GE Oil & Gas

is a world leader in advanced technologies and services with 43,000 employees in more than 100 countries supporting customers across the industry — from extraction to transportation to end use. Our unrelenting commitment to the environment, health and safety, quality and integrity defines us: it’s The Way We Work.
The GE Oil & Gas business

Operating in 100+ countries

43,000 employees

Revenue ’12: ~$18.2B

Subsea Systems

Drilling & Surface

Lufkin

Measurement & Control

Turbomachinery

Global Services

PII
Building on a strong foundation...

(Orders $ in billions)

1994
A Turbomachinery company

1997
Developed a Service model

2004
Expanded in Inspection Technologies

2007
vetcogray

2008
Entered the Drilling & Production segment

2011
The “new” GE Oil & Gas

2012
GE Oil & Gas became stand-alone GE segment

2013
Continue to build out capabilities to focus on specific segments

2007
2012

$1 $2 $4 $10 $15.2 $18.2

2013
Continue to build out capabilities to focus on specific segments

$18.2

LUFKIN
Closed on July 1st

SALOF
Closed on May 31st

Well Support
• Pressure Control
• Electrical Submersible Pumps
• Logging Services

… GE Oil & Gas today
SOLUTIONS FOR SMALL SCALE LNG
LNG-fueled transportation today

**Opportunities**

**LNG vs Diesel Prices**

<table>
<thead>
<tr>
<th></th>
<th>$4</th>
<th>$2</th>
<th></th>
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<tbody>
<tr>
<td>LNG (DGE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diesel</td>
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**NG vs Diesel Emissions Reduction**

<table>
<thead>
<tr>
<th></th>
<th>CO</th>
<th>CO2</th>
<th>NOX</th>
<th>VOG</th>
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<tbody>
<tr>
<td></td>
<td>-100%</td>
<td>-75%</td>
<td>-50%</td>
<td>-25%</td>
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**Adoption challenges**

**For vehicle owners**

- High conversion costs
- Nascent LNG fueling network

**For LNG station operators**

- High CapEx/OpEx
- Location based adoption risk
- Logistics cost & complexity

Sources: ¹IHS CERA – Apr ’12, ²Credit Suisse: The Shale Revolution – Dec ’12, ³EIA.gov data – Feb ’13, data, ⁴NGVA –’13

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LNG In A Box and CNG In A Box are trademarks of GE Oil & Gas, Inc.
Rail industry LNG supply chain

Wing to wing solution includes 5 major segments

1. Natural gas pipeline
2. “LNG liquefaction station
3. LNG filling station
4. LNG tender car
5. LNG locomotive
LNG infrastructure for marine

Gas Source
- Pipeline Gas
- Large LNG terminal
- LNG Container
- Marine Transport

@Port
- Road Transport
- LNG Storage
- Small-Scale LNG

LNG Station
- L/CNG Station
- Power Station

Users
- Marine fleets
  - Ro-Ro
  - Lo-Lo
  - Ro-Pax
- Industrial fleets
  - Rail
  - Heavy duty
  - Medium duty
- Personal NGV/Fleets
  - Light/medium duty
- Distributed Power
  - Emerging markets
  - Remote power
  - Peaking
  - Marine fleets

GE Offerings
- Micro LNG Salof MMLS
- LNG In A Box
- CNG In A Box
- Gas Engines
- Drill Motors
- Gas Turbines
Transforming LNG fueling infrastructure model

Traditional Large LNG

- Up to 72 months
- Custom, project-based
- Capital intensive
- High logistics complexity & cost

LNG for Transportation

- 6-24 months
- Modular & standard, product-based
- Reduced CapEx & OpEx
- Simplified logistics, on-site production

Breaking down traditional, complex LNG plants into modular, rapidly deployable solutions
Small LNG solutions

2011 Micro LNG – Gen 1
- 30-90 Ktpa
- Liquefaction only
- Custom
- API
- EPC heavy
- Construct on site
- 24 months lead time

2012 - 2013 Micro LNG – Gen 2
- 30-150 Ktpa
- Turnkey solution
- Multiple standard packages
- Non API
- Factory tested skids, GC only
- Plug&play, light civil work
- Target 12-15 mo lead time

LNG in a Box
- 6-30 Ktpa
- Turn key solution
- 1 standard box
- Non API
- Factory tested solutions
- Plug&play, pad prep only
- Target 3-6 mo lead time
- Equipment financing

1 Tonne of LNG = 1,380 m3) of Natural Gas = approx. 52 mm BTU
1 Ktpa = 1 Kilo (1,000) tonne per annum
For full conversion table: [http://www.platts.com/conversion-tables](http://www.platts.com/conversion-tables)
LNG In A Box™ system

Ideally suited for:
- Heavy-duty truck fueling stations
- Virtual pipeline
- Distributed power generation

Performance:
- 10,000-50,000 gallons per day LNG production
- Inlet gas: Pipeline
- Gas recovery: 80-82%
- Specific power 1.4 kWh/gal (1.3MJ/liter)

Features:
- Modular, rapidly (re)deployable design
- Simple methane cycle
- Minimal pad prep & quick installation
- 6-12 month lead time
- Highly automated operation
- Gas engine option available
- Equipment financing available

1 LNG gallon = 75,000 Btu
1.68 Gallons of LNG = 1 Gallon of Diesel (on energy equivalents)
Micro LNG system

Ideally suited for:

- HD truck fueling hub
- Rail
- Marine
- Peaking plants

Performance:

- 100,000-300,000 gallons per day LNG production
- Inlet gas: Pipeline

Features:

- Methane based system with boil off recovery
- 8% improved power efficiency
- 40% reduced wasted methane
- Scalable design w/ multiple standard packages for rapid deployment
- Factory tested skids
- Plug & play, light civil work
- Targeting 12-15 month lead time

1 LNG gallon = 75,000 Btu
1.68 Gallons of LNG = 1 Gallon of Diesel (on energy equivalents)
CNG In A Box™ system

**Performance:**
- 10,000-20,000 gallons per day gasoline equiv. (GGE*) production
- Inlet gas: Pipeline

**Features:**
- Portable, Modular design
- Minimal pad prep & quick installation
- 2-4 month lead time
- Highly automated operation
- Gas engine option available
- Equipment financing available

**Ideally suited for:**
- Cars, trucks, buses fueling stations
- Rig-site gas distribution, flare capture
- Storage, remote sites

1 GGE* = 114,000 BTU/Gallon
1 GGE* = 3.587 m³ Compressed Natural Gas
CNG Portfolio

CNG In A Box - 400
- 10,000 gasoline gallons per day ... 7.5 GGE / min
- Cars, trucks, buses
- Launched in Mar ‘12 ... first unit delivered Sep ‘12

CNG In A Box High-Flow
- 20,000 gasoline gallons per day ... 15 GGE / min
- Rig-site gas distribution, large trucks, flare capture
- Launched in Sep ‘12 ... first unit delivered Mar ‘13

CNG In A Box Stand-alone
- 10-20,000 gasoline gallons per day ... gas-engine driven
- Storage, remote sites
- Under development
Gas Monetization... CNG/LNG

NA transportation fuel share by vehicle type

On-road 85%
- Personal vehicles 37%
- Light-duty trucks 28%
- Medium 5%
- Heavy-duty 15%

Rail 10%
- LNG

Marine/off-road 5%
- LNG

GE Gas Monetization Solutions

Gallons/day

GE fueling solution

Large LNG
- 1,000,000

Micro & Mini LNG
- 50,000

LNG In A Box™
- 20,000

CNG In A Box™ / CNG In A Box™ Hi-Flow
- 100

CNG HFA* (Home Fueling Appliance)
- 5

* Under development

Source: 2007 EIA: Transportation Energy Data Book
*2017 estimate by Frost & Sullivan N8CF-18. Medium is average of Class 6 & 7 trucks, Heavy duty is Class 8 trucks
**NTI/BD under exploration
Small LNG ... key points

• Strong heritage and experience in large scale LNG
• In-house financial solutions to facilitate different business models
• Integrated LNG solutions for wide production capacity range
• Complete life cycle solution utilizing best-in-class GE capabilities
• Product structure ... Single design for multiple plants
• Modular design ... Plug & play
• Flexible ... can be redeployed or scaled up/down if needed

Bringing GE-proven LNG experience to rapidly deployable, small-scale solutions