



CASE STUDY

Pulse-jet fabric filter expansion at UK energy from waste plant

The situation

The waste-to-energy plant referenced in this case study is based on a 35 MW plant located in the UK.

In 2004, the waste-to-energy plant placed an order to extend each of their two existing eight chamber fabric filters (baghouses) by 50%. The customer wanted to reduce the air to cloth ratio for reliability reasons. However, Clyde Bergemann explained that extending the plant will reduce overall pressure drop and therefore significantly reduce fan power. Additionally, it was further explained that with Clyde Bergemann's progressive cleaning system the existing hydrated lime injection system will be more effective and owing to the fact cleaning is constant the materials handling system will be less stressed.

Companies were invited to bid for the design, fabrication, delivery and onsite construction of two new, four module pulse-jet fabric filters to extend the existing fabric filters at the plant. Clyde Bergemann was awarded the contract as a result of inherent low pressure losses within the design, control system philosophy and competitive price.

Our solution

Clyde Bergemann EEC offered a complete solution and involved a detailed model study to predict the final flow balance and pressure drop throughout the system. It included a new control system to manage the existing and new extension, inlet and outlet manifolds, lagging and cladding, inlet and outlet dampers, wiring/cabling to ash detectors for hoppers and burst bags, spare parts, scaffolding and manuals.

The construction took a total of approximately six months to complete with minimal disruption to plant operation as it required a short "break in" period to connect the new modules.





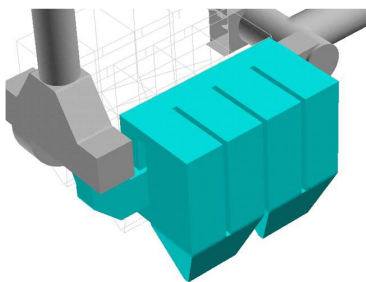
Significant I.D. fan power savings

The results

Four tests were conducted in two locations, one in the extension filter outlet and one in the stack. The results confirmed particulate emission levels of under 2 mg/Nm³.

	Extension Filter Outlet		Stack	
	09:55	13:08	09:17	11:25
Start time	09:55	13:08	09:17	11:25
End time	12:00	15:15	11:10	13:16
Volume flow (Nm ³ /s)	17.2	19.7	48.5	55.8
Particulates (mg/Nm ³ dry @ 11% O ₂)	1.04	1.00	1.04	1.19

Another factor that proved to be of benefit to the plant was the reduction I.D. fan power consumption that resulted in significant savings.



Benefits

- Optimal gas flow and dust particle distribution among modules
- Increased bag life due to the more favourable air to cloth ratio
- Significant I.D fan power savings
- Reduced materials handling wear
- Increased efficiency of hydrated lime injection
- Intelligent and flexible control system
- Increased bag filter operational data

Clyde Bergemann fabric filter reference list (extract)

Country	Installation	Plant capacity (MW)
USA	Huntley Power Plant	400
USA	Dunkirk Power Plant	600
USA	Manitowoc Public Utilities	60
USA	Rochester Public Utilities	55
UK	Eye Biomass Plant	12.7



Clyde Bergemann Materials Handling Ltd (APC Division)

Lakeside Boulevard, Lakeside
Doncaster, DN4 5PL
England UK

T: +44 1302 552200
F: +44 1302 369055

Website: www.cbmh.co.uk
eMail: powersales@cbmh.co.uk