Powerful
First-Class Boiler and Combustion Systems & Complete Engineering Services
Atul Sharma
Vertrieb / Business Development

Bioenergie in Indonesia- Case Study-E5880
Eckrohr (corner tube) boiler technology was developed in the mid 1940’s
First licensees started to build Eckrohr-boilers worldwide
Outsourcing of the ERK technology from La Mont Boiler Ltd. in 1977
ERK is headquartered in Berlin, Germany, with a global licensee network
ERK provides engineering services while licensees manufacture, supply, and install boiler/heater systems
Today 35 licensees in 26 countries worldwide ranging from small boiler manufacturers to turn-key suppliers, e.g. John Thompson, JFE, and Thyssen Krupp
Background Eckrohrkessel

Technical concept of ERK boiler

- The pressurized body is made of a stable framework out of downcomers, headers and tube walls, which are welded together with the tube walls to a gas-tight tube cage.

- The unique arrangement of mixture pipes (4), steam back-flow pipes (5), overflow pipes (6) and unheated downcomers and return pipes (2, 7) allows a pre-separation of steam before the steam drum. This results to an excellent load change behavior as well as a high steam purity.

- This tube cage with all welded or separately supported heating surfaces is self-supported by downcomers in the corners of the boiler (2, 7).
Background Eckrohrkessel

Business areas

- Licenses for ERK boiler and combustion system designs with ongoing engineering and development support
- Boiler/combustion system engineering services, including detail engineering, expert reports, boiler optimisation etc.
- Rankine and Brayton cycle optimisation with unique boiler and heater equipment expertise
- IP tube technology to improve component performance, size, and weight
- Research and development
Background Eckrohrkessel

References

- More than 6,000 boiler and heater references with capacities from 0.3-250MW
- Broad fuel spectrum with >80,000MW installed capacity worldwide
- Expertise with steam, thermal oil, hot water, and chemical heating systems
Background Eckrohrkessel

35 licensees in 26 countries

- Large number of licensees not only enables large number of references but also rapid implementation of innovations through local contacts
- ERK is a European SME with global reach
ip tube technology

Concept and benefits

- ip tube = industrial power tube
- Patented technology with IP protection for various applications, designs, and manufacturing processes
- ip tubes can double heat transfer rates without tube side pressure drop increase; Heat transfer rate increase of up to 4.5 possible
- Heat transfer is enhanced through turbulent flow on the tube inside and outside
- Specially shaped dimples individually engineered for various purposes, such as heat transfer, pressure drop, fouling, and acoustics
- Beneficial fouling behavior through induced turbulences proven in various applications
- More than 150 ip tube references available worldwide and active marketing through ERK’s licensee network
ip tube technology

Markets

- Heat recovery smoke tube boiler
- Directly fired smoke tube boiler
- Shell & tube heat exchanger
- Marine boiler systems
- Flue gas condenser
- Thermal oxidiser
- Air preheater
- Heating surfaces for refuse and biomass fired boilers, WHB in cement industry and other high dust applications
E-5880- Gudang Garam

ERK Eckrohrkessel GmbH
Germany
(Boiler design befitting the combustion system)

ALERA International pte Ltd.
Singapore, Germany
(Twin Fluid Fluidized bed combustion system)

SCHNEIDER Engineering GmbH
Germany and South East Asia
(Manufacturing, Detail Engineering)

INTEC Energy Systems
(Manufacturing, Detail Engineering together with Schneider)
E-5880- Gudang Garam

Gundang Garam Pt Tabak.
- Cigarette producer
- North Sumatra
- Different types of biomass wastes

Project time line
- Oct 2010 - Kickoff
- Aug 2012 - Boiler registration
- 2013 – Erection commissioning and installation
- 2014 – Operation
E-5880 - Gudang Garam

Boiler parameters
- Steam cap - 25 tph
- Pressure - 16 bar
- Saturated steam
- Thermal cap - 19MW

Fuel parameters
- Tobacco stems
- Dust, Paper
- Baskets
- LCV: 9-10 MJ/kg
- FFeed rate 6-7t/h

Combustion system
- ALERA Fluidized Bed
E-5880- Gudang Garam- Twinfluid system

Features

- Combo-concept of Fluidised bed combustion and Circulating fluidised bed combustion

- Fluidized Bed
  - Shallow bed – Combustion bed
  - Main bed – Heat transfer bed with in-bed tubes
  - The exchange of solids between both the beds can be controlled and hence broad range of operation
  - Biomass mix combustion with limestone and upto 40% part load conditions
  - Proved system in complex fuel combustion with 3 references
Advantages

- In bed tubes can transfer about 40% of net heat which can be integrated in boiler water wall design
- Low pressure loss through fluidized bed
- Higher bed height results in low pressure from primary combustion fan
- Horizontal mixing of fuel in the fluidized bed
- Effective partload operation
- Environmental friendly combustion- low emission limits by adding limestone in bed
E-5880- Gudang Garam- Twinfluid system
E-5880- Gudang Garam- Boiler
E-5880- Gudang Garam- Boiler
E-5880- Gudang Garam- Boiler- Summary

- Logistics - Costs
- Network of partners- Ease of working
- "Designed in Germany" – Value
- Combustion system- Efficient and all rounder for 7 fuel proportions
- Boiler – Operation
- ERK’s experience and know- 28 references in Indonesia
- ERK’s licensee in Indonesia- PT BASUKI PRATAMA Engineering (7 Project references)
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