

## References

# Dublix Boiler Cleaning

This booklet contains an introduction and a description of some of our projects

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## File

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## Introduction

The Waste to Energy facilities listed represents organisations and municipal enterprises among the clients where Dublix Engineering has supplied equipment and services over the most recent years. Please note that the list is not complete and further information can be found on our homepage [www.dublix.com](http://www.dublix.com).

## History

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### Vantaa Energia (2013)

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*Dublix Engineering was selected as supplier for the boiler cleaning on the empty boiler passes of on the new Waste to Energy Installation at Vantaa Energia, Finland.*

This new large WtE plant shall be in operation 2014.

The plant operates two combustion lines and is build by the Swiss company Hitachi Zosen INOVA a major supplier world wide of WtE combustion plants.

The DD-Jet system to be installed consists of two units each unit is serving two boiler sections.

Please find an overview about the new installation on a [video presentation](#) made for the plant.

The DD-Jet system is operated from the control center and after activation the complete cleaning sequence is executed fully automatically.

Follow the erection of the new Vantaa Energia Plant on a web cam, click on the picture below.



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## Amager Ressourcecenter, Copenhagen (2013)

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*Amager Ressourcecenter (ARC) is a Danish waste incinerator located close to the centre of Copenhagen.*

ARC incinerates more than 400,000 tons of waste per year (2011) and is among the largest WtE plants in Denmark.

### **Dublix Engineering has provided services and equipment since 2001:**

1. Project completion management (2001)
2. Supply of grate parts (2003)
3. Delivery of 4 DD-Jet semi automatic boiler cleaning systems (2013)



## KARA/NOVEREN (2013)

*KARA/NOVEREN I/S is a Danish Waste-to-Energy plant situated in the city Roskilde, burning household waste on 3 lines,; 2 lines each based on Volund grates and rotary kiln with a 7t/h capacity; built in 1980 and 1988, a newer line was built in 1999 with an W+E grate, the W+E based system is handling 20 t waste/h.*



### **Plant Inspections Combustion system**

Dublix Engineering has carried out several Plant Inspections on the Volund grate based lines, in order to achieve better plant operation.

### **Flue Gas Cleaning System Inspection**

The flue gas cleaning system at KARA/NOVEREN I/S, handling the flue gas from the two Volund lines are based on the FLS GSA semidry FGC technology.

Dublix Engineering has 2007 conducted inspection on the GSA system on one line.

### **Rotary Kiln adjustments**

Dublix Engineering has modified the operation of the rotary kiln in order to avoid upwards movement of the unit.

### **Furnace Grate Upgrade**

Dublix Engineering conducted in March 2009 upgrades on one furnace grate by changing the water cooled grate to a modern air cooled grate, at the same time the unique automatic lateral grate tension units (spring loaded) applied for several similar installations.

The Water cooled grate needed renovation due to heavy wear and reduced availability of the water cooled grate. The renovation work was supervised by the engineers of Dublix Engineering A/S; the components for the new air cooled grate was successfully completed during 10 working days March 2009.

### **Boiler cleaning with DD-Jet Nozzle head**

The plant have installed the advanced DD-Jet Nozzle Head on its W&E combustion line.

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## Västervik Miljö & Energi, Sweden (2012)

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Metso Power new fluid bed boiler for waste combustion is a new major installation for the end client Västervik Miljö & Energi. The plant is located approximately 280 km south of Stockholm.

**First Metso installation in Sweden on a fluid bed waste boiler.**

The DD-Jet system has been in operation since 2011 on two other Metso boilers at the Gioia Tauro Plant, located in Calabria in the south of Italy.

**The DD-Jet system cleans the second pass of the boiler through four injection holes.**



## Weener Energie (2012)

*The Weener Energie GmbH & Co. KG is located in the city of Weener in the north west of Germany.*

**In 2012 Dublix supplied the DD-Jet head as a substitution for OEM supplied nozzle heads with poor performance.**

Configuration: 2 X 4.6 MW CHP

Operation: 2008

Fuel: RDF, paper mill waste

Boiler/incinerator system supplier: Baumgarte

This plant supplies steam for paper drying at the Klingele Papierwerke mill via a 1.8 km pipeline. Fuel burn is about 170,000 tons/year.

[Link to homepage of Weener.](#)





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## Electrawinds, Oostende (2012)

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*In 2012 Dublix Engineering supplied, through the company Baumgarte Boiler Systems GmbH, new DD-Jet nozzle heads substituting OEM supplied nozzle heads with poor performance.*

The [Electrawind plant](#):

Operational: July 2009

Power production: 18 MWe

Annual combustion capacity min. 130,000 tons of biomass (RDF)

### **Performance**

The performance of the new boiler cleaning nozzle heads was superior compared to the nozzle heads originally installed.



## Vaasa, Finland (2011)

*Hitachi Zosen Inova AG placed its first major order with Dublix Engineering in 2011 for one fully automatically operating DD-Jet system to be installed at the new Vaasa WtE plant in Finland.*

This advanced system supply was based on detailed evaluation and test of the DD-Jet system on various installations prior to first order.

The supply has already in 2012 shown high performance and availability. Please find below on the right a picture showing the effect from long term operation with the DD-Jet system on the Vaasa WtE plant.



## Gioia Tauro, Calabria (2011)

*During the period when the company Veolia Italy operated the Gioia Tauro plant it was equipped with the DD-Jet boiler cleaning system for cleaning the second pass on two boilers located in the south of Italy.*

**The plant is based on fluidized bubbling bed waste combustion technology from Metso Power.**

First DD-Jet installation in Italy on a Metso Power FB RDF boiler:

The installation consists of one DD-Jet semi automatically operated system serving both combustion lines. The very elegant installation is easy to maintain and provides cleaning services for two combustion lines. The system is equipped with vertical and horizontal motor controlled movements.

The installation was commissioned in November 2011.



## I/S Nordforbrænding (2010)

*I/S Nordforbrænding, Denmark, operates 4 combustion lines. Dublix has been supplying grate parts for all 4 combustion lines.*

### **Dublix supply included:**

- DUB 3 grate parts for one combustion line (2010)
- Grate parts for one horizontal W&E grate combustion line (2010)
- DUB 3 add on sales for two combustion lines (2011)
- Supply of lateral grate tension system (2010)
- Supervision for grate installation (2010-2012)
- DD-Jet boiler cleaning equipment (2011-2013)

The plant has obtained heavily improved operation by applying the new DUB 3 grate on all old Volund lines.





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## Attero Noord BV (2009)

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Dublix Engineering has supplied 4 DD-Jet Nozzle heads for the [Attero Noord BV WtE plant](#) in Wijster, the new DD-Jet Nozzle heads was installed on three existing boiler cleaning systems originally delivered from another supplier but having too low performance and having a very high maintenance cost.

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## IVAGO, Gent (2009)

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Three (3) DD-Jet nozzle heads installed.

Three (3) DD-Jet nozzle heads installed on an existent boiler cleaning system delivered by another supplier.

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## IVM Eeklo (2009)

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*The plant operates two combustion lines each with a capacity of 7 tons of waste/hour. The combustion system is based on a combination of rotary combustion kilns and combustion grates.*

### Dublix supply to the plant:

- FuzEvent for more stable steam flow
- DD-Jet Nozzle heads for more efficient boiler cleaning
- FuzEvent service contract



### The FuzEvent Installation

The FuzEvent system was installed on both lines of the plant in April 2008. The project was successfully completed in July 2008.

The client has approved that the FuzEvent System achieved more stable steam flow (35 %) on line 1 and (50 %) on line 2.

### The Service Contract

In order to secure an ongoing focus on optimization by the FuzEvent system, the IVM Eeklo plant has subscribed to a service contract since 2008 for long-term partnership.

### DD-Jet Cleaning System Nozzle Head

In 2009 two DD-Jet nozzle heads were successfully installed on the boiler in a cleaning system originally delivered by another supplier. The result was significantly improved operation of a boiler cleaning system delivered by another supplier.

## Veolia STVL Limoges (2009)

*STVL Limoges is a French Waste-to-Energy plant, built in 1985, burning household waste on three lines of approx. 4.2 tons/hour capacity each and equipped with Volund grates. The plant is operated by Veolia.*

### Dublix Engineering supplied the following:

#### The FuzEvent Installation

The FuzEvent system is installed on all three lines of the plant. The project was started in May 2008 and was completed in January 2009.

#### The DD-Jet Installation

The DD-Jet system is installed on the plant, two units can clean the two radiation passes on all three boilers. The installation was successfully completed in September 2008.

#### Combustion System Upgrades

The following changes have been made:

- Secondary air injection through the furnace roof, to optimize the combustion
- Cooling water spray mixed in the secondary air jet from the furnace roof nozzles to use as an emergency tool to control the furnace temperature when it tends to run too high in spite of the traditional control measures.

#### The results:

**The target (guarantees) was to reach a 6 % increase in waste treated.** The steam production increase should be 1 ton of steam per line from 10.5 to 11.5 tons/line. Extended tests have been carried out in December 2008, January and March 2009, the results showing that the plant is now performing much better than the defined guarantees. Test results show an increase in the amount of treated waste by 24, 17 and 12 % on line 1, 2 and 3 respectively. As a result, the steam production increased by 12 %, from 10.5 to 11.8 tons/hour.



The advanced display of the STVL Limoges plant

## Hallingdal (2008)

Successful use of DD-Jet System, flue gas temperature reduction 120°C 10 % more waste treatment capacity by FuzEvent.

Hallingdal is a Norwegian Waste-to-Energy plant, built in 1985, burning household waste on one line of a 3.5 ton/hour capacity and equipped with a Volund grate.

### The FuzEvent Installation

The project was completed in 2005 and has since then been improved further.

The FuzEvent installation provided the following results:

- CO emissions within EU limits,
- 10% more throughput,
- 100% automatic control, no set-points adjustments by the operators.

### Supply of grate parts

Dubl<sup>ix</sup> has for more than 10 years been supplying grate parts for this plants.

### The DD-Jet Installation

The project was successfully completed in August 2008. 4 nozzle injection holes were prepared in the boiler roof in order to clean the boiler at a rate of 15 minutes twice a week.

The DD-Jet installation provided a reduction of the flue gas temperature at the economizer by 120°C, which allows the plant to burn more waste.

### The Service Contract

In order to achieve a continuous optimization of the plant by the FuzEvent system, the Hallingdal plant has subscribed to a Service Contract since 2008 for long-term partnership.

Services included in the contract:

- Engineering assistance per year by remote service, internet logon, or visits at the plant;
- Identification of cause of operation related optimization problems;
- Remedy of operating trouble related to process optimization and mechanical areas;
- Installation of new versions of the FuzEvent software;
- Introduction to the functions of the FuzEvent system to the operational staff of the plant in connection with plant visits.



## IBW Virginal (2008)

*IBW Virginal is a Belgian Waste-to-Energy plant located 35 km southwest of Brussels, burning household waste on two lines. The most recently established combustion line was built in 2004 and equipped with a Stiefel water cooled grate.*

**In 2008 Dublix Engineering supplied the following equipment and services for the Stiefel combustion line:**

- FuzEvent optimization
- DD-Jet boiler cleaning

### The FuzEvent Installation

The purpose was to complete the original project by operation in the full operational range of the capacity diagram, special focus was the handling of very low calorific value waste qualities.

FuzEvent successfully achieved automatic control during more than 90 % of the time by automatic operation of all connected set-points. Based on the improved stability and capacity to burn low calorific waste, the plant contractor succeeded in completing his supply.

### DD-Jet System installation

A DD-Jet system was successfully installed and commissioned in October 2009. The new DD-Jet system operates on the line 2 boiler, providing efficient optimal cleaning of the radiation boiler passes 1 and 2.

