

# CASE STUDY

## Bannari Amman Sugars, Nanjangud, Karnataka

Bannari Amman Sugars Ltd. (BASL) has a 80 KLPD distillery attached to their sugar plant at Nanjangud, Karnataka.

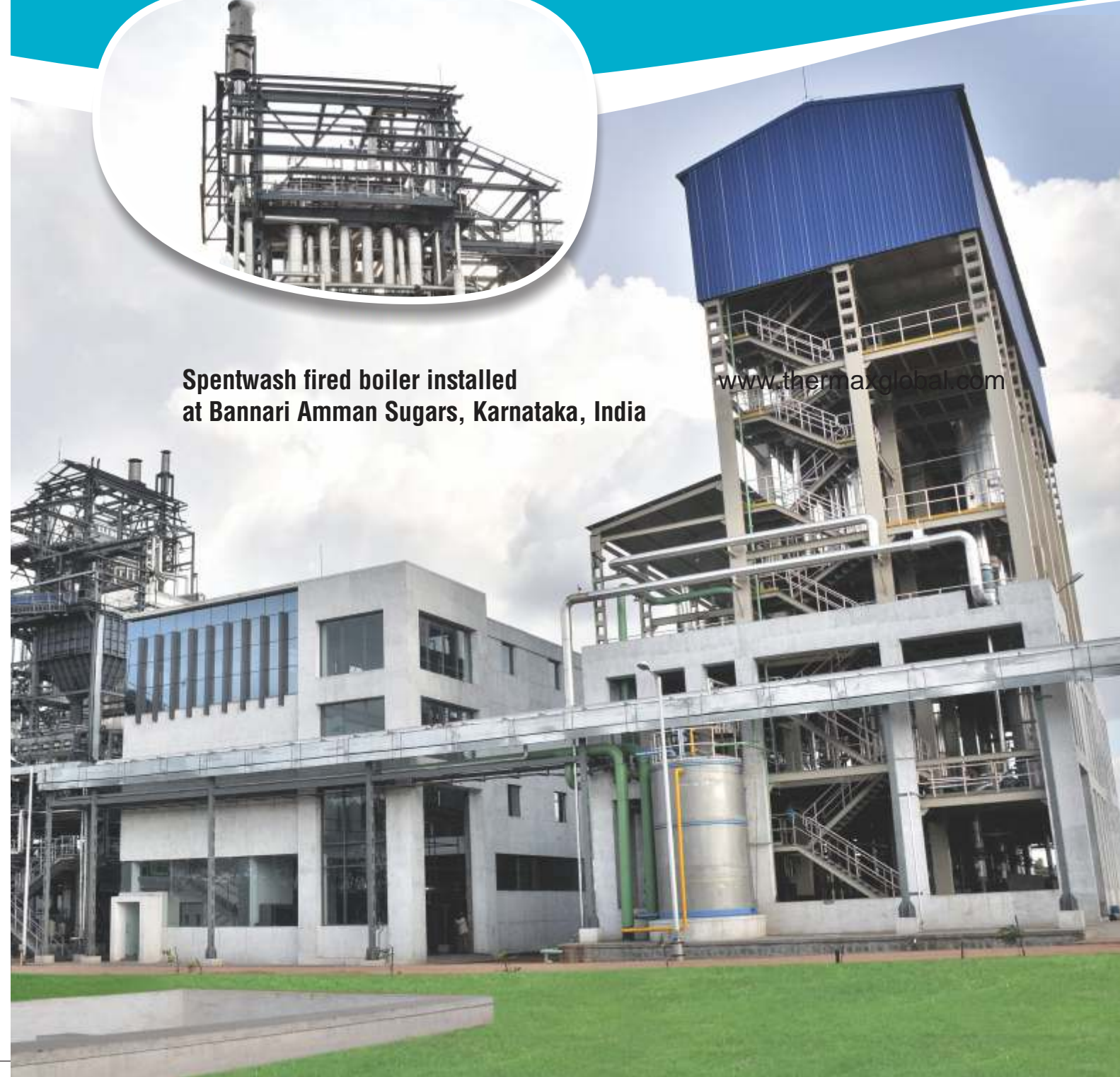
The spentwash boiler in the distillery, supplied by Thermax, is designed to incinerate 8.5 TPH concentrated spentwash to generate 23.4 TPH steam at 32 kg/cm<sup>2</sup>(g) pressure and 350° C temperature.

- Total steam generation: 23.4 TPH
- Gross power generation: 1.6 MW
- Payback period (approx): 4.5 years

Operating reliably since November 2008, the boiler has demonstrated continuous operation for more than 45 days without off-line cleaning.



Spentwash fired boiler installed at Bannari Amman Sugars, Karnataka, India



# CASE STUDY

## EID Parry Limited, Sivaganga, Tamil Nadu

EID Parry Ltd. has a 60 KLPD standalone distillery at Sivaganga, Tamil Nadu.

The spentwash boiler supplied by Thermax in this distillery is designed to incinerate 187 TPD of concentrated spentwash to generate 22 TPH of steam. The steam thus generated allows the distillery to meet the entire steam demand of process and evaporator, as well as generating 2 MW power.

Spentwash fired boiler at Nirani Sugars Ltd, Karnataka, India



In view of our constant endeavour to improve the quality of our products, we reserve the right to alter or change specifications without prior notice. All photographs shown in this publication are representative in purpose, and to be used for reference only. For actual details and specifications, please refer to Thermax offer document.



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## Thermax Babcock & Wilcox Energy Solutions



# Spentwash-based Co-generation Technology

Powerful energy solutions for distilleries

# Thermax - improving your business is our business

Thermax offers products, systems and solutions in energy and environmental engineering to industrial and commercial establishments around the world. Its business expertise covers heating, cooling, waste heat recovery, captive power, water treatment and recycling, air pollution control and waste management and performance chemicals.

Thermax brings to customers extensive experience in industrial applications and expertise through technology partnerships and strategic alliances.

Operating from its headquarters in Pune (Western India), Thermax has built an international sales and service network spread over South East Asia, Middle East, Africa, Russia, UK and the USA.

**Boiler & Heater Group (B&H)**  
Thermax's Boiler & Heater Group provides equipment and complete solutions for generating steam for process and power needs through combustion of various solid, liquid and gaseous fuels, as well as through heat recovery from turbine/engine exhaust and (waste) heat recovery from industrial processes. The Group also offers heaters for various applications in the Chemical, Petrochemical & Refinery segments. Its services arm offers renovation and modernization solutions for old boilers and heaters.

The major industry segments served by the Group in India and across the world are Steel, Refinery, Petrochemical, Power, Cement, Sugar, Fertilizer, Paper, Chemical, Non-Ferrous Metal and Textiles.

## Spentwash-based Co-generation Technology (Patented)

Alcohol/ethanol manufacturing is a highly energy intensive process. Given the fragile and dynamic nature of the fuel and power situation faced by distilleries today, it makes good business sense for them to go for a vinasse incineration-based co-generation system with the following attendant benefits:

- Greater energy security - it helps meet the entire steam and power demand of the distillery, thereby making it self-sufficient
- Regulatory compliance - stringent environmental policies that mandate 'zero liquid discharge' from distilleries can be fully complied with through incineration route

Based on extensive R&D and a series of successful trials, Thermax offers a unique solution for spentwash (concentrated to 55%-60% solids) incineration, that comes with high reliability and patented technology.

This world-class spentwash incineration solution can be offered through various routes:

- Boiler Island
- Boiler-Turbine-Generator package
- Complete turnkey solution on EPC basis
- Build-Own-Operate-Transfer (BOOT)



### Benefits

- By generating steam from spentwash, molasses based distilleries can significantly reduce their energy costs. Every kilogram of concentrated spentwash replaces nearly 0.33 kg of Indian coal
- Community life around the distillery sites need not be plagued by pollution, as the discharge of spentwash is almost entirely eliminated. This is a relief for the distillery sector in view of growing public awareness and ever tightening pollution control regulations
- Helps meet 'zero liquid effluent discharge' norm
- Effective solution for power and process steam requirements of a distillery
- Ash generated from the boiler has high potash content, which can be used in fields for improving soil conditions



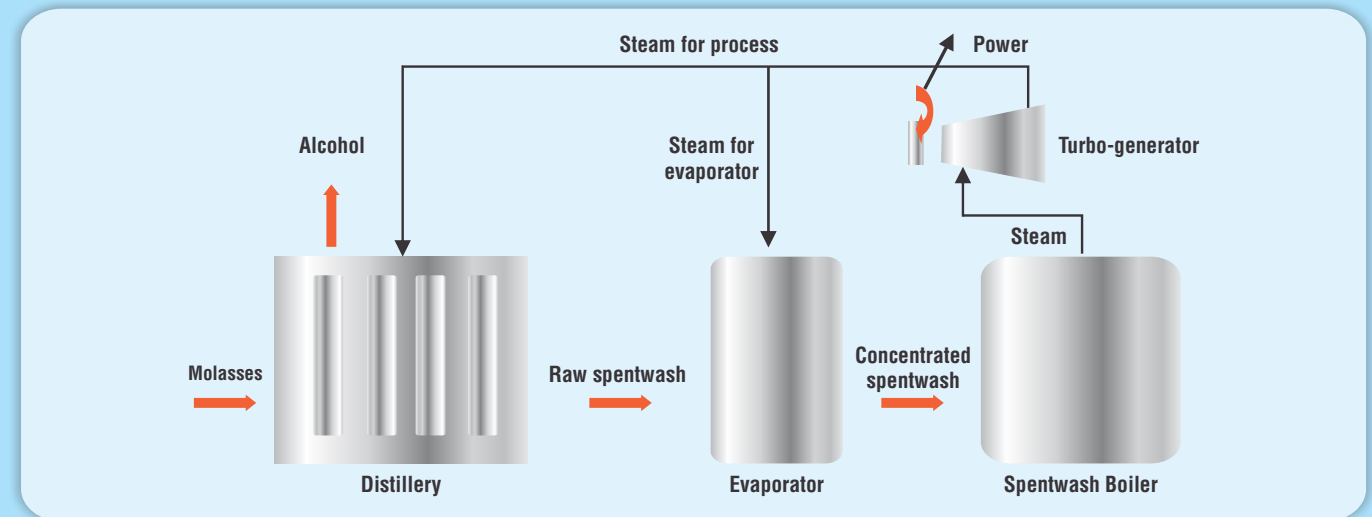
### Designed & Engineered for Excellence

- Effective on-line cleaning system.
- Specially designed spentwash handling system
- Adequate residence time to ensure complete combustion
- System designed for maximum heat recovery
- Multi-pass design ensures minimum fouling potential

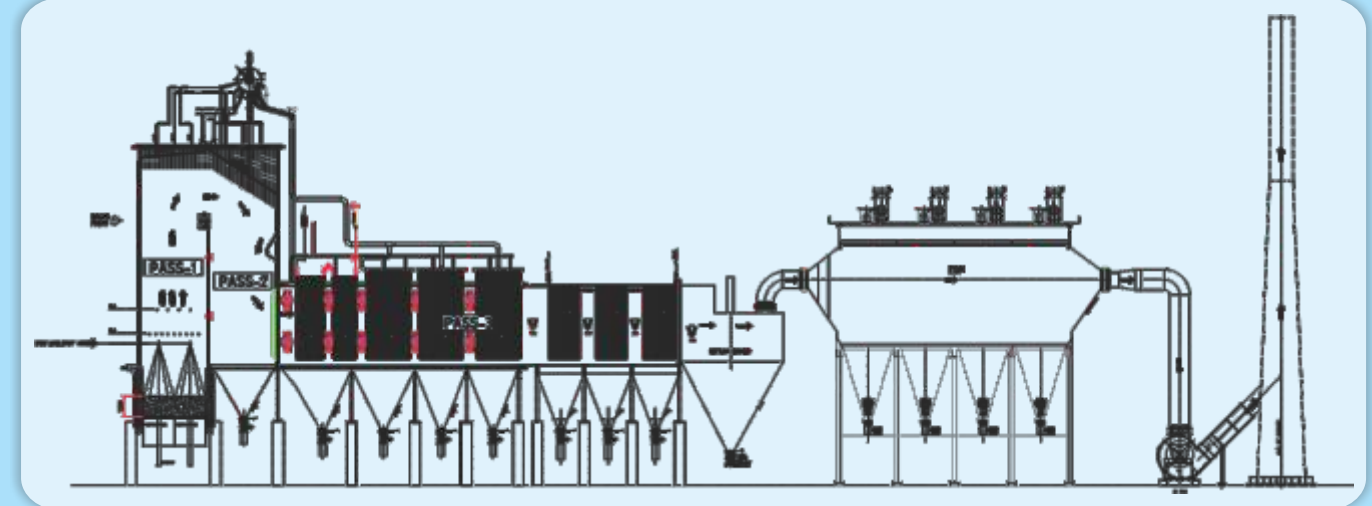
### Operating Range

- Operating capacity - 10 to 75 TPH
- Pressure - 10 to 66 kg/cm<sup>2</sup>g
- Temperature - Saturated or from 350 to 480°C
- Support fuels - Indian coal, imported coal, wood chips, petcoke and bagasse

### Process Flow Diagram



### Typical Boiler Schematic



### Spentwash Fired FBC Boilers

Sr. No.	Name of customer	Capacity (TPH)	Pressure (Kg/cm <sup>2</sup> )	Temp Deg. C	Fuels	Year of Commissioning	Year of order
1	Bannari Amman Sugars, Nanjangud, Karnataka	25	32	350	Spent wash + Coal	2009	2007
2	EID Parry Ltd., Nellikupam, Tamilnadu	22	44	380	Spent wash + Coal	2009	2008
3	Mohan Breweries & Distilleries Ltd., Tamilnadu	28	44	385	Spent wash + Coal	2010	2008
4	Sovereign Distilleries, Karnataka	36	21	380	Spent wash + Coal	2011	2008
5	Nirani Sugars Ltd., Mudhol, Karnataka	32	45	400	Spent wash + Coal	2012	2009
6	Indian Sugar Manufacturing Co. Ltd., Indi, Bijapur, Karnataka	22	44	380	Spent wash + Coal	2013	2011
7	Universal Robina Corporation, Philippines	30	44	380	Spent wash + Coal	Under Execution	2012
8	The Nandi Sahakari Sakkare Karkhane Niyamit Bijapur, Karnataka	24	45	400	Spent wash + Coal	Under Execution	2012
9	Shivshakti Sugars Limited Belgaum, Karnataka	33	44	400	Spent wash + Coal	Under Execution	2012
10	Dayal Beverages Ltd., Saharanpur, Uttar Pradesh	25	44	400	Spent Wash + Coal	Under Execution	2013
11	Sar Senapati Santaji Ghorpade Sugar Factory Pvt Limited	10.8	10	Sat	Spent Wash + Coal	Under Execution	2013
12	Shri Ambalika Sugar Pvt Ltd	28.3	45	390	Spent Wash + Coal	Under Execution	2013