EVENT SUMMARY

Natural Gas for High Horsepower Applications
September 17-19, 2013
McCormick Place
Lakeside Center
Chicago

RAIL
MARINE
PRESSURE PUMPING
DRILLING
MINING
HHP Summit 2013 was made possible with the support and assistance of the following organizations:

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With 1,500 registered attendees, the 2013 HHP Summit amassed North America’s largest and most impressive showing of natural gas stakeholders for marine, mining, rail, and E&P operations. The industry’s leading conference illustrated the current perfect storm of opportunity presented by a transition from diesel to natural gas in high horsepower applications. With new engines coming to the market, significant innovations in fueling equipment, new LNG production plants being announced, and tightening emissions regulations, there has never been a better time for high horsepower operations to make the switch to domestically abundant, low-cost natural gas.

At the three-day conference, attendees heard exciting keynotes from Billy Ainsworth, CEO of Progress Rail Services & Electro-Motive Diesel; Lorenzo Simonelli, President and CEO of GE Transportation; and Wyoming Governor Matt Mead.

Additional program highlights included:
• Peer-to-peer educational sessions
• Off-site tours of Caterpillar’s engine manufacturing facilities
• A sold-out trade show floor featuring the latest off-road natural gas-powered equipment and engine displays
• Ample networking opportunities at hosted receptions

Returning sponsors Caterpillar, Encana, Pivotal LNG/AGL Resources, Chart, Cummins, GE, Shell, Westport, and many others were represented at the record-breaking summit, which showcased the staying power of natural gas in all high horsepower applications.

“Fantastic conference – undoubtedly THE industry event for natural gas in HHP applications.”

The survey stats speak volumes–
93% of attendees plan to attend HHP Summit 2014!
Spanning various high horsepower sectors, attendees of HHP Summit 2013 represent a diverse group of global off-road transportation stakeholders. The industry’s leading conference brought together equipment and operations managers, procurement specialists, maintenance directors, equipment manufacturers, technology providers, natural gas suppliers, infrastructure developers, engineers, academic researchers, government representatives, community members, environmental organizations, media representatives, and many others.

**Geographic Representation of Attendees**

88% - United States  

12% - International  
*In order of representation:* Canada, Russia, Austria, China, Germany, Japan, Turkey, Australia, Chile, India, Kazakhstan, United Kingdom, Brazil, Indonesia, Norway, Poland, South Korea, Spain, Switzerland, Haiti, Mexico, Taiwan, United Arab Emirates
A SAMPLE OF COMPANIES REPRESENTED AT HHP SUMMIT 2013

ABB
ABS Americas
ACD
Advanced Green Innovations
Agility Fuel Systems
AGL Resources
Altra Industrial Motion
American Commercial Lines
America's Natural Gas Alliance
American Power Group
American LNG Transportation & Fuels
ANGI Energy Systems
Antero Resources
Apache Corporation
Applied Natural Gas Fuels
Arch Coal
Argent Marine Companies
Argosy Transportation Group
Argus Consulting
Ariel Corporation
Arkansas & Missouri Railroad Company
Association of American Railroads AT&SF
Australasian Centre for Rail Innovation
Avista
AVL
Baker Hughes
Barber-Nichols
Bay Shipbuilding Company
Bayou Well Services
BHP Billiton Iron Ore
Black & Veatch
Bloomberg News
BLU / Transfuels
BP
BNSF Railway Company
BRU
Bloomberg News
BNSF / Transfuels
BSN Railway Company
BP
Braemar Engineering
Brotherhood of Locomotive Engineers & Trainmen
Cabot Oil & Gas Corporation
Canadian National Railway
CanGas Solutions
Capstone Turbine Corporation
Carib Energy
Carnival Corporation
Cascadia Capital
Castrol Lubricants
Caterpillar
CENTA Corporation
CenterPoint Energy
Chart Industries
Chesapeake Energy
Chevron
CHI Engineering
Chicago Power & Process
Chicago Tribune
Citadel
Citigroup
CIT Rail Resources
Clean Energy
Cleopatra Resources
Cobham
Colony Energy
ComAp
Comprehensive Power
CONAM Construction Company
Conoco Phillips
CONSOL Energy
Continental Controls
Construction Equipment Magazine
Credit Suisse
Crescent Towing
Crewley Marine
Cryogenic Industries/Cosmodyne
Cryostar
Cryo Systems International
CSX Transporation
Cummins
DCL International
Det Norske Veritas (DNV)
Diesel & Gas Turbine Publications
Diesel Progress
Donlen
Dow Jones Newswire
Dragon/Applied Cryo Technologies
Dresser-Rand
DSEC Co.
Earl Energy
Electro-Motive Diesel
Encana Natural Gas
Ensign United States Drilling
EDT Corporation
Ernst & Young
ET Environmental
Evolution Well Services
ExxonMobil
Fairbanks Morse Engine
Federal Railroad Administration
Federal-Mogul Corporation
Ferus
FEV
FlexGen Power Systems
Flint Hills Resources
Flowserve Corporation
Foley Equipment Company
FortisBC Energy
G.W. Lisk Company
Gas Drive Global
Gas Technology Institute
Gaz Metro Transport Solutions
GDF SUEZ North America
GE
GFS Corp
Girtz Industries
Gladsaxe, Neandros & Associates
Goldman Sachs
GP Strategies
Great Lakes Maritime Research Institute
GP Strategies Corporation
Green Field Energy Services
GTI-Altronic
Halliburton
Hannon Armstrong
Harley Marine Services
Heavy Equipment Specialist
Heinzmann GmbH & Co.
Hexagon Lincoln
HIPOWER
Hitachi Power Systems Canada Ltd.
Hy-Lok USA
Hythane Company
ICR Turbine Engine Corporation
IMPCO Technologies
Ingersoll Rand
Ingram Barge Company
Inland Power Group
INOXCA
Interlake Steamship Company
Interstate McBee
IPD
JC Carter
Joy Global
J-W Power
KAC
Kanorado Corporation
Kato Engineering
Kiewit Mining Group
Kohler Co.
Kraft Power
L.P. Transportation
Laborde Products
Laredo Petroleum
LEAM Drilling Systems
Ledcor Construction
The Linde Group
Lockheed Martin
Ludica
MAN Diesel & Turbo North America
MarineLog
Marine Service GmbH
Martin Energy Services
Matheson
MicroLNG
Micron Industries
Mid-West Truckers Association
Ministry of Railways, Government of India
MIRATECH
Mitsubishi Engine North America
Mitsui & Co.
Monico
Morgan Stanley
Nabors
New Eagle
Noble Energy
Norfolk Southern Railway
North American Coal Corporation
Northwestern University
OEM Off-Highway
Office of the Governor of Wyoming
OsComp Systems
Pace Global-a Siemens Business
Parkland Commercial Fuels
Parker Hannifin Corporation
Patterson-UTI Drilling
Pennsylvania Independent Oil and Gas Association
Perma-Pipe
Philadelphia Gas Works
Pioneer Natural Resources Company
Pivotal LNG
Pilats Gas Daily
Plum Energy
Port of San Francisco
Power Solutions International
Progress Rail Services
Progressive Railroading
Prometheus Energy
PSB Industries
PT Post Energy Indonesia
Puget Sound Clean Air Agency
Questar Gas Company
Railway Age
REV LNG
Ricardo
Robert Bosch LLC
Rolls-Royce
SAE Off-Highway Engineering Magazine
Saint Lawrence Seaway Development Corporation
Rush Enterprises
SCF Marine
Schlumberger
Schwob Energy Services
Scott Pump
SEACOR Marine
Sempra U.S. Gas & Power
Seneca Resources
Sequential Energy Management
Shelk
Siemens
SIGTTO
Simon-Maxwell
Smith Power Products / GE Jenbacher
Society of Naval Architects and Marine Engineers
South Dakota Investment Office
Southern Towing Company
Southwest Research Institute
Southwestern Energy
Spectrum LNG
St. Louis Clean Cities
State of Wyoming
Stilt Spark Plug Company
Sulzer Turbo Services
Taylor-Wharton
Teck
TECO Energy
Texas Transportation Institute
Thigpen Energy Services
Thomson Reuters
TOTE Shipholdings
Transport Canada
Trinity Industries
Turbonetics
UGI Energy Services
Union Gas Limited
Union Pacific Railroad Company
University of Chicago
University of Wisconsin-Madison
US Railcar
U.S. Department of Transportation - Maritime Administration
Wall Street Journal
Wärtsilä Corporation
Voigt Maritime
Waukesha Pearce Industries
WesMoor Cryogenic Companies
WesPac Energy Group
Westport Innovations
Worthington Industries
Xebec
XTO Energy
Zeus Development Corporation
ZHRO Solutions
Several exciting announcements, industry partnerships and new product unveilings took place at this year’s Summit, reaffirming the HHP Summit as THE event where the high horsepower industry broadcasts its breakthrough news!

**Caterpillar Rolls Out the Gas Engines**

Caterpillar reaffirmed its pledge at HHP Summit 2012 in Houston to offer natural gas as an option across its many engine lines. Caterpillar has detailed deployment of 3512C engines with DGB, its dual fuel Dynamic Gas Blending kits, by Southwestern-DeSoto for drilling in the Fayetteville Shale, and said it has delivered its first dual fuel marine engine too.

**GFS for GE and Komatsu**

Florida’s GFS Corp unveiled new Evo brand dual fuel engine upfit equipment for locomotives and LMTs (large mine trucks). Both are branded as NG+D, for natural gas plus diesel. GFS says it will offer its Evo-LT system to retrofit GE-built AC4400 and Dash-9 locomotives in early 2014. The Florida company’s new Evo-MT kits for Komatsu 830E and 930E model LMTs represent its first offerings for electric drive LMTs. They augment existing GFS conversion systems for Caterpillar 777 and 793 mechanical drive trucks.

**Taylor-Wharton and Caterpillar Toromont for Interlake**

Taylor-Wharton is set to supply four vertically stern-mounted fuel tanks and Caterpillar MaK will supply twin Toromont engines as Interlake Steamship converts the 1,004-foot Mesabi Miner to LNG dual fuel power for hauling ore and other dry cargoes on the Great Lakes.

**GE, Clean Energy Fuels, and Ferus Natural Gas Fuels Form Eagle LNG Partners**

This new consortium combines the resources of LNG production, transport and financing with existing supply relationships to bring the clean fuel to customers in the marine, rail, mining and E&P sectors, in addition to long-haul truckers. GE Transportation chief Lorenzo Simonelli announced the new partnership at HHP Summit 2013 in Chicago.

**AT&F Tackles the Marine LNG Sector**

Cleveland-based AT&F, an ISO 9001:2008-certified custom steel fabricator and first-time HHP Summit 2013 exhibitor, recently opened AT&F Marine as a new division in Charleston, South Carolina. AT&F plans to apply its experience in pressure vessels and related componentry to such products as liquefied natural gas equipment for ships.

“Hearing panelists present on their experience and lessons learned was a big change from just ‘talk’ to actually making this transition to natural gas happen. Seeing the progress was phenomenal.”
GE Celebrates Waukesha mobileFLEX
GE Power & Water trumpeted recent US EPA certification of its all-gas Waukesha engines for mobile oilfield power generation. Previously, permits or exemptions had to be secured for each location where the engines were employed. Fittingly, the line is now branded as mobileFLEX.

First Frack with 100% Field Gas
Green Field Energy Services announced the recent success of running its turbine-engine frack pump trucks on 100% gas from the ground – no trucked in CNG nor LNG, nor any diesel – for EQT in the Marcellus Shale.

Alpha Coal Tests LNG Mine Trucks
Alpha Natural Resources VP Kenneth Ferguson spoke during an HHP Summit plenary session and described his firm’s work with three LNG-fueled large mine trucks, the nation’s first, at Alpha Coal West’s Belle Ayr mine in Gillette, Wyoming.

Altronic Unveils GTI+ Bi-Fuel
Ohio-based Altronic, drawing on the experience generated by upwards of 3,000 installed GTI systems worldwide, unveiled its GTI+ Bi-Fuel system and promised “noticeably improved performance through the use of an innovative new mixer design and a fully electronic, closed-loop fuel control valve-based gas train.”

Hexagon Showed Its CNG TITAN
Nebraska’s Hexagon Lincoln brought a TITAN tube trailer to HHP Summit 2013, offering the units as an economical way to deliver large volumes of natural gas to customers, including E&P operators. HHP Summit was the first time Hexagon Lincoln displayed its TITAN trailer in public.

HiPower Systems to Use GTI Controls
HiPower Systems plans to incorporate the GTI Bi-Fuel control suite by Altronic into its line of 150-kilowatt to 3-megawatt generators – allowing the diesel engines to burn a gas-diesel mixture of up to 70 percent natural gas, “reducing fuel costs by as much as 50 percent.”

In case you missed the daily dose of HHP Insight at the event, you can view all three newsletters online: www.hhpsummit.com/mediacenter.html

To receive regular updates on industry happenings, subscribe to HHP Insight, the news source on natural gas for high horsepower applications, complete with key contact information to help you make connections.
The 2013 HHP Summit earned print and online media placements in some of the nation’s most influential media outlets and trade publications, highlighting the tremendous interest in the natural gas-fueled advancements taking place across the high horsepower industry. As HHP Summit remains at the forefront of CNG and LNG-fueled high horsepower projects and industry wide announcements, national, state and regional media outlets will continue to engage in the show as a way to ensure firsthand coverage of breaking news, projects, and key industry partnerships announced live at the annual conference.

**HHP Summit 2013 media coverage by the numbers:**

- **80** unique media stories were published
- **25%** more media outlets published multiple HHP Summit stories*
- **40%** increase in sponsor and exhibitor announcements*

*Compared to HHP Summit 2012

Media partnerships and coverage for the 2013 HHP Summit included participation from a variety of news outlets, including:

- *REUTERS*
- *THE WALL STREET JOURNAL*
- *msn. Money*
- *OEM Off-Highway*
- *EM Today*
- *Railway Age*
- *Midwest Energy News*
- *NGT News| Next-Gen Transportation*
- *CCJ*
- *Downstream Today*
- *LNG World News*
- *News of the Industry*
- *E&E Publishing, LLC*
- *Mining*
- *Diesel Progress*
- *SNL*
- *Heraldonline*

“Excellent event. There was a lot to see and hear about covering virtually all segments.”

—Mike Brezonick, Diesel Progress Magazine
Teeming with never-before-seen engines, equipment, technologies, and fuel suppliers, the HHP Summit trade show floor was a one-stop shop for attendees looking to implement natural gas projects in their high horsepower operations. HHP Summit exhibitors provided hands-on access to fuel cost savings solutions at every turn across the rail, marine, mining, and exploration and production sectors. In addition to the incredible showing of equipment, engines, and representatives, the trade show floor was the site of dozens of exciting industry announcements, partnerships, and product unveilings.

“My company is researching dual fuel technology for our vessels; being able to inspect the displayed equipment and discuss solutions with representatives is vital to our future success in this endeavor.”

–Scott Coder, SCF Marine, a SEACOR Company
“Professional and very well done. It was nice to see a hands-on element and get a behind-the-scenes look inside the factory.”

CAT NATURAL GAS ENGINE FACILITIES TOURS

HHP Summit 2013 presenting sponsor Caterpillar—the world’s largest manufacturer of mining and construction equipment, diesel and natural gas engines, and industrial gas turbines—offered attendees the opportunity to get a behind-the-scenes look at the natural gas engine technology contributing to greatly reduced fuel costs and emissions in fuel-hungry off-road equipment.

Tour #1: E&P and MINING
Caterpillar Lafayette Engine Center | Lafayette, Indiana
The 1.3 million ft² Lafayette plant produces Caterpillar’s most well-recognized and durable engines—the 3500, 3600 and C175 series. On this tour, attendees explored the facility where Caterpillar’s natural gas engines for drilling, pressure pumping, marine, electric power, and mine haul trucks are manufactured.

Tour #2: LOCOMOTIVE and MARINE
Electro-Motive Diesel LaGrange Engine Facility | LaGrange, Illinois
EMD is a global provider of engines for diesel-electric locomotives, offshore oil and marine vessels. Attendees that took part in this tour experienced EMD’s natural gas programs and development firsthand.
"I enjoyed every aspect of the summit. The keynote speakers were excellent, but my favorite component was the breakout sessions because of the detail shared by the presenters.”

–Chuck Hawkey, Alban Cat Power Systems
Tuesday, September 17, 2013

9:00 a.m.  Day One Welcome and Opening Remarks

9:15 a.m.  Opening Keynote Address – Natural Gas Engines: A Current Reality
  • Billy Ainsworth, President and Chief Executive Officer, Progress Rail Services and Electro-Motive Diesel

9:45 a.m.  Executive Roundtable #1 – State of the Union: the Growing Use of Natural Gas for Today’s HHP Applications
In the last year, the level of activity around the use of natural gas as a diesel fuel substitute in fuel-hungry high horsepower applications has increased tremendously. On a weekly basis, major new projects and orders are being announced, end-user demonstration projects are being launched, and new engine technologies and equipment are being developed. While the level of excitement has been high, most agree that this level of activity is a mere foreshadow of the significant natural gas HHP markets that will come in the next year, three years, five years, and beyond. In this session, senior executives from global organizations will highlight the growing momentum within this industry throughout North America and beyond, and will give the audience a glimpse of the substantial natural gas HHP markets expected in the near future.
  • Samuel Thomas, Chairman, President & Chief Executive Officer, Chart Industries
  • Bruce Hodgins, Vice President, Partner Relationships, Westport
  • Eddie Green, General Manager, North American Marine & Stationary LNG Business Development, Shell
  • Blake Larson, Executive Director of High-Horsepower Engineering, Cummins
  • Matt Most, Vice President, Commercial Development, Encana Natural Gas, Inc.

11:15 a.m.  Coffee Break

11:45 a.m.  Keynote Luncheon

12:25 p.m.  Keynote Introduction
  • Matt Most, Vice President, Commercial Development, Encana Natural Gas, Inc.

12:30 p.m.  Keynote Address
  • Governor Matt Mead, State of Wyoming

1:00 p.m.  Networking Break

1:30 p.m.  Executive Roundtable #2 – End Users Making the Business Case for Natural Gas HHP
The fuel price created with oil prices remaining more than $100 per barrel and natural gas less than $4.00/MMBtu—and anticipation that this spread will be maintained well into the future—has created tremendous opportunity for large fuel users to begin converting their operations to run on low-cost, domestic natural gas. Several large end-users have already begun to make investment decisions to switch, while a significant number of others are in the demonstration and evaluation phase with the anticipation that they too may make larger investments in the near-term. Top-level executives from end-user operations will present the criteria that made the business case for their companies to begin making this transition to natural gas.
  • Mark Barker, President, Interlake Steamship Company
  • Kenneth Ferguson, Assistant General Manager and Vice President, Alpha Natural Resources/Alpha Coal West
  • Darrell Iler, Senior Engineer Car Design, Canadian National Railway
  • William Marshall, Vice President Pressure Pumping, Bayou Well Services

3:15 p.m.  Breakout Session #1 – Natural Gas Engine Technologies to Power the High Horsepower Industries
The opening breakout sessions will provide an exciting look at the technologies and equipment making the use of natural gas possible in high horsepower applications. With several engine products already commercially available and being ordered, and many others being developed and tested for near-term commercialization and deployment, the opportunity for a near-term transition to natural gas is immense. Panelists will provide product updates, information, and firsthand insight into the real and practical costs, challenges, and benefits of their respective technologies. Ample time for audience Q&A and open discussion amongst the panelists will be provided (see next page).
### Breakout Session #1: “Natural Gas Engine Technologies to Power the High Horsepower Industries”

#### Marine

**MODERATOR:**
Steve Kemp, Chair, Great Lakes & Great Rivers Section, The Society of Naval Architects & Marine Engineers

- Leif Gross, Product Definition / New Product Introduction Manager, Caterpillar Marine Power Systems
  - CMPS: Natural Gas Engine Technologies
- Greg Young, Director, Commercial Marine Business Development, Cummins
  - LnG: High Speed Marine Engines Options
- Odd Magne Horgen, General Sales Manager, Rolls-Royce Marine AS
  - Reducing Marine Emissions
- Chuck Griffith, Sales Manager, Offshore & Merchant, MAN Diesel & Turbo North America
  - Cost-Effective Dual-Fuel Diesel Mechanical Solution for Vessels Conversions
- Edward Hall, PhD, Senior General Manager, GE Transportation
  - Fuel Flexibility from GE Marine Gas Turbine Engines

**MODERATOR:**
Dave Myers, Business Development Manager, North America, Hexagon Lincoln

- Russell Goss, Project Manager, New Product Introduction, Caterpillar Global Petroleum
  - OEM Advancements in Optimizing Natural Gas Consumption in the Oilfield
- Keith Brooks, Vice President, OEM & GTI Bi-Fuel, Altronic–GTI
  - GTI Bi-Fuel Introduces New Electronic “AGV5 SmartValve”
- Aaron Trexler, Waukesha Senior Product Line Manager, GE Power & Water, presenting with Chris Seider, Manager, Special Projects, Patterson-UTI Energy
  - The Rich Burn Combustion Advantage in Mobile Drill Rig Power
- Nick Radean, Sales Manager, Fairbanks Morse
  - Premium Power Solutions Demand True Dual Fuel

#### Drilling

**MODERATOR:**
Bryan Luftglass, Head of Strategic Market & Business Development, Linde

- Diana Hopkins, Product Definition Manager, Caterpillar Oil & Gas
  - Caterpillar Dynamic Gas Blending: A Revolution in Pressure Pumping
- Shane Cannon, Territory Manager, Cummins
  - Cummins Dual Fuel for Pressure Pumping
- Lyle Jensen, President & Chief Executive Officer, American Power Group
  - APG Turbocharged Natural Gas Dual-Fuel System: Initial Results in High-Pressure Pumping Applications
- Philip Bruza, Sales Engineer, ComAp
  - Bi-Fuel Development and Integration into the Electric Power and Oil & Gas Markets

#### Pressure Pumping

**MODERATOR:**
Mischa Wanek-Libman, Engineering Editor, Railway Age

- Martha Lenz, Director, Engine Systems, Electro-Motive Diesel
  - Natural Gas Engine Technologies for Rail
- David Mumford, Senior Director, Off Road, Westport
  - Perspectives & Lessons Learned from a Demonstration Project with a Natural Gas Locomotive
- Eric Dillen, Dual-Fuel Engine System Leader, GE Transportation
  - Dual-Fuel Locomotive Development
- Mark Kuhn, Principal, Ricardo Strategic Consulting
  - Opportunities & Challenges Associated with Natural Gas Adoption for Locomotive Applications

#### Rail

**MODERATOR:**
Jeff House, Business Development Manager, Prometheus

- Martha Lenz, Director, Engine Systems, Electro-Motive Diesel
  - Natural Gas Engine Technologies for Rail
- David Mumford, Senior Director, Off Road, Westport
  - Perspectives & Lessons Learned from a Demonstration Project with a Natural Gas Locomotive
- Eric Dillen, Dual-Fuel Engine System Leader, GE Transportation
  - Dual-Fuel Locomotive Development
- Mark Kuhn, Principal, Ricardo Strategic Consulting
  - Opportunities & Challenges Associated with Natural Gas Adoption for Locomotive Applications

#### Mining

**MODERATOR:**
Jeff House, Business Development Manager, Prometheus

- Aaron Biskaps, Marketing Manager, Large Mining Trucks, Caterpillar
  - LnG Mining Truck Development
- Bruce Hodgins, Vice President, Partner Relationships, Westport
  - Natural Gas Solutions for Large Mine Trucks
- Christopher Pritchard, High Horse Power, Natural Gas Product Manager, Cummins
  - Cummins Dual-Fuel Engines for Mine Equipment
- George Aguilera, Executive Vice President, Gaseous Fuel Systems
  - EVO-MT Retrofit Solutions for Mine Haul Trucks
- John Fisher, Business Development Manager, Electric Power Division Mining Team, Caterpillar
  - Using CAT Distributed Power in Mining Applications

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**5:00 p.m. Welcome Reception and Networking in the Trade Show Hall, Sponsored by Chart Industries**

Join us for an evening of networking and exploration in the massive trade show hall—featuring four times more exhibit space than the 2012 show. This opening reception will provide a first look and an interactive environment for learning about the engines, fueling equipment, fuels, service providers, and other technologies available in today’s HHP marketplace.
Wednesday, September 18, 2013

7:30 a.m.  Breakfast in the Trade Show Hall

8:30 a.m.  Day Two Welcome – Innovation and Advancements Accelerating the North American HHP Market

• Joel Feucht, General Manager of Gas and Medium Speed Engines, Caterpillar

The famed keynote speaker from HHP Summit 2012 returns to this year’s stage to provide an update on the accomplishments and progress Caterpillar has made in the HHP space in the last year, as well as some perspective on what to expect in the year ahead.

8:45 a.m.  Opening Address – The Outlook for Natural Gas: Emerging Fundamentals

• Kenneth Medlock III, PhD, Senior Director, Center for Energy Studies, James A. Baker III Institute for Public Policy, Rice University

Dr. Medlock is renowned expert on natural gas markets, energy commodity price relationships, transportation, national oil company behavior, economic development and energy demand, and energy use and the environment. He is widely published, provides frequent testimony to the US Senate Committee on Energy and Natural Resources, and is often quoted by mainstream media on these topics. Dr. Medlock will discuss key energy issues related to the increase use of natural gas in the HHP sector, including a comprehensive review of today’s energy markets, natural gas and petroleum supplies, domestic demand growth, exports, and ultimately what all of this means to forward energy supplies, price spreads, and other issues relevant to end-users that spend billions of dollars a year on energy.

9:15 a.m.  Plenary Session #3 – Developing LNG Production Assets for the North American HHP Market: Timelines, Costs and Other Key Considerations

As new LNG fueled HHP projects are analyzed, investigated, and announced, new sources of LNG must be brought online to keep pace with increasing demand. Recognizing that not all LNG is created equally, this panel will examine various options available to end-users from micro-scale LNG production, to utility peak shaving assets, LNG export terminals and multiple options for new purpose-built LNG plants. Critical factors for LNG plant siting will be examined, including development timelines and costs, natural gas and electrical utility requirements, permitting considerations, and key considerations for identifying the best site for your LNG plant.

• Pete Tumminello, Executive Vice President of Wholesale Services, AGL Resources
  Leveraging Utility LNG Assets While Developing New LNG Merchant Plants

• Jeff Sipes, Vice President & General Manager, Chart Energy & Chemicals
  Using a Modular Design Approach to Scale LNG Production to Meet Growing Equipment Needs

• Joseph Pak, Director of Sales and Marketing, Cosmodyne
  Nitrogen Expander Cycle for Small-Scale LNG Plants: a Cinderella Story

• Earl Lawson, Vice President, Energy Solutions, Linde North America
  LNG Supply: the Unique Perspective of an Operating and Engineering Company

10:45 a.m.  Networking Break in the Trade Show Hall

12:00 noon  Keynote Luncheon, Sponsored by America’s Natural Gas Alliance

12:30 p.m.  Keynote Introduction

• Amy Farrell, Vice President, Market Development, America’s Natural Gas Alliance

12:45 p.m.  Keynote Address – Engines, Fuel, and Infrastructure: Putting All of the Pieces Together

• Lorenzo Simonelli, President & Chief Executive Officer, GE Transportation

1:30 p.m.  Breakout Session #2 – Bunkering, Tender Cars, and Other Fueling Opportunities to Extend the Virtual Pipeline

Successful alternative fuel planning requires the development of a robust and strategically planned infrastructure system that works seamlessly to support everyday operational needs. These technical breakout sessions will provide case studies and detailed presentations on mobile and permanent natural gas refueling equipment options (including both LNG and CNG), costs, permitting and code issues, and other important development considerations. Mobile and modular LNG and CNG refueling equipment—which has proved critical to successful natural gas fueled HHP operations—will be displayed onsite at the HHP Summit to give attendees a hands-on look at this equipment as a compliment to the technical presentations provided (see next page).
### Marine

**Moderator:**
- John Snyder, Publisher and Editor, Marine Log

- William Hutchins, Project Engineer, Shell
  *Shell’s Plans for LNG Marine Bunkering*

- Per Egil Vedlog, Design Manager, Ship Technology, Merchant, Rolls-Royce Marine AS
  *Rolls Royce’s Innovative Self Propelled LNG Bunkering Vessel*

- Alexander Harsema-Mensonides, Sales Director, Marine Service GmbH
  *LNG Fuel Tank Container: A New Approach to LNG Bunkering*

- Randy Helland, retired USCG and Regulatory Consultant, Great Lakes Maritime Research Institute
  *LNG as a Maritime Fuel on the Ohio River: A Case Study and Regulatory Evaluation*

- Keith Meyer, Chief Executive Officer, LNG America
  *Leveraging LNG Export Terminals for Domestic LNG Marine Supply in the Gulf Coast*

### Drilling

**Moderator:**
- Dave Schultz, Senior Vice President, LNG America

- Matt Most, Vice President, Commercial Development, Encana Natural Gas, Inc.
  *Mobile Fueling Options to Support Gas Driven Drill Rigs and Other Service Operations*

- Grant Madison, Product Manager, LNG Mobile Equipment, Chart Industries
  *Regasification Equipment for E&P Operations*

- Kurt Sorschak, President & Chief Executive Officer, Xebec Adsorption
  *Field Gas Purification for Diesel Displacement and Pipeline Injection*

- Dave Myers, Business Development Manager, North America, Hexagon Lincoln
  *State-of-the-Art CNG Tube Trailers for Drill Rigs and Other Remote Operations*

- Nathan Ough, Vice President, Certarus
  *CNG: An Alternative and Cost-Effective Approach for Supplying Natural Gas to Drill Rigs*

### Pressure Pumping

**Moderator:**
- Ken MacQuarrie, Development Manager, WSD, Parkland Fuel Corporation

- Jed Tallman, Manager, Market Development, Ferus Natural Gas Fuels
  *Leveraging Leading Cryogenic Logistics Experience and Expertise to Supply LNG for Pressure Pumping Services*

- Pedro Santos, Chief Executive Officer, OsComp Systems
  *CNG Fuel Supply for Pressure Pumping: An Innovative Case Study*

- Randy Hull, Director of Business Development, Prometheus Energy
  *Selecting the Optimum Mode of Natural Gas Supply for Drilling & Frac Operations*

- Earl Lawson, Vice President, Energy Solutions, Linde North America
  *LNG for Pressure Pumping: Transforming from Early-Stage to Commercially Sustainable Solutions*

### Rail

**Moderator:**
- Erik Montague, Business Development Advisor, Shell

- Michael Iden, General Director Car & Locomotive Engineering, Union Pacific Railroad and Chair of the Association of American Railroads
  *Natural Gas Fuel Tender Technical Advisory Group Update on AAR’s Fuel Tender Standards*

- Brian Dracup, Senior Director, LNG Rail and Tender Program Development, Westport
  *LNG Tender Car Design and Approach for Locomotive Fuel Supply*

- Scott Nason, Business Development Manager, LNG Rail Applications, Chart Industries
  *Chart’s Experience, Expertise, and Approach in Building LNG Tender Cars*

### Mining

**Moderator:**
- Peter Scott, President & Chief Executive Officer, Scott Pump Service

- Brian Bostrom, Senior Engineering Manager, LNG, Chart Industries
  *Mine Car Fuel Systems*

- Scott Hartman, PhD, LNG Technology Lead, North America, Shell
  *Challenges of Mine Haul Vehicle Refueling*

- David Barr, Vice President & General Manager LNG, Taylor-Wharton Cryogenics
  *LNG Storage and Fueling Infrastructure for Mine Haul and Other HHP Applications*

- Ujjwal Kumar, Business Development Manager, LNG Rail Applications, Chart Industries
  *Micro LNG Supply to Support Haul and Other HHP Applications*
3:30 p.m.  **Plenary Session #4 – Best Practices for Personnel Safety and Cryogenic Fuel Management in Today’s HHP Sectors**

Personnel safety and LNG fuel management to reduce system heat leak and fuel loss are critical issues for those using LNG in today’s various HHP sectors. Hear how key HSE considerations can be effectively addressed and how proper design engineering, equipment selection, and operational protocols play important roles in proactively minimizing system heat leak and fuel loss across the value chain. A live LNG demonstration will kick off this session to provide a basic 101-level understanding of the physics of natural gas, followed by in-depth presentations from industry leading experts.

- **Erik Neandross**, Chief Executive Officer, Gladstein, Neandross & Associates
  *Live Demonstration of LNG Physics*

- **Rick Boudiette**, Technical Adviser, The Society of International Natural Gas Tankers and Terminal Operators
  *The Safety Record of LNG Shipping and the Launch of the Society of Gas as a Marine Fuel*

- **Tom Drube**, Director of Engineering, Chart Industries
  *Cryogenic Heat Management: Innovations and Lessons Learned from Argon Industry and Application to the HHP LNG Sector*

- **Chad Porter**, Chief Operating Officer, Ferus
  *Key Elements of a Robust HSE Program for Natural Gas-Fueled HHP Applications*

5:00 p.m.  **Evening Reception and Networking in the Trade Show Hall, Sponsored by GE**

Join us for this networking event to continue making valuable business connections. The reception will feature exciting interactive displays that are sure to entertain...you’ll just have to show up to see what we mean!

“I was super impressed with the LNG demonstration. I can’t say I’ve ever seen a more poised, informative, and well put together demo involving alternative fuels.”
Thursday, September 19, 2013

7:30 a.m.  Breakfast in the Trade Show Hall

8:30 a.m.  Breakout Session #3 – End User Case Studies: A Closer Look at Today’s Leading HHP Projects for the Marine, Drilling, Pressure Pumping, Rail and Mining Sectors
Peer-to-peer information exchange is often the most valuable form of learning for those looking to advance their own natural gas HHP projects. These end-user case studies panels feature leading early adopters set to share why and how they have made these investments; project capex, opex and ROI data and results; what has worked well; and, the key lessons learned along the way (see next page).

10:15 a.m.  Networking Break in the Trade Show Hall

11:00 a.m.  Plenary Session #5 – Show Me the Money: Wall Street’s Perspective on the Emerging HHP Market
This concluding panel will provide an intriguing and dynamic look at one of Wall Street’s hottest markets from those actively involved in analyzing the economics and trends, and those recommending and making investments in these markets. Learn how, where, when, and why investment decisions are being made; what the realities of a true market shift in these sectors are; what the conversion of these operations to operate on natural gas means to the financial community; and where the largest financial opportunities lie. Hear how suppliers and end-users can leverage this interest to make key business decisions in the rapidly growing natural gas HHP sector.

MODERATOR: Matt Most, Vice President, Commercial Development, Encana Natural Gas, Inc.
• Jim Wicklund, Managing Director—Energy Research, Credit Suisse
• Alina Dumitrasc, Manager, Galway Group / Galway Energy Advisors
• Matt Simon, Portfolio Manager, Citadel LLC

12:30 p.m.  Closing Remarks and Program Concludes
# Breakout Session #3: “End-User Case Studies: A Closer Look at Today’s Leading HHP Projects for the Marine, Drilling, Pressure Pumping, Rail and Mining Sectors”

## Marine
**MODERATOR:** Carol Wolosz, Executive Director, Great Lakes Maritime Research Institute

- **Paul Blomerus**, PhD, Senior Director, High Horsepower, Westport
  *Innovative Solutions for Tug Boats*
- **Jan Hagen Andersen**, Principal Engineer, Det Norske Veritas
  *LN&G as a Fuel for Marine Applications: Norwegian End-User Case Studies*
- **Roy Bleiberg**, Director of Engineering, ABS Americas
  *Case Studies Showcasing Risk Assessments for Gas-Fueled Ships*
- **John Hatley**, Americas Vice President Ship Power, Wartsila North America
  *Marine Business Case Examples for LN&G Fuel*

## Drilling
**MODERATOR:** Keith Hall, Director of Engineering & Product Development, Wesmor Cryogenic Manufacturing

- **William Copeland**, Drilling Engineer, EQT Corporation
  *EQT’s Extensive Testing, Demonstration, and Use of Natural Gas to Power its Drilling Operations*
- **Brian Murphy**, Engineering Manager, Ensign
  *United States Drilling Natural Gas Fuel: Opportunities and Economics on Modern Drill Rigs*
- **Curtis Rueter**, Manager, LNG/CNG Development, Noble Energy
  *Noble Energy’s Recent Experience with Dedicated and Dual Fuel Systems for Drilling and Pressure Pumping*
- **Mark Bruchman**, General Manager of Operations, Apache Corporation
  *An Overview of One of North America’s Leading E&P Companies Using Natural Gas to Power Its Operations*

## Pressure Pumping
**MODERATOR:** Stuart Wilson, Vice President, Commercial Development, Ferus Natural Gas Fuels

- **Matthew Hackworth**, Business Specialist, EQT Corporation
  *EQT’s Extensive Testing, Demonstration, and Use of Natural Gas to Power its Pressure Pumping Operations*
- **Adam Marks**, Equipment Design Team Manager, Halliburton
  *Halliburton’s Use of Natural Gas for Pressure Pumping Operations*
- **Sean Parker**, Project Manager, Bi-Fuel Technologies, Baker Hughes
  *Baker Hughes’ Use of Natural Gas for Pressure Pumping Operations*
- **Chris Combs**, Director, Fracturing Technology, Green Field Energy Services
  *Fracturing with 100% Natural Gas*
- **Troy Huey**, Wellsite Delivery Technology Manager, Schlumberger
  *Technology and Value Drivers for Today’s Frac Pump*

## Rail
**MODERATOR:** Sean Turner, Chief Operating Officer, Gladstein, Neandross & Associates

- **Dale Lewis**, Director of Strategic Analysis, CSX Corporation
  *Perspectives on Natural Gas for Locomotives from a Class I Railroad*
- **Michael Iden**, General Director Car & Locomotive Engineering, Union Pacific Railroad and Chair of the Association of American Railroads
  *Natural Gas Fuel Tender Technical Advisory Group, UP’s Consideration of LN&G for Locomotives*
- **Darrell Iler**, Senior Engineer Car Design, Canadian National Railway
  *CN: LNG Locomotive Initiatives*

## Mining
**MODERATOR:** Jon Leonard, Senior Vice President, Gladstein, Neandross & Associates

- **Bill Caffee**, Mining Industry Consultant
  *Power Generation: Experiences of a Former Newmont Mining Corporation Energy Solutions Manager*
- **Steve Forbush**, Diesel Equipment Specialist, Arch Western Bituminous Coal
  *Arch Western Bituminous Coal’s Perspective on Natural Gas*
- **David Moses**, Manager, Mine Support, Albion Sands, Shell
  *Shell’s Roadmap for LNG Mine Haul Trucks at the Albion Oil Sands*
- **Kenneth Ferguson**, Assistant General Manager and Vice President, Alpha Natural Resources/Alpha Coal West
  *Alpha Coal’s Alternative Fuel (LN&G) Mine Haul Project*
William (Billy) Ainsworth  
**Chief Executive Officer, Caterpillar’s Progress Rail Services and Electro-Motive Diesel**

**Biography:** Billy Ainsworth founded what is today known as Caterpillar’s Rail Division in the early 1980s. Since acquiring Progress Rail in 2006, Caterpillar has invested more than $2 billion to grow its rail business, including the acquisition of the iconic Electro-Motive Diesel brand in 2010, further expanding its global footprint. Progress Rail today serves as one of North America’s largest suppliers of products and services to the railroad industry, and Electro-Motive has world-class locomotive manufacturing facilities across the globe.

**Keynote address highlights:** Representing Caterpillar, one of the HHP Summit’s title sponsors in 2012 and again in 2013, Mr. Ainsworth reaffirmed the resounding promise of the augural summit as he declared, “We’re all in and firmly committed to meeting our customer’ needs with natural gas.” Natural gas isn’t new to the company, which has served as a market leader in gas engines since 1947. Ainsworth set the stage for the Caterpillar-hosted HHP Summit by discussing the value of natural gas today, and presented Caterpillar’s market-leading portfolio of gas engine products and systems. Sharing the company’s commitment to continue to deliver leading natural gas engines across all high horsepower sectors, Ainsworth showcased the broad range of HHP engines currently available or under development at Caterpillar, including dual fuel gas-fired engines for E&P applications, dual fuel engines for marine vessels, gas-capable engines for large mine haul, and Caterpillar’s Progress Rail-EMD branch currently developing several technologies for locomotives.

Matt Mead  
**Governor, State of Wyoming**

**Biography:** Matt Mead took office as Wyoming’s 32nd Governor in January 2011. As the nation’s third largest producer of natural gas and leading exporter of domestic energy, Wyoming has played an important role in the development of a robust natural gas transportation industry. The state has served as the launchpad for several key LNG initiatives, including Burlington Northern’s first LNG locomotive project in the ’90s and Alpha Natural Resources’ current LNG mine haul truck test project.

**Keynote address highlights:** Governor Matt Mead called for a co-existence between environmental solutions and energy production, stating, “We have to move away from this either-or approach. One of the answers is using natural gas and using more natural gas in high horsepower applications.” In highlighting Wyoming’s leadership in energy development and discuss Wyoming’s effort to expand opportunities, Governor Mead conveyed that with a wholesale shift to natural gas, the state could save 200 million to 300 million gallons of diesel per year. Governor Mead championed his work with the energy industry, business community, environmental organizations, and landowners in Wyoming to develop a statewide energy strategy. Titled “Leading the Charge: Wyoming’s Action Plan for Energy, Environment and Economy,” the strategy identifies many specific initiatives to achieve excellence in energy development, environmental stewardship, and economic growth.

Lorenzo Simonelli  
**President and Chief Executive Officer, GE Transportation**

**Biography:** Lorenzo Simonelli has expanded GE Transportation from a $3.4 billion per year locomotive-focused business to a diversified division with annual revenues of approximately $5.6 billion. Under his leadership since July 2008, GE Transportation has emphasized advanced technology manufacturing, intelligent control systems, and a diverse approach to new propulsion solutions to solve the world’s toughest transportation challenges.

**Keynote address highlights:** Likening the current natural gas opportunity to “a new dawn” in strengthening the manufacturing sector within the US, Simonelli noted, “By 2030, natural gas will overtake oil as the country’s most abundant fuel with an estimated 283 years of global supply.” Simonelli further illustrated GE’s commitment to HHP natural gas projects by revealing the company’s newest initiatives, which included plans for two micro LNG plants and the announcement of multiple partnerships with well-known natural gas providers. In discussing GE’s diverse product portfolio across multiple HHP markets, Simonelli highlighted the company’s LNG-fueled locomotive prototype currently under testing, in addition to the recent US EPA certification of GE’s all-gas Waukesha engines for mobile oilfield power generation, among other product offerings. Simonelli concluded, “We’re going big into natural gas, and we see it as one of the big avenues of growth going forward.”