Letters Patent on said invention, when granted, to Caterpillar Inc.

4. This assignment shall inure to the benefit of ASSIGNEE, its successors, assigns and other legal representatives, and shall be binding upon ASSIGNOR, ASSIGNOR'S heirs and legal representatives.

IN TESTIMONY WHEREOF, ASSIGNOR has executed this instrument.

Martin Willi  
MARTIN WILLI

5/7/10  
Date

IN WITNESS OF the execution hereof by MARTIN WILLI we have hereunto set our hands.

[Signature] 05/07/2010  
Witness (1) Date  
Address: 311 SW WATER ST STE # 311  
PEORIA IL 61602

[Signature] 05/07/2010  
Witness (2) Date  
Address: 1501 E GARDNER LN  
APT. 427  
PEORIA HEIGHTS, IL. 61616

ASSIGNMENT

WHEREAS, Scott Fiveland, residing at Metamora, Illinois, hereinafter referred to as ASSIGNOR has invented together with Martin Willi, Hoisan Kim and Mark Sommars a new and useful

INTERNAL COMBUSTION ENGINE, COMBUSTION CHARGE FORMATION SYSTEM, AND METHOD

for which ASSIGNOR is about to file an international application and/or make application for Letters Patent in the United States of America, such invention being described and identified by said application having an attached International Application Request and/or an attached Declaration and Power of Attorney executed by ASSIGNOR on 6/02/2010; and

WHEREAS, Caterpillar Inc., a Delaware corporation having a place of business at Peoria, State of Illinois, United States of America, hereinafter referred to as ASSIGNEE, is desirous of acquiring the entire right, title and interest in and to said invention and any Letters Patent granted thereon by the United States of America and any foreign country;

NOW, THEREFORE, in consideration of the sum of One Dollar (\$1.00) and for other good and valuable consideration received by ASSIGNOR from ASSIGNEE, the receipt of which is hereby acknowledged by ASSIGNOR;

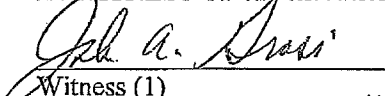
1. ASSIGNOR hereby sells, assigns, transfers and conveys unto ASSIGNEE the entire right, title and interest in and to said invention, any application therefor, and any Letters Patent granted thereon by the United States of America and any foreign country, including any continuing application, reissue or extension thereof, together with the right to file applications and obtain patents for said invention in any foreign country, and covenant that ASSIGNOR has the full right to do so.
2. At the request and expense of ASSIGNEE, ASSIGNOR agrees to communicate to ASSIGNEE any facts known respecting said invention, to execute all papers necessary to file any application on said invention necessary or desirable to aid ASSIGNEE in obtaining and enforcing proper protection for said invention in the United States of America and any foreign country.
3. ASSIGNOR hereby authorizes and requests the COMMISSIONER OF PATENTS AND TRADEMARKS to issue the United States Letters Patent on said invention, when granted, to Caterpillar Inc.
4. This assignment shall inure to the benefit of ASSIGNEE, its successors, assigns and other legal representatives, and shall be binding upon ASSIGNOR, ASSIGNOR'S heirs and legal representatives.

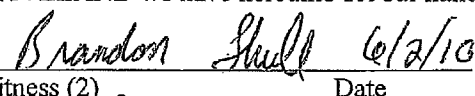
IN TESTIMONY WHEREOF, ASSIGNOR has executed this instrument.

  
\_\_\_\_\_  
SCOTT FIVELAND

6/02/2010  
\_\_\_\_\_  
Date

IN WITNESS OF the execution hereof by SCOTT FIVELAND we have hereunto set our hands.

  
\_\_\_\_\_  
Witness (1) Date: 6/2/10  
Address: 14914 Windsor  
Brimfield, IL 61517

  
\_\_\_\_\_  
Witness (2) Date: 6/2/10  
Address: 917 W Ravinwoods Rd  
Peoria, IL 61615

09-457