

## FuzEvent® Case Study: Bolton Thermal Recovery Facility (ERF)

# Performance increase in a Waste to Energy plant

### The business challenge

#### Plant description:

*Bolton Incinerator was constructed in 1970 and upgraded to an ERF in 2000. The installation is a single incinerator designed for a burn capacity of approximately 15 tonnes of waste an hour, and a maximum power generating capacity of 9.2 MW.*

#### Most important Results:

- Return of investment <8 month
- 7 % increased power production
- 4,5 % more waste throughput
- 92 % full automatic operation
- 35 % less steam fluctuations



Entrance to the ERF Bolton Plant

Bolton ERF is located in Greater Manchester in North West England, and the plant is under contract between Greater Manchester Waste Disposal Authority and Viridor (Greater Manchester). The plant management was unhappy with the waste treatment capacity, and Dublix Engineering was brought in to evaluate the possibilities of using high-level control for improving the overall combustion efficiency.

Three main focus areas were identified during a feasibility study:

1. High steam flow fluctuation and lower than the nominated power production, due to inefficient combustion control strategies. During 2013 and 2014, the average power generation was 7.6 MW (82.6% of maximum).
2. Heavy need for operator intervention. Need for constant monitoring of the combustion process leaves less time for the plant operators to focus on other important plant issues.
3. Too high furnace temperature. Causing thermal wear on the refractory heavy fouling on the combustion chamber walls and in the overpass.

Based on **The Feasibility Study** Dublix **guaranteed** that the FuzEvent® high-level combustion control could run the process **more than 90%** of the time, and provide a **reduction in steam flow fluctuations by at least 20%**.

### Implementation Results

During a 5-month trial period, the FuzEvent® system controlled the combustion process for more than 92% of the time, and had the following improvements on plant performance:

- Improved the steam flow stability by 35%
- Average power generation increased by 0.350 MW (7 % increase)
- Waste throughput increased 4,5 %
- Less need for support burners
- Substantial reduced wear on refractory
- Very high operator acceptance

*It is important to understand that high-level control with the FuzEvent® system does not replace operators but assist them in performing better than average.*

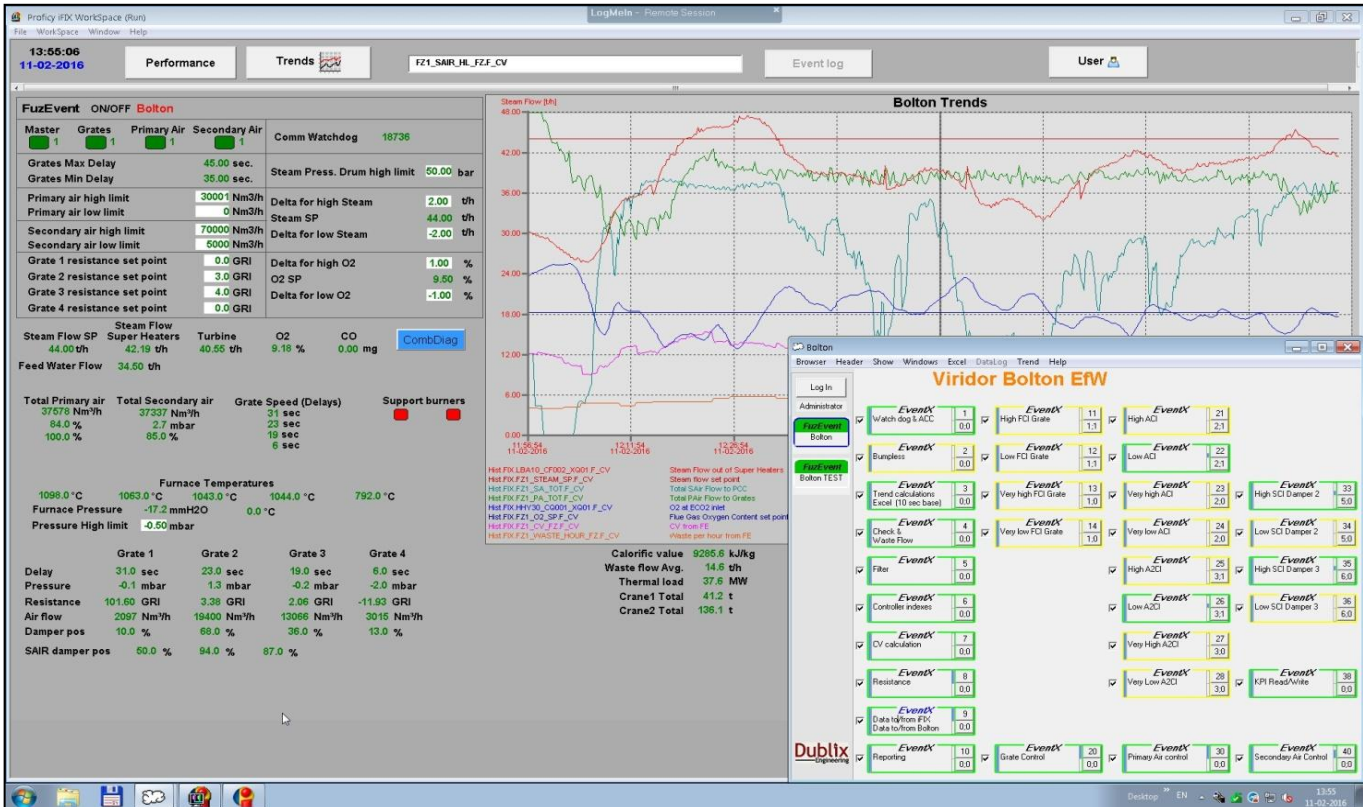
*The FuzEvent® system applies actions comparable to the ones of the very experienced operator; the development of the process is constantly evaluated by combining multiple process signals, long term trends. The process control actions are based on high level control rules with build in experience from many similar installations in combination with inputs from the plant operators. The end result is a much more stable process, higher steam output and increased plant efficiency.*

Dublix Engineering A/S

## The Implemented FuzEvent®

The FuzEvent® High Level Control system implemented at the Bolton ERF was as a part of the project configured with the following additional instruments and controls:

- Under grate pressure-measurements
- Renewed oxygen measurement
- Crane weighing system for the Combustion Diagram feature
- SCADA/DCS/PLC upgrade, for FuzEvent® access
- Water mist injection system for cooling in combustion chamber.
- Improved steam flow measurement



## The project timeline, implemented in less than 5 month

- May - June 2015 Design meeting, installation of water mist and instruments, and DCS/SCADA modifications.
- June - July 2015 Installation of the FuzEvent® computer, test of interface to DCS/SCADA, instrument test.
- July 2015 FuzEvent® 4 weeks cold and hot commissioning and test.
- August 2015 FuzEvent® in full control, 2 weeks fine tuning and operator training in the control strategies.
- Sept 2015 Stable operation with plant operators in command of of the FuzEvent®.
- Nov. 2015 FuzEvent® System Service contract activated.
- Dec. 2015 Installation of Cold Standby FuzEvent® computer.

- The FuzEvent® control provides an increase of 7% in the electrical production
- The waste throughput was increased 4,5 %
- Much better temperature control in combustion chamber, expect much lower wear on refractory
- Operators were dedicated and committed during the implementation
- The return on investment on this particular installation was well within 8 month

Stephen Robinson, Plant Manager, Viridor Bolton