



## CASE STUDY

### Efficient dry bottom ash handling with DRYCON™ at Heyuan Power Plant, China

#### The situation

Heyuan Power Plant, owned by Shenzhen Energy Company (SEC) (65%) and Hopewell Power (35%), is situated in Heyuan City, Guangdong Province just 200km from Hong Kong. The first 600 MW unit of the brand new plant was put into operation in January 2009 followed by the second 600 MW unit in August 2009.

In order to become one of the most efficient and cost effective coal-fired power plants in Guangdong today, SEC wanted to include modern technologies to ensure it meets these targets. One of the areas of consideration would be the removal of bottom ash.

The initial plan for the bottom ash removal project was for a wet removal system known as a Submerged Scraper Conveyor (SSC) but after serious consideration with the help and advice of Clyde Bergemann, SEC opted for a dry solution and awarded the contract to Clyde Bergemann for their DRYCON™ technology on both 600 MW units.

#### Our solution

Following a detailed review of available technologies, SEC chose Clyde Bergemann's DRYCON™ dry bottom ash technology to provide a high reliability, low maintenance solution whilst providing for the elimination of water commonly used in alternative solutions.

In addition to elimination of water, SEC noted the additional benefits provided by the DRYCON™ system which include:

- increased environmental protection
- positive influence on the efficiency of the boiler
- efficiency improvement by eliminating energy wastage on water recirculation and treatment
- elimination of corrosion and limitation of erosion issues
- low life cycle costs compared to wet systems





## Ability to maintain the system on-load resulted in 99.9% availability

### Heyuan DRYCON™ technical details

Conveyor width (m)	1.8
Steel plate width (m)	1.4
Conveying distance (m)	54
Conveying rate (t/h)	12
Incline (degrees)	37
Power (kW)	18.5

### The results

From start-up in January until October 2009, Heyuan Unit 1's required less than 7 hours for maintenance with the boiler unit still on-load. Availability was recorded at 99.9%

The client was very satisfied with DRYCON™ technology and the services provided by Clyde Bergemann's experienced engineers. After the PAC of Unit 2 in August 2009, SEC issued a commendatory letter to praise the performance of Clyde Bergemann staff.

### Benefits

- No water requirement for ash cooling and conveying and avoidance of all water related treatment costs
- Re-burning effect of heat energy from ash increases boiler efficiency, reduces coal usage and CO<sub>2</sub> emissions
- Lower carbon in the ash increases the quality and therefore becomes more profitable
- Low life-cycle costs
- Ability to maintain on-load resulting in increased boiler availability

### Additional references

Country	Installation	Boiler units	Max capacity each boiler
China	Ala'er	3 x 120 MW	5 t/h
China	Daihai	2 x 600 MW	60 t/h
China	Jinzhou	2 x 300 MW	26 t/h
China	Junliangcheng	2 x 350 MW	35 t/h
China	Shuidonggou	2 x 660 MW	45 t/h
China	Tuyou	2 x 600 MW	23 t/h
China	Xuanhua	2 x 300 MW	20 t/h
Germany	Lünen	1 x 800 MW	18 t/h
India	Mettur	1 x 600 MW	90 t/h
Indonesia	T.J.Awar	2 x 300 MW	15 t/h



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