GSTC Syngas Database: 2017 Update

Gasification & Syngas Technologies Conference
Colorado Springs, 17th October, 2017
Overview

• Introduction
• Syngas market development
• Gasification statistics
• Reforming statistics
• Conclusions
Introduction

- First edition 1999 as gasification database
- Updated regularly since then
- 2016 gasifier update
  - Total 1014 projects, 2559 gasifiers, of which:
  - Active commercial operating and planned 356 projects, 863 gasifiers
  - 154 GW\textsubscript{th} operating, 96 GW\textsubscript{th} under construction and 250 GW\textsubscript{th} planned.
- SMR database integrated for 2017
  - ~95% of ammonia, methanol, GTL and DRI plants
  - ~85% refinery hydrogen plants
  - Smaller plants less well covered
Syngas Market Development 2016-2017

Source: GSTC Database, 2017
Total Syngas Market

Source: GSTC Database, 2017
Market Share by Technology Type

![Market Share Chart]

Source: GSTC Database, 2017
What’s New in 2017 Database - Content

• Gasification

  – Total 1099 projects, 2886 gasifiers not counting spares, of which:

<table>
<thead>
<tr>
<th></th>
<th>Projects</th>
<th>Gasifiers</th>
<th>GWth Syngas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>379</td>
<td>938</td>
<td>173</td>
</tr>
<tr>
<td>Construction</td>
<td>131</td>
<td>348</td>
<td>108</td>
</tr>
<tr>
<td>Planned</td>
<td>146</td>
<td>734</td>
<td>116</td>
</tr>
<tr>
<td>Total</td>
<td>656</td>
<td>2,020</td>
<td>398</td>
</tr>
</tbody>
</table>

Note: Total database includes shutdown gasifiers, gasifiers never built or only in pre-planning stage, as well as pilot and demonstration gasifiers.
Cumulative Gasification Capacity

Source: GSTC Database, 2017
Gasification by Region

Source: GSTC Database, 2017
End Use Applications of Gasification Syngas

Source: GSTC Database, 2017
Primary Feedstocks for Gasification

MWth Synthesis Gas

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>350,000</td>
<td>150,000</td>
<td>0</td>
</tr>
<tr>
<td>Gas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Petcoke</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Petroleum</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Biomass</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Waste</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: GSTC Database, 2017
Number of Gasifiers by Primary Feedstocks

Source: GSTC Database, 2017
Gasification by Technology

Source: GSTC Database, 2017
Biomass Gasification

Source: GSTC Database, 2017
Numbers of Biomass Gasifiers

Source: GSTC Database, 2017
Biomass Gasifiers by Size

Number of Projects

- Planned (2021)
- Construction (2020)
- Operating (2017)

Source: GSTC Database, 2017
## Reformer Syngas Database - Content

### 986 Projects

<table>
<thead>
<tr>
<th></th>
<th>Projects</th>
<th>Units</th>
<th>GWth Syngas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating</strong></td>
<td>799</td>
<td>907</td>
<td>240</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>30</td>
<td>33</td>
<td>15</td>
</tr>
<tr>
<td><strong>Planned</strong></td>
<td>31</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total Active-Real and Planned</strong></td>
<td><strong>860</strong></td>
<td><strong>975</strong></td>
<td><strong>265</strong></td>
</tr>
</tbody>
</table>

Note: Total database includes shutdown reformers, reformers never built or only in pre-planning stage, as well as pilot and demonstration reformers.

Source: GSTC Database, 2017
SMR/ATR Syngas by Application

Source: GSTC Database, 2017
SMR/ATR Syngas by Region

Source: GSTC Database, 2017
Conclusions

• Integrating gasification and SMR databases allows full market overview by product

• Continuous, but moderate increase over last year over most product segments.
Acknowledgements

- Gasification & Syngas Technologies Council.
- Technology licensors, plant owners and others for contribution of project data.

- Any additions/corrections are always welcome
  
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