Policies that support and challenge biomass and waste to energy power plants

June 2018, Dr. Verena Streiterdt
COMPANY STRUCTURE

Technology Provider / Licensor

- **ERK ENGINEERING**
  - Design, engineering, calculations, and expert reports

- **ERK BOILER SYSTEMS**
  - Technology licenses for water tube boiler systems

- **ERK FIRING SYSTEMS**
  - Technology licences for fluidised bed & water-cooled inclined grate systems

- **ERK TUBE SYSTEMS**
  - Technology licenses for fire tube boiler and heat exchanger systems

- **ERK RESEARCH AND DEVELOPMENT**
  - R&D activities are executed together with universities worldwide & focus on sustainability
ERK LICENSEES WORLDWIDE
6000+ INSTALLED REFERENCES WORLDWIDE
Biomas Fired Boiler Systems

- Decades of experience with biomass fired boilers
- ERK ranks 3rd technology provider for biomass fired boilers
- Installations for most biomass materials as well as fuel mixtures
- Multiple design options to maximise boiler availability, such as parallel flow and tailed designs, and efficiency requirements, e.g. combustion air preheating or flue gas condensation
- About 40 references of Biomass boilers in the SEA region

380 REFERENCES

REFERENCE PARAMETERS

| MAX | 160 MW | 109 bar | 540 °C |
| MIN | 0.4 MW | 3 bar | 180 °C |
WASTE FIRED BOILER SYSTEMS

- Decades of experience with waste fired boilers
- ERK ranks 5th technology provider for waste fired boilers
- Installations for most waste materials and fuel mixtures
- Multiple design options to maximize boiler availability, such as parallel flow and tailend designs, and efficiency requirements, e.g. combustion air preheating or flue gas condensation
- Up to 10 references in SEA

more than
650
REFERENCES

REFERENCE PARAMETERS

<table>
<thead>
<tr>
<th>MAX</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 MW</td>
<td>0.6 MW</td>
</tr>
<tr>
<td>102 bar</td>
<td>3 bar</td>
</tr>
<tr>
<td>520 °C</td>
<td>174 °C</td>
</tr>
</tbody>
</table>
WASTE FIRED BOILER INSTALLATIONS

Japan

Steam capacity: 2x 98 tph
Operating pressure: 50 bar
Steam temperature: 350°C
Application: Energy from waste (MSW), Cogeneration

SPECIAL FEATURE
32 MWe electricity from waste plant + district heating
WASTE FIRED BOILER INSTALLATIONS

Germany

Steam capacity  3x 20 tph
Operating pressure  40 bar
Steam temperature  400°C
Application  Energy from waste plant (MSW), cogeneration

SPECIAL FEATURE
First waste fired boilers with parallel flow heating surfaces (minimises fouling), first superheaters in operation for >9 years, 97% boiler availability
WASTE FIRED BOILER INSTALLATION

Licencee: LAWI Engineering GmbH

Location: Saraburi/ Thailand

- Thermal capacity: 45 MW
- Electrical capacity: 9.5 MW
- Fuel: RDF
- Operating pressure: 53 bar
- Feedwater temperature: 130 C
- Steam temperature: 450 C
- Application: Electric power generation for the public grid

SPECIAL FEATURE

EnviComb® is a Combustion System designed and applied for the reliable & efficient thermal utilization of Municipal Solid Wastes (MSW) and Refuse Derived Fuels (RDF).
WASTE FIRED BOILER INSTALLATIONS

Licencee: LAWI Engineering GmbH

Brasil

Steam capacity 4 tph
Operating pressure 31 bar
Steam temperature 370°C
Application Decentralised energy from waste plant

SPECIAL FEATURE
800 kWe capacity energy from waste plant
Policies that support Waste to energy projects – example from China

- China banned imports of plastic waste in January 2018
- Increases the demand of WtE plants elsewhere
- For example, New South Wales government in Australia is currently rethinking their ban for waste to energy plants
Policy challenges for biomass and waste to energy projects – Thailand

**Thailand:**
- Ministry of Energy cancels competitive bidding procedure for RE projects → disincentive for investors
- Project objections from a private party can stop projects for long periods of time
- Government (EGAT) is challenged by smart-grid requirements and thus opposes further increase of renewable energy
Reported policy challenges for biomass and waste to energy projects – **Indonesia**

- Ministry of Energy and Mineral Resources Regulation No. 50/2017 – drop of foreign investors

<table>
<thead>
<tr>
<th>Renewable energy</th>
<th>Method of appointment</th>
<th>Regional BPP &gt; national BPP Agency</th>
<th>Regional BPP &lt; National BPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>Direct selection, BOOT</td>
<td>Maximum 85% of regional grid BPP</td>
<td>Based on agreement between PLN and iPP</td>
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<tr>
<td>Waste</td>
<td>Reference price + incentives, BOOT</td>
<td>Maximum 100% of local generation</td>
<td>Based on agreement between PLN and iPP</td>
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</tbody>
</table>

- **Biomass**: Import tax reduction for biomass technology imports
- **Waste**: Intransparent appointment processes, insecurity of investments
ERK ECKROHRKESSEL GMBH

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THANK YOU