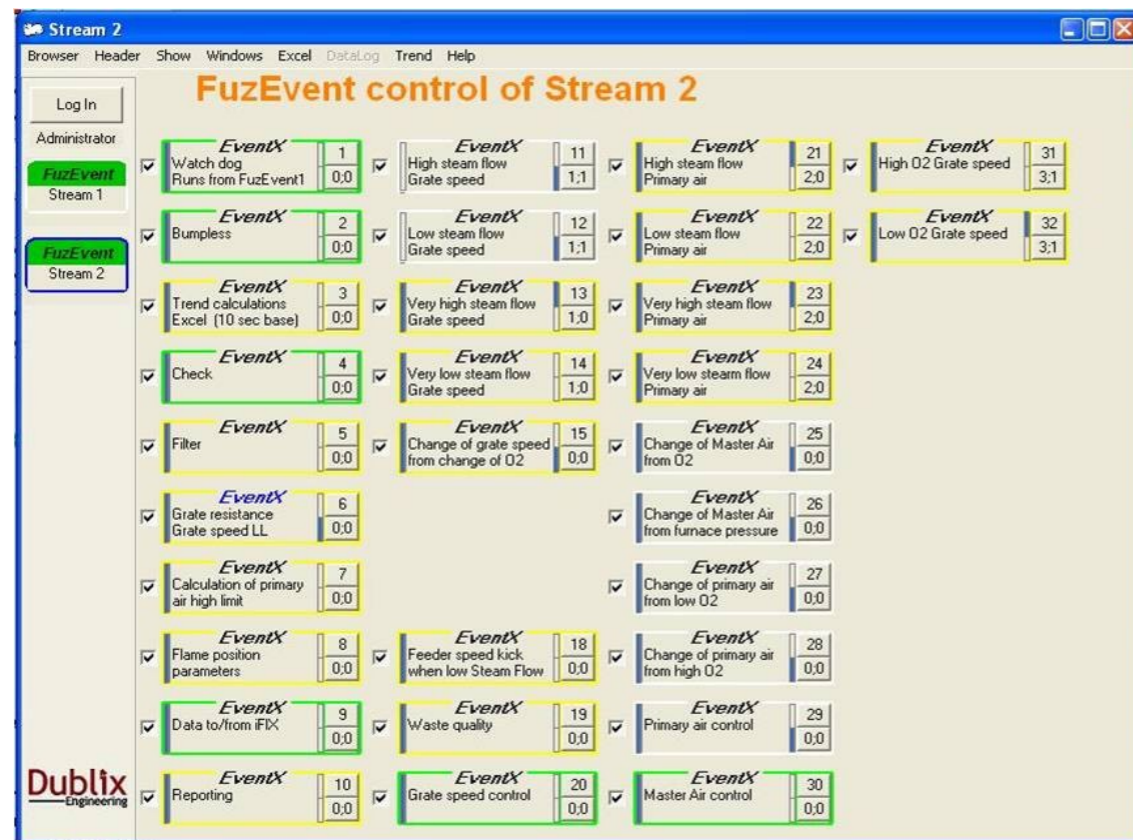


The FuzEvent® System
keeps the operators actively informed
and in charge of the process

Optimization
of Waste Incinerators
by FuzEvent®



FuzEvent®
the High-Level Process Control Tool
for Waste Incinerators:
Pay back in less than a year!

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FuzEvent[®], the Solution to the Incineration Challenge

The FuzEvent[®] Control Strategy, an Easy and Fast Implementation

FuzEvent optimizes a plant operation while taking into consideration the plant's complex process dynamics.

The FuzEvent[®] package is an open system where the user has access to the control logic through all the control parameters and calculations.

The Complexity of Control Systems for Incinerators

The main challenges when operating an incineration plant are:

- Very different and fast-varying operation of the furnace, caused by the fluctuations in waste composition;
- Long time delays for some operator actions to be visible;
- Varying process dynamics depending on the actual state of the furnace.

A control strategy based on PID controller dynamics is not the best way to cope with the above-mentioned process characteristics of a waste incinerator. Due to narrow defined operating intervals, a conventional control scheme cannot efficiently control the plant: operators need to take over in

The Dublix Engineering Solution

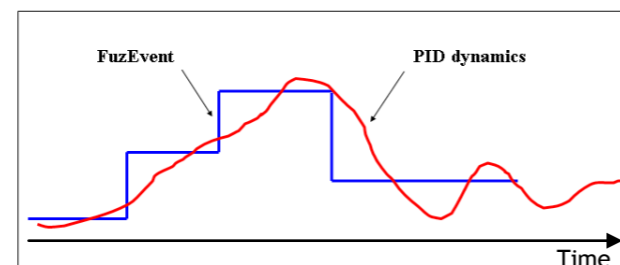
Based on over 20 years of practical work with control of waste incinerators, Dublix Engineering has developed a unique control scheme, which includes the following features:

- **Fast reactions**, without overreacting, to cope with the fluctuations in the waste composition and to avoid capacity loss;
- **Waiting time** after an adjustment to allow the process to react;
- **Previous control actions checks** when evaluating the next adjustment;
- **Dynamic behaviour adaptation** to the current state of the process through a priority management system.

The FuzEvent[®] Control System and the implemented strategy handle the parameters and interventions recommended in the EU's Reference Document on the Best Available Techniques (BAT) for Waste Incineration (August 2006).

Opposite to conventional PID control, FuzEvent[®] with fuzzy logic makes actions with longer intervals, like the operators; this results in a **more stable operation** of the plant (see graph below).

FuzEvent[®] ensures a **consistent control strategy 24 hours a day** while operating the plant all the time like the most experienced operator. The control rules are easy to modify and improve, the plant operator specialists can get access to and understand the control strategy.



Usual Benefits from the FuzEvent[®] System

- Improvements of the process stability.
- Better control of the plant's emissions.
- Increased waste capacity.
- Better handling of waste quality diversity.
- Better operation during periods of lower capacity.

Typical Results of a FuzEvent[®] optimized incinerator

- Fully automatic control of all FuzEvent[®] controlled set points 98% of the time;
- Experience shows that for each 10% improvement of process stability, energy production goes up by 2-4%, and emissions are reduced by 8-12%;
- More stable steam production; typically 20-40% reduction in the fluctuation of the steam flow, resulting in 3-5% increase of steam flow set-point;
- 3-5% increased plant capacity.

**FuzEvent[®] in service of your combustion process
makes the work done by your operators more efficient:
5-10% more efficiency!**

FuzEvent[®] Operation

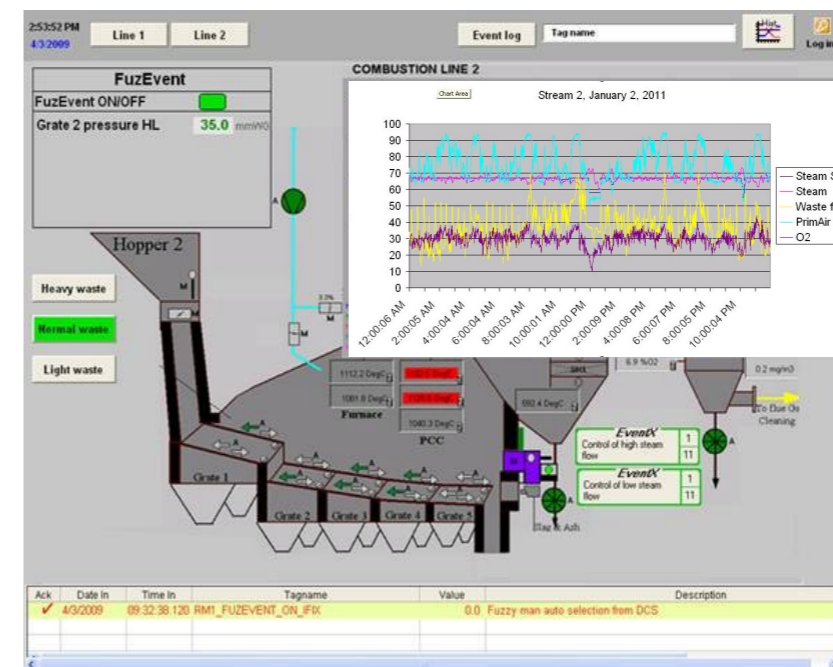
FuzEvent[®] is installed on a separate PC with an OPC link to the existing control system. The FuzEvent[®] receives data (i.e. furnace temperature, O₂ levels, etc.) from the process, applies the designed calculations and sends back appropriate set-points to the control system. **The existing control system remains unchanged.**

A watch dog system is installed to check that the link between the FuzEvent[®] PC and the existing control system is active. In case of connection issues, the operator receives a warning and FuzEvent[®] is switched off.

Everything is included in the FuzEvent Package:

- the FuzEvent[®] software and licence, for control optimization;
- a PC with a Microsoft Office licence, for reporting;
- an i-Fix licence, for user-friendly operator screens;
- the Dublix Waste-to-Energy Control Algorithms (DWCA).

FuzEvent[®] Operators Screens with graphs



References

The FuzEvent[®] Control System is installed in more than 11 incineration plants in Europe and China

Please contact us for detailed reference list with achieved results or check www.dublix.com.

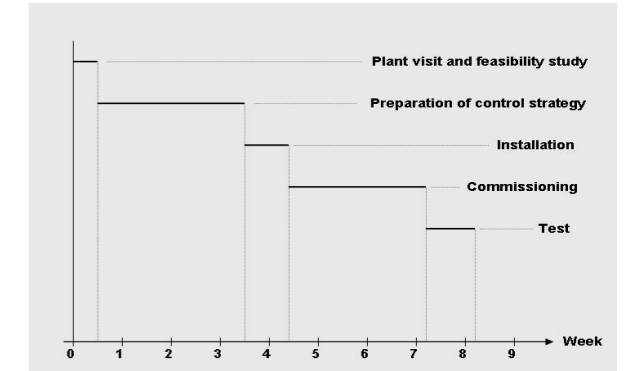
Fast Implementation

A FuzEvent[®] system is implemented in less than 3 months.

The FuzEvent[®] Control Strategy is based on Dublix Engineering's expertise and design meetings with the plant's management and operators. The FuzEvent[®] System contains a standard control loops library and new ones will be defined to correspond to the specific needs of the plant.

Management and Operators will be trained to the FuzEvent[®] functions to fully understand the applied control strategy.

Typical Optimization Schedule



Efficient Service

Dublix Engineering offers a Service Contract to keep the system and the strategy up-to-date which ensures optimal plant operation on the long term.

Dublix Engineering provides **very fast and efficient support** on the system through a secured Internet connection.