CB&I E-Gas Technology
2016-2017 Progress on All Fronts

Gasification & Syngas Technologies Conference  2016

October 17, 2016

Jayesh Shah, Commercial Development Manager
This presentation contains forward-looking statements regarding CB&I and represents our expectations and beliefs concerning future events. These forward-looking statements are intended to be covered by the safe harbor for forward-looking statements provided by the Private Securities Litigation Reform Act of 1995. Forward-looking statements involve known and unknown risks and uncertainties. When considering any statements that are predictive in nature, depend upon or refer to future events or conditions, or use or contain words, terms, phrases or expressions such as “achieve,” “forecast,” “plan,” “propose,” “strategy,” “envision,” “hope,” “will,” “continue,” “potential,” “expect,” “believe,” “anticipate,” “project,” “estimate,” “predict,” “intend,” “should,” “could,” “may,” “might” or similar forward-looking statements, we refer you to the cautionary statements concerning risk factors and “Forward-Looking Statements” described under “Risk Factors” in Item 1A of our Annual Report filed on Form 10-K filed with the SEC for the year ended December 31, 2015, and any updates to those risk factors or “Forward-Looking Statements” included in our subsequent Quarterly Reports on Form 10-Q filed with the SEC, which cautionary statements are incorporated herein by reference.
E-Gas™ Gasification Technology

E-Gas Worldwide Projects Status

- Wabash River Gasification Plant
- POSCO SNG Project
- Reliance Gasification Project
- CNOOC Gasification Project
- SINCIER Gasification Project

E-Gas Plus™

E-Gas Quench

CB&I Support
E-Gas™ Technology for Gasification

- Two-stage design w/dry carbon and water recycle → 99%+ carbon conversion, ~10% less oxygen use, no wastewater or carbon lost

- Demonstrated for low reactivity as well as reactive fuels → Fuel flexible

- Continuous Slag Removal (no lock hoppers), water recycle → Reliable, Lower CAPEX

- Smaller water handling system, compact fire tube boiler design → Lower structure height, Lower CAPEX

- The only gasification technology licensor with hands-on experience driven design → Better performance, High reliability

- Single Train Capacities:
  - 3000 mtpd on bituminous coal/pet coke
  - 4000 mtpd on sub-bituminous coal

Feedstock Options

E-Gas™ Technology Target Feedstocks

- MSW
- Sludge
- Biomass
- Lignite
- Sub-bituminous coal
- Bituminous coal
- Pet Coke
- Waste Oils
- Plastics

Product Options

- IGCC
- Power & Steam
- CO
- Hydrogen
- Methanol
- Acetic Acid
- Olefins
- Ammonia
- SNG
- Diesel
- Naphtha
- Jet Fuel
- Gasoline

Gasification Byproducts

- Slag
- Elemental Sulfur

A World of Solutions
<table>
<thead>
<tr>
<th>Project</th>
<th>Owner</th>
<th>Start-Up</th>
<th>Feedstock</th>
<th>Trains</th>
<th>NM3/hr per train (CO+H2)</th>
<th>MMSCFH per train (CO+H2)</th>
<th>Syngas Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wabash River Indiana, USA</td>
<td>Phibro LLC</td>
<td>1995</td>
<td>Bit Coal, Petcoke</td>
<td>1</td>
<td>135,000</td>
<td>5.14</td>
<td>Power</td>
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<tr>
<td>POSCO SNG Gwangyang, S. Korea</td>
<td>POSCO</td>
<td>2016</td>
<td>Sub-Bit Coal</td>
<td>2+1</td>
<td>144,000</td>
<td>5.48</td>
<td>SNG</td>
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<tr>
<td>Reliance Gasification, Jamnagar, India</td>
<td>Reliance Industries</td>
<td>2016-2017</td>
<td>Petcoke, Petcoke and Sub-Bit coal blend</td>
<td>9+1</td>
<td>272,000</td>
<td>10.35</td>
<td>Power, Hydrogen Fuel, SNG Acetic Acid</td>
</tr>
<tr>
<td>CNOOC Gasification, Huizhou, China</td>
<td>CNOOC</td>
<td>2017</td>
<td>Bit Coal</td>
<td>2+1</td>
<td>144,000</td>
<td>5.48</td>
<td>Hydrogen, Chemical</td>
</tr>
<tr>
<td>Sincier Gasification, Shandong, China</td>
<td>Sincier</td>
<td>2018</td>
<td>Coal and Liquid Pitch</td>
<td>2+1</td>
<td>115,000</td>
<td>4.38</td>
<td>Hydrogen, Power</td>
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</table>
Phibro LLC : New Owner
Conversion to Ammonia Plant

• Permitted, Designed and Built in 4 years
• Largest IGCC in the World in 1995
• Cleanest IGCC Power Plant
• Demonstrated Repowering of Pulverized Coal Plant

The Wabash River Gasification Project is located in West Terre Haute, Indiana and is owned by Phibro LLC.
Indonesian Sub-bituminous Coal

Total Three (3) – Gasification Trains

287,000 Nm$^3$/hr \((\text{H}_2 + \text{CO} + \text{CH}_4)\)

Syngas for SNG

POSOCO SNG Project at Gwangyang

Plant Site

SNG Plant Site

LNG Terminal
Commissioning and Start-up

- CB&I Technical Support team has been fully engaged.
- Commissioning Activities of the E-Gas TBL are complete.
- Demonstrated Gasifier operations on coal while commissioning downstream units.
- CB&I’s Training programs and Operator Training Simulator - Effective at preparing operations teams.
- Commissioning of downstream units almost complete.
- Performance test completion scheduled for 1st Quarter 2017.
Reliance Industries Jamnagar

Blend Feedstock - Petcoke + Coal

Total Ten (10) – Gasification Trains

2,720,000 Nm³/hr (H₂ + CO + CH₄)

Syngas for Power Generation, Fuel, Chemicals and Hydrogen
Pre-commissioning

- CB&I Technical Support team has been fully engaged
- Several Reliance Operations and Maintenance engineers experienced POSCO commissioning and startup activities.
- On Schedule for mechanical completion of DTA Modules

Commissioning

- Operated the DTA Module 1 Rod Mill and associated slurry pumps to make slurry
- On schedule for gasifier operation on petcoke
CNOOC Gasification Project (China) - Overview

Coal, Coke or 80/20 Coke/Coal Blend

| Coal: 4,075 mtpd | Coke: 2,825 mtpd | Blend: 3,021 mtpd |

Total Three (3) – Gasification Trains

Total Syngas: 240,000 Nm³/hr

<table>
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<tr>
<th>Syngas to H₂</th>
<th>Extraction gas to Oxo Chemical</th>
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<td>225,000 Nm³/hr</td>
<td>15,000 Nm³/hr</td>
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HP Steam Production: 190 MT/hr @ 1750 psi
Civil Works (including piling) - begun in March 2016

Completed Detailed Engineering – June 2016

50% Construction Complete – December 2016

Mechanical Completion – Mid 2017

Gasification Plant Start-up – Late 2017
Shandong Sincier Petrochemical Co. LTD (China)

Coal + Pitch

Total Three (3) – E-Gas Plus Gasification Trains

230,000 NM3/hr H2 + CO

Syngas to Hydrogen for Refinery Expansion
E-Gas Plus™ Technology

Additional Feed helps meet increased hydrogen demand.

Internal utilization of resid avoiding transportation and local market irregularities.

Reduces overall oxygen consumption.
E-Gas Quench

- No Steam Production
- Higher Moisture in Syngas
- Proven Technology Benefits

Gasifier Operation

Recycle Syngas Quench
Water/Steam Quench
Second Stage Slurry

First stage Pitch/Steam
First stage Slurry

Oxygen

Syngas
- Hydrogen
- CO
- Methane

Char

Water Quench

Slag
E-Gas Gasification Technology is the right choice. CB&I provides the support throughout project lifecycle.
## Contact us:

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Thank You!