

胡浩然博士

个人教育，工作经历和业绩介绍

2020年4月

个人简介



胡浩然博士
首席科学技术官
潍柴动力股份有限公司

胡浩然博士毕业于华中科技大学，获得美国麻省理工学院(MIT)科学博士学位和俄亥俄州立大学工商管理硕士(MBA)学位。曾在美国伊顿公司、卡特彼勒公司、底特律柴油机公司、雅各布车辆公司等任首席科学家和高级工程经理职位。

2014年至2020年，任潍柴动力副总裁兼首席技术官，主导潍柴的新能源决策和技术开发，战略布局氢燃料电池和固态氧化物燃料电池技术等。成功开发具有自主知识产权的新能源并联混合动力总成系统；与英国锡里斯公司合作，开发出全球第一辆30KW，系统效率超过60%的固态氧化物燃料电池公交车动力总成系统；协调与推动和加拿大巴拉德公司合作，实现两万台氢燃料电池发动机的本地化生产，使潍柴在新一轮动能转换中占领技术的制高点。

先后荣获“国际汽车工程师学会Arch T Colwell 杰出论文奖”，和国际汽车工程师学会会士(SAE Fellow)，美国机械工程学会会士(ASME Fellow)，中组部“千人计划”特聘专家，山东省“泰山学者蓝色产业领军人才”等荣誉称号。共获得32项美国发明专利；2012年领衔撰写“先进商用车混合动力总成系统”一书，由国际汽车工程师学会(SAE)出版，成为2012年度最畅销书之一。

胡浩然博士相继担任国际SAE董事会董事(2015-2018)，英国锡里斯动力公司董事，潍柴-巴拉德新能源公司董事，潍柴北美公司董事，和潍柴(潍坊)新能源公司董事。

教育经历



**1982-1987: 美国麻省理工学院 (MIT)
机械工程科学博士 (ScD)**



**1987-1989: 美国俄亥俄州立大学 (OSU)
工商管理硕士(MBA)**

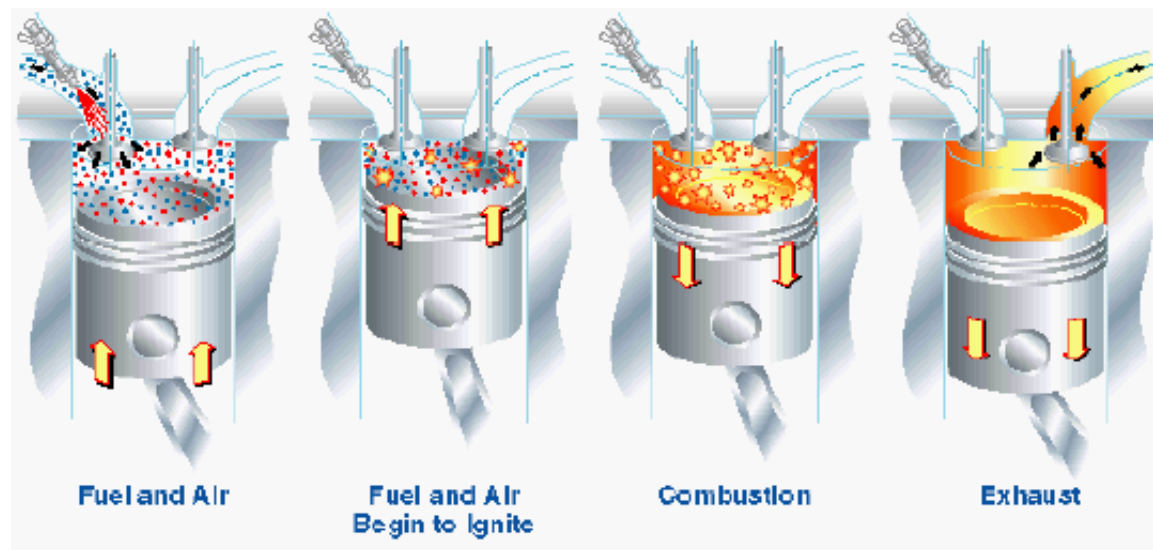


**1979-1982: 华中科技大学船舶内燃机工学硕士
1975-1978: 华中科技大学船舶内燃机毕业**

工作经历与科研成果

1982-1987: MIT, 研究助理, 博士后研究员

发动机燃烧系统研究: 建立发动机燃烧化学动力学模型。该模型已被广泛用于模拟发动机HCCI燃烧过程, 被称为“**Hu-Keck模型**”。

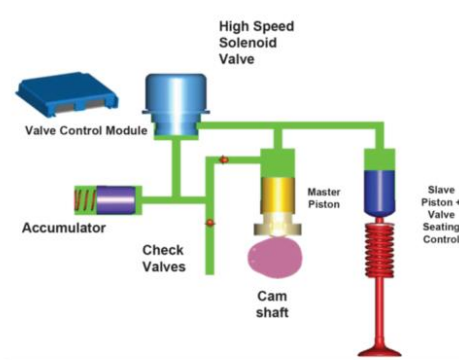


1. Haoran Hu and James Keck, "Autoignition of Adiabatically Compressed Combustible Gas Mixtures", SAE paper 872110, Toronto, Canada, Nov. 2-5, (1987).
2. James Keck and Haoran Hu "Explosions of adiabatically compressed gases in a constant volume bomb", [Symposium \(International\) on Combustion](#) 01/1988; 21(1):521-529.

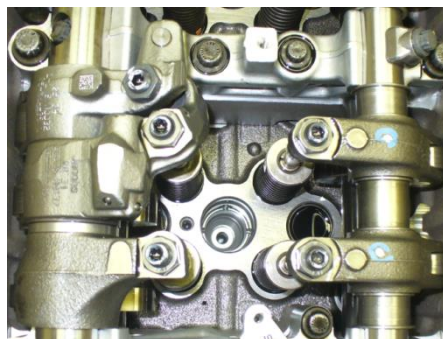
工作经历与科研成果

1990-1997：皆可博车辆系统公司 (Jacobs Vehicle Systems) 任高级工程师，部门经理，高级工程经理

发明“lost motion”可变阀门柴油机制动系统，**拥有12项美国发明专利，并成功产业化。**广泛应用于摇臂集成式制动系统，如戴姆勒 (Daimler) DD15等



“lost motion”工作原理



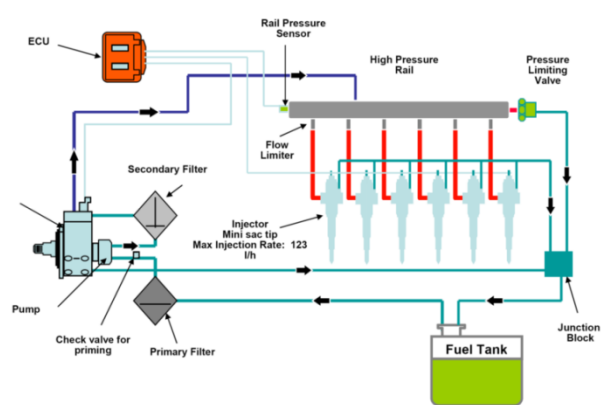
戴姆勒DD15制动器结构

1. Hu, H., “Electrically controlled timing adjustment for compression release engine brakes”, US patent # 5,379,737, January 10, 1995.
2. Haoran Hu, Joseph Vorih, and Mark Isreal, “The Integrated Lost Motion VVT Diesel Engine Retarder”, SAE 973180, November, 1997.

工作经历与科研成果

1997-2001: 底特律柴油机公司(Detroit Diesel Corp.) 任高级工程经理

领导多功能团队成功开发**全球第一款**路用**高压共轨**重型柴油发动机，
引领新一代高燃油经济性，低排放的柴油发动机技术



高压共轨燃油系统原理图



底特律S60柴油机

1. Kennedy, L., Tkac, R., and Hu, H., "High-pressure connector having an integrated flow limiter and filter," US patent #, January 11, 2005.
2. Hu, H., "Internal EGR cooler," US patent # 6,932,063, August 23, 2005

工作经历与科研成果

2001-2002: 美国卡特彼勒公司 (Caterpillar Inc.) 任工程经理

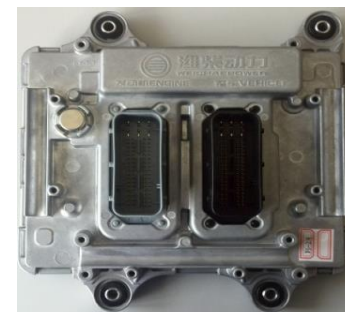
领导多功能团队开发燃油喷射系统，液压系统，排放控制系统等等。发明与开发电控液压泵系统，**获得2项发明专利，并成功产业化**



液压泵



液压阀



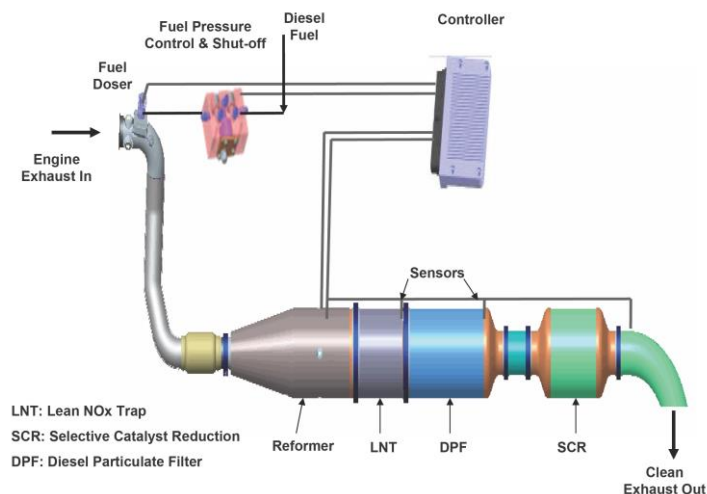
控制器

1. Hu, H., "Variable-delivery, fixed-displacement pump," US patent # 6,802,697, October 12, 2004.
2. Hu, H. et al., "Electrically driven hydraulic pump sleeve actuator," US patent # 6,718,950, April 13, 2004.
3. Hu, H., "Powering the World Green - An Eaton View Of Future Hydraulic Industry And Hydraulic Technologies," Bauma China 2010, Shanghai China, Nov. 20, 2010.

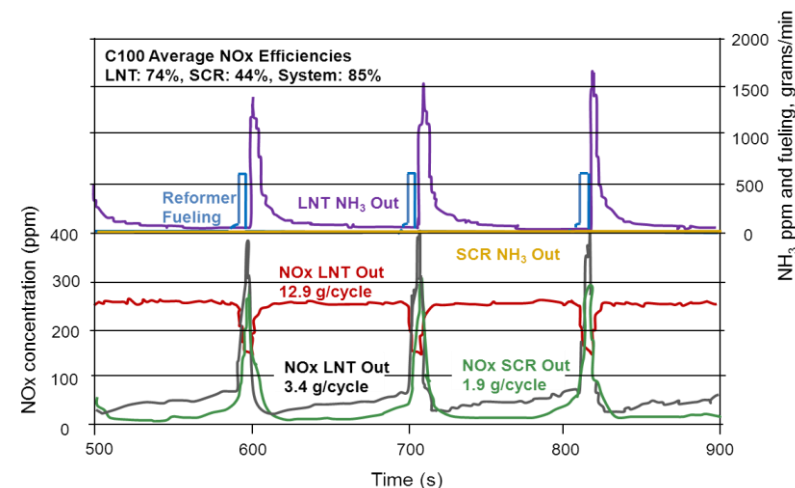
工作经历与科研成果

2002-2014年1月： 美国伊顿公司 (Eaton Corp.)， 首席科学家

发明并成功开发了非尿素LNT-SCR NO_x柴油机排放后处理系统。**获得7项美国发明专利。**此项技术目前被美国能源部定义为前沿技术



非尿素LNT-SCR排放后处理系统工作原理



试验结果

1. Haoran Hu, Johannes Reuter, John Yan, and James McCarthy, Jr, "Advanced NO_x Aftertreatment System And Controls For On-Highway Heavy Duty Diesel Engines" SAE 2006-01-3552, November 2006.
2. Haoran Hu, "Hybrid LNT/SCR NO_x Aftertreatment System for On-Highway Heavy-Duty Diesel Engines", 2006 Diesel Engine-Efficiency and Emissions Research (DEER) Conference, Detroit, MI, August, 2006.

工作经历与科研成果

2002-2014年1月： 美国伊顿公司 (Eaton Corp.), 首席科学家

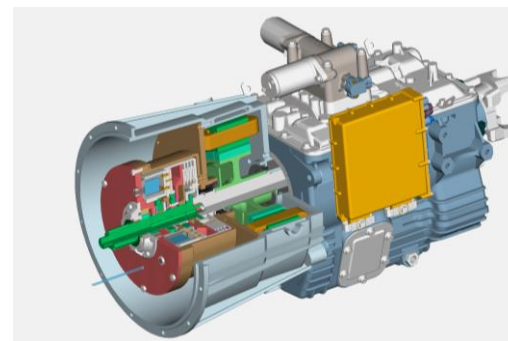
成功领导开发商用车混合动力总成系统, **获得4 项美国发明专利**, 以及在亚太市场的产业化。在2008 年和北汽福田一起交付给北京公交的**680 辆混合动力公交车**成为“十城千辆”的典型案例。



混合动力公交在海南琼海试验场测试



2013年, 与时任科技部长万钢, 美国能源部长朱棣文在美国华盛顿



开发全球领先的混合动力总成系统

1. Hu, H., et al., "Internal combustion engines for hybrid powertrain," US patent # 7,028,793, April 18, 2006.
2. Haoran Hu, Zhanjiang Zou, and Hanyun Yang;" On-board Measurements of City Buses with Hybrid Electric Powertrain, Conventional Diesel, and LPG Engines", SAE 2009-01-2719, November 2009.
3. Hu, H., et al.,"Comparative Studies of Drivetrain Systems for Electric Vehicles," SAE 2013-01-2467, October, 2013.

工作经历与科研成果

2002-2014年1月：美国伊顿公司 (Eaton Corp.)，首席科学家

2010年，**主导成立中国首个新能源产业联盟**。联盟成员包括：美国：IBM公司，AECOM公司，Eaton公司，中国：福田汽车，大洋电机，中信国安盟固利动力科技有限公司。揭开中国新能源产业联盟的序幕。



2010年9月2日，中国政府网站



2010年，联盟成员合影



2012年，联盟成员考察广东中山市的新能源公交车

工作经历与科研成果

2014-2020年： 潍柴动力副总裁兼首席技术官

成功布局**氢燃料电池、固态氧化物燃料电池，和液压CVT** 三大新能源核心技术



2017年11月与奥地利VDS公司
CEO签署液 CVT战略合作协议



2018年5月与英国锡里斯公司签署
SOFC战略合作协议



2018年8月与加拿大巴拉德公司
签署氢燃料电池战略合作协议

1. <http://www.cerespower.com/news/latest-news/strategic-partnership-with-weichai-power/1>.
2. <https://www.ballard.com/about-ballard/newsroom/news-releases/2018/08/29/ballard-signs-historic-strategic-collaboration-with-weichai-power-advancing-china-strategy>
3. <https://markets.businessinsider.com/news/stocks/weichai-power-signs-strategic-restructure-agreements-with-germany-s-aradex-and-austria-s-vds-to-accelerate-industrialization-of-new-business-landscape-1028817872>

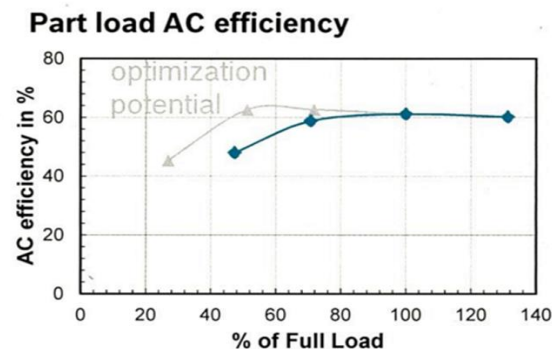
工作经历与科研成果

2014-2020年： 潍柴动力副总裁兼首席技术官

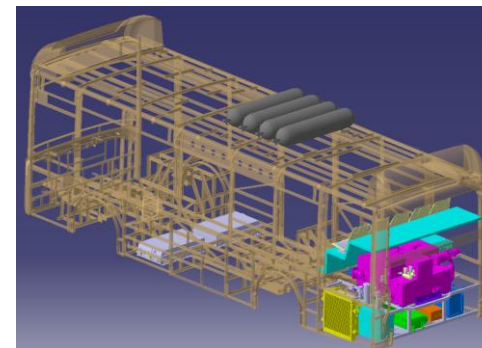
成功开发**全球第一辆**30KW、系统效率超过60%的固态氧化物燃料电池公交车动力总成系统



全球首辆SOFC公交车



测试系统效率



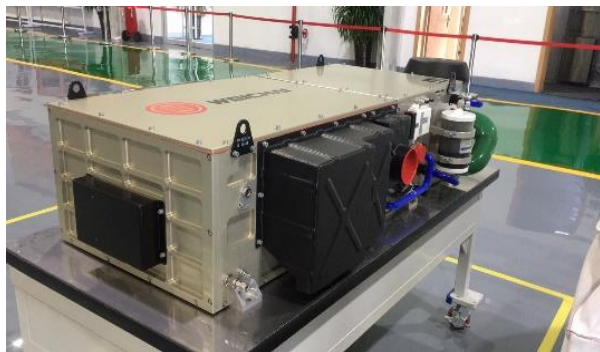
SOFC系统的整车布置

1. <https://fuelcellsworld.com/news/ceres-power-and-weichai-power-develop-first-prototype-fuel-cell-range-extender-for-chinese-bus-market/>

工作经历与科研成果

2014-2020年： 潍柴动力副总裁兼首席技术官

成为潍柴巴拉德氢能科技有限公司的董事。 积极领导与推动潍柴和巴拉德的合作， **实现2万台氢燃料电池发动机本地化生产。**



潍柴巴拉德生产的120KW模组



2020年，3月31日，潍柴2万台
氢燃料电池发动机工厂投产



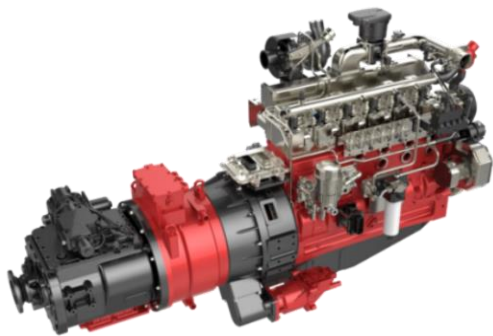
潍柴氢燃料电池公交车在潍
坊批量运营

1. <https://ngtnews.com/weichai-ballard-joint-venture-eyes-fuel-cell-production-in-2020>
2. <https://www.iyiou.com/p/125809.html>
3. <http://news.21-sun.com/detail/2019/08/201908241037281.shtml>

工作经历与科研成果

2014-2020年： 潍柴动力副总裁兼首席技术官

领导成功开发全新的陕汽（山东）轻卡平台，首辆轻卡已经于2019年5月17日下线，开发潍柴智能矿卡，和具有自主知识产权并联动力总成公交车，在滕州，潍坊运行。



自主知识产权并联动力总成，
成功运行30万公里



2019年5月17日第一辆轻卡
下线



成功开发无人驾驶智能矿卡

1. http://www.chinatruck.org/news/201905/15_83448.html
2. <http://www.cweekly.cn/2019/0912/267957.shtml>

工作经历与科研成果

2014-2020年： 潍柴动力副总裁兼首席技术官

成功主导“潍柴科技创新周”和“创新峰会”等活动，**营造良好创新生态。**



院士演讲



与嘉宾合影



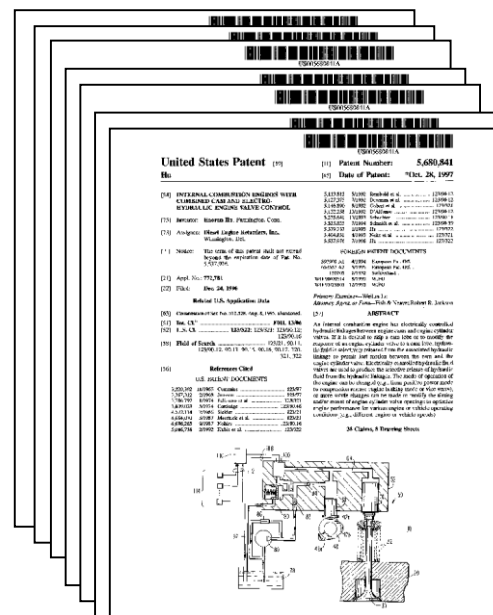
头脑风暴

已经成功举办三届。每届“潍柴创新周”活动有上千人次参加。头脑风暴活动结合市场的需求和潍柴面临的技术挑战，集思广议出近百个创新点，大大提升潍柴产品的竞争能力。

专利与论文论著

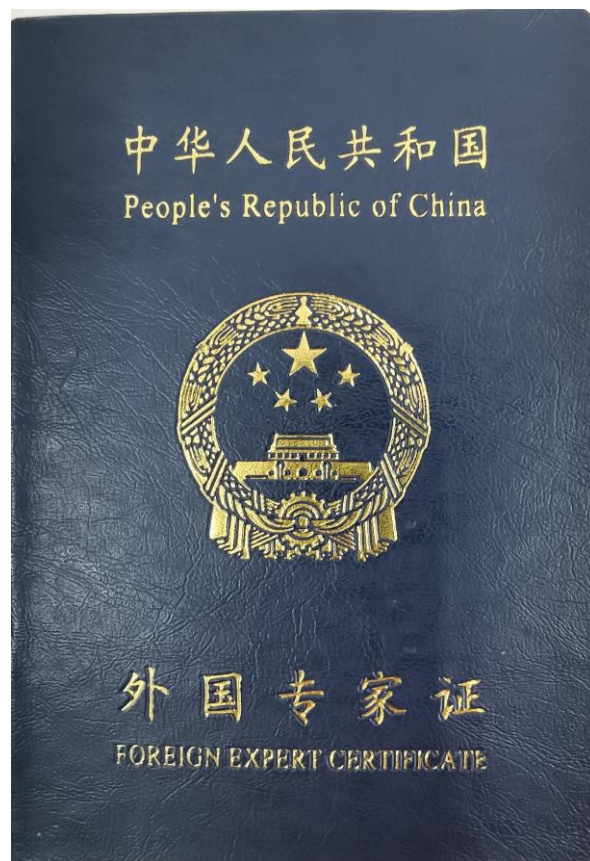
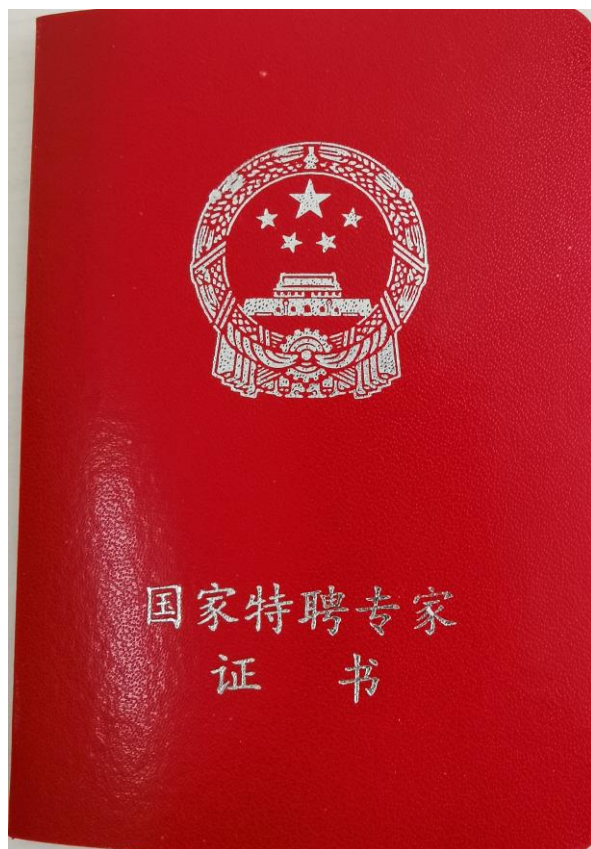
- 获得美国发明专利32项
- 主持和参与制定国际标准5项
- 发表论文论著30多篇

领銜撰写的“先进商用车混合动力总成系统”一书（共404页），由国际汽车工程师学会（SAE）出版，并成为SAE 2012年度最畅销书之一。



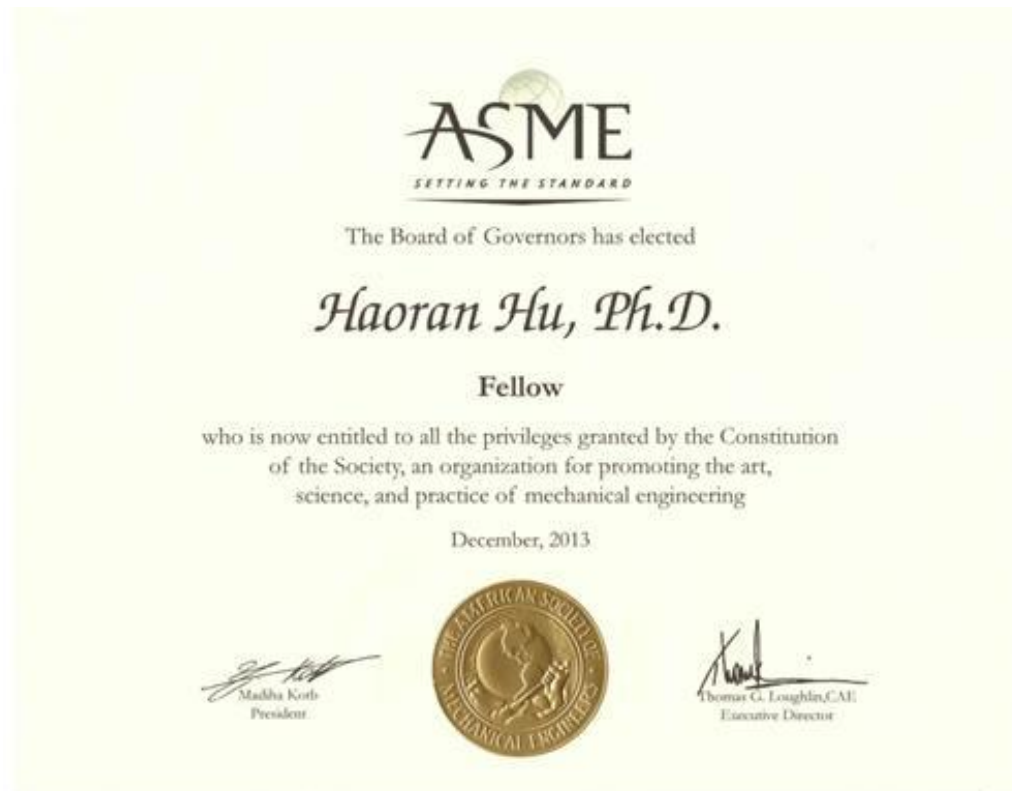
获得荣誉

中组部“千人计划”特聘专家，山东省“泰山学者蓝色产业领军人才”



获得荣誉

- 2012年获得汽车工程界最高荣誉称号——国际汽车工程师学会会士 (SAE Fellow)
- 2013年获得美国机械工程学会会士 (ASME Fellow)



获得荣誉

- 1999年获国际汽车工程师学会 SAE Arch T Colwell 杰出论文奖
- 2005年获得伊顿 “年度工程师奖”， Eaton “Engineer of the Year”



为了美好的明天，让我们共同努力！
Let' s work together for a better tomorrow!

Resume



Dr. Haoran Hu
Chief Science and
Technology Officer
Weichai Power Co., Ltd.

Dr. Haoran Hu graduated from Huazhong University of Science and Technology with an Master of Engineering degree, from the Massachusetts Institute of Technology (MIT) with a Doctor of Science (ScD) degree, and from Ohio State University with an MBA degree. He served as Chief Scientist and Senior Engineering Manager at Eaton Corp., Caterpillar, Detroit Diesel Corp., Jacob Vehicle System Company, etc. before returning to China in 2014.

From 2014 to 2020, Dr. Hu has been the Vice President and Chief Technology Officer at Weichai Power Company. He led the strategic planning, development , and commercialization of the new-energy technologies, and has successfully developed and commercialized new hybrid powertrain systems, the world's first 30KW solid oxide fuel cell bus powertrain system, and the local production of 20,000 hydrogen fuel cell engines.

He was elected as a SAE Fellow in 2012, an ASME Fellow in 2013, and awarded Arch T Colwell Award from the SAE International in 1999, and 32 U.S. patents. In 2012, he co-authored a book of "Advanced Commercial Vehicle Hybrid Powertrain System", published by SAE International, becoming one of the best-selling books of 2012.

Dr. Hu has been elected as a Board Director at the SAE International (2015-2018), Ceres Power PLC (since 2019), Weichai-Ballard New Energy Company (Since 2019), Weichai North America(2016-2020), and Weichai (Weifang) New Energy Company(since 2018).

US Patents in Powertrain Systems, Fuel Cells, and Emission Reduction Technologies

1. Hu, H., "Combined solar/thermal (CHP) heat and power for residential and industrial buildings," US patent # 8,921,683, December 30, 2014
2. Hu, H., "System and method of operating internal combustion engines at fuel rich low-temperature- combustion mode as an on-board reformer for solid oxide fuel cell-powered vehicles," US patent # 8,463,529, June 11, 2013.
3. Hu, H. et al., "Clean power system," US patent # 7,818,959, October 26, 2010.
4. Hu, H. et al., "Hybrid catalyst system for exhaust emissions reduction," US patent # 7,650,746, January 26, 2010.
5. Hu, H. et al., "Clean power system," US patent # 7,818,959, October 26, 2010., 7,648,785, January 19, 2010.
6. Hu, H. et al., "Exhaust aftertreatment system with transmission control," US patent # 7,628,009, December 8, 2009.
7. Yan, J, McCarthy, Jr., J.E. and Hu, H., "Valveless dual leg exhaust aftertreatment system," US patent # 7,334,400, February 26, 2008.
8. Hu, H., et al., "Thermal management of hybrid LNT/SCR aftertreatment during desulfation," US patent # 7,251,929, August 7, 2007.
9. Hu, H., et al., "Mechanism and method of combined fuel reformer and dosing system for exhaust aftertreatment and anti-idle SOFC APU," US patent # 7,213,397, May 8, 2007.
10. Hu, H., et al., "Hybrid catalyst system for exhaust emissions reduction," US patent # 7,213,395, May 8, 2007.
11. Hu, H., et al., "Narrow speed range diesel-powered engine system w/ aftertreatment devices," US patent # 7,063,642, June 20, 2006.
12. Hu, H., et al., "Integrated NOx and PM reduction devices for the treatment of emissions from internal combustion engines," US patent # 7,062,904, June 20, 2006.
13. Hu, H., et al., "Internal combustion engines for hybrid powertrain," US patent # 7,028,793, April 18, 2006.
14. Hu, H., "Internal EGR cooler," US patent # 6,932,063, August 23, 2005.
15. Kennedy. L., Tkac, R., and Hu, H., "High-pressure connector having an integrated flow limiter and filter," US patent #, January 11, 2005.

US Patents in Powertrain Systems, Fuel Cells, and Emission Reduction Technologies

16. Hu, H., "Variable-delivery, fixed-displacement pump," US patent # 6,802,697, October 12, 2004.
17. Hu, H. et al., "Electrically driven hydraulic pump sleeve actuator," US patent # 6,718,950, April 13, 2004.
18. Hu, H., "Internal combustion engine with combined cam and electro-hydraulic engine valve control," US patent # 6,244,257, June 12, 2001.
19. Hu, H., "Internal combustion engine with combined cam and electro-hydraulic engine valve control," US patent # 6,125,828, October 3, 2000.
20. Konopka, J. , Hu, H. and , Mercier, R., "Electronic controls for compression release engine brakes," US patent # 5,967,115, October 19, 1999.
21. Hu, H., "Internal combustion engines with combined cam and electro-hydraulic engine valve control," US patent # 5,839,453, November 24, 1998.
22. Vorih, J. and Hu, H., "System and method for controlling the amount of lost motion between an engine valve and a valve actuation means," US patent # 5,829,397, November 3, 1998.
23. Hu, H., "Four-cycle internal combustion engines with two-cycle compression release braking," US patent # 5,746,175, May 5, 1998.
24. Hu, H.. et al., "Electronic controls for compression release engine brakes," US patent # 5,718,199, February 17, 1998.
25. Hu, H., "Internal combustion engines with combined cam and electro-hydraulic engine valve control," US patent # 5,680,841, October 28, 1997.
26. Hu, H., "Four-cycle internal combustion engines with two-cycle compression release braking," US patent # 5,537,976, July 23, 1996.
27. Hu, H., et al., "Compression release engine brakes with electronically controlled, multi-coil hydraulic valves," US patent # 5,479,890, January 2, 1996.
28. Hu, H., "Electrically controlled timing adjustment for compression release engine brakes," US patent # 5,379,737, January 10, 1995.
29. Hu, H., "Compression release engine brake with selectively reduced engine exhaust noise," US patent # 5,357,926, October 25, 1994.
30. Hu, H., "Compression relief engine retarder clip valve," US patent # 5,201,290, April 13, 1993.
31. Hu, H., "Master piston for a compression release engine retarder," US patent # 5,165,375, November 24, 1992.
32. Hu, H., "Self-clipping slave piston," US patent # 5,161,501, November 10, 1992.

Selected Publications Including a Best Selling SAE Book

Selected Publication List:

1. Hongbin Wang, Xubin Song, Benjamin Saltsman, Haoran Hu "Comparative Studies of Drivetrain Systems for Electric Vehicles," SAE 2013-01-2467, October, 2013.
2. Haoran Hu, *Simon Baseley, and Rudolf M. Smaling*, "Advanced Hybrid Powertrains for Commercial Vehicles," SAE International, ISBN: 978-0-7680-3359-5, 404 Pages, 2012.
3. Haoran Hu, "Build a Sustainable Future Together," The Sixth International CSR Forum, Beijing, China June, 11, 2011.
4. Haoran Hu, "Achieving Sustainable Urbanization in China," Energy Evolution Symposium, Beijing China, June 9, 2011.
5. Haoran Hu, "Powering the World Green - An Eaton View Of Future Hydraulic Industry And Hydraulic Technologies," Bauma China 2010, Shanghai China, Nov. 20, 2010.
6. Haoran Hu, "System Solutions for Achieving Sustainable Transportations," International Green Vehicle Conference, Beijing China, October 20, 2010.
7. Haoran Hu, "New Energy Sustainable Transportation International Alliance (NESTIA) ," 2010 China 3rd Summit of Green Energy Automotive Development, Beijing China, August 28, 2010.
8. Haoran Hu, "Alternate Fuels and Emission Controls," Integer Diesel Emission Conference, Beijing China, March 23-25, 2010.
9. Haoran Hu, Zhanjiang Zou, and Hanyun Yang, "On-board Measurements of City Buses with Hybrid Electric Powertrain, Conventional Diesel, and LPG Engines", SAE 2009-01-2719, November 2009.
10. Haoran Hu, "Fuel Cells and Sustainability- An Industrial Perspective on PEMFC and SOFC System Integration and Commercialization," 6th international Fuel Cell Science, Engineering technology Conference, Denver, CO, June 16-18, 2009.
11. Haoran Hu, Johannes Reuter, John Yan, and James McCarthy, Jr , "Advanced NO_x Aftertreatment System And Controls For On-Highway Heavy Duty Diesel Engines" SAE 2006-01-3552, November 2006.
12. Haoran Hu, "Hybrid LNT/SCR NO_x Aftertreatment System for On-Highway Heavy-Duty Diesel Engines", 2006 Diesel Engine-Efficiency and Emissions Research (DEER) Conference, Detroit, MI, August, 2006.
13. Haoran Hu, Joseph Vorih, and Mark Isreal, "The Integrated Lost Motion VVT Diesel Engine Retarder", SAE 973180, November, 1997.
14. Haoran Hu, mark Isreal, and Joseph Vorih, "Variable Valve Actuation and Diesel Engine Retarding Performance", SAE Paper 970342, February, 1997.
15. Mark Isreal and Haoran Hu, " Impact of Ambient Parameters on Operating Efficiency of Compression Release Engine Retarder Systems on Heavy Duty Diesel Engines", SAE Paper 932972, November 1993.
16. Haoran Hu and James Keck, "Autoignition of Adiabatically Compressed Combustible Gas Mixtures", SAE paper 872110, Toronto, Canada, Nov. 2-5, (1987).


[Bookstore](#)
[eBooks](#)
[New Releases](#)
[Special Offers](#)

Advance ComVec Technologies with SAE's Variety of Resources



Advanced Hybrid Powertrains for Commercial Vehicles
By Haoran Hu, Simon Baseley, Rudolf M. Smaling
This book provides a broad and comprehensive look at hybrid powertrain technologies for commercial vehicles. It begins with the fundamentals of...[more](#)
[View FREE Front Matter](#)
Published August 2012
Product Code R-396
List Price \$99.95
Member Price: \$79.96*
 **eBook available**

New Best Seller!
[Advanced Hybrid Powertrains for Commercial Vehicles](#)
By Haoran Hu, Simon Baseley, Rudolf M. Smaling
This book provides a broad and comprehensive look at hybrid powertrain technologies for commercial vehicles. It begins with the fundamentals of...[more](#)
[View FREE Front Matter](#)
Published August 2012
Product Code R-396
List Price \$99.95
Member Price: \$79.96*
 **eBook available**



Changes in Plain Bearing Technology
By Rolf Koring
Drawing from years of experience in design development, materials selection, and their correlation to real-life part failure...[more](#)
Published November 2012
Product Code R-420
Special Offer \$76.50
List Price \$85.00
Member Price \$68.00*

Coming Soon – Pre-order Now and Save 10%!
[Changes in Plain Bearing Technology](#)
By Rolf Koring
Drawing from years of experience in design development, materials selection, and their correlation to real-life part failure...[more](#)
Published November 2012
Product Code R-420
Special Offer \$76.50
List Price \$85.00
Member Price \$68.00*



Laser Diagnostics and Optical Measurement Techniques in Internal Combustion Engines
By Hua Zhao
The purpose of this book is to provide, in one publication, an introduction to experimental techniques that are best suited for...[more](#)
[View FREE Front Matter](#)
Published July 2012
Product Code R-406
List Price \$109.95
Member Price \$87.60*
 **eBook available**

NEW!
[Laser Diagnostics and Optical Measurement Techniques in Internal Combustion Engines](#)
By Hua Zhao
The purpose of this book is to provide, in one publication, an introduction to experimental techniques that are best suited for...[more](#)
[View FREE Front Matter](#)
Published July 2012
Product Code R-406
List Price \$109.95
Member Price \$87.60*
 **eBook available**