

COMBUSTION MANAGEMENT



Energy from Waste Virtual London 10-12 March 2021 Connecting the global waste to energy industry www.efwconference.com

It is with great pleasure that we invite you to a technical presentation about the unique system of Technikgruppe for combustion optimization and an additional half-hour discussion with other experts.

Day 2, 11th March 2021



Matthias Lukic, technical expert, founder, owner and CEO of Technikgruppe, has more than 25 years of experience in combustion of solid fuels on grates.

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Damir Zibrat, Business Development Manager of Technikgruppe, has more than 25 years of experience in international strategical selling and marketing.

www.technikgruppe.com/technology-of-fire

11 th March 2021	
14:30 - 14:45	Plant optimisation - digital systems
	Improving plant performance and reducing downtime with advanced combustion performance and monitoring
	Matthias Lukic, CEO, Owner, Technikgruppe Damir Zibrat, Business Development Manager, Technikgruppe
	Practical results and theoretical explanations about Technikgruppe combustion optimisation systems. Gain a greater understanding of the technical issues around combustion and examine the benefits of enhanced steam production, stabilised air flows and stabilised flue gas temperature to enhance overall performance.
14:45 - 15:00	
	The benefits of localised energy from smaller plants
	Barthelemy Fourment, Head of International Development, Dalkia Wastenergy
15:00 - 16:00	Interest-focused round tables and networking break Interest-focused round table rooms enable multi person video for further questions and more in-depth discussion.
	Round table 1 - Technikgruppe Combustion optimisation - practical examples and theory.
	Round table 2 - Dalkia Wastenergy

Please note that a reservation is required for the ROUND TABLE. Please check the final schedule 1 day before the round table. In this presentation, working principles of the unique combustion optimization system, practical results and case studies are analyzed and explained. In another half an hour, discussion experiences will be exchanged with other participants at the round table. Before participating in the presentation and the ROUND TABLE, you are gently invited to visit **www.technikgruppe.com/technology-of-fire**. If you want, send us questions in advance.

Target audience:

- plant managers
- operational managers
- maintenance managers
- performance improvement engineers
- plant engineers
- plant operator supervisors
- plant operators

Technology of fire

The combustion process in Energy from Waste and Biomass plants is very complex, and the demands on control systems in those plants are very sophisticated. There are many theories about the best combustion technologies to use and there are equally many different approaches to find the right solutions.

In most conventional control systems there are lots of implemented control algorithms and many arguments how to compare different approaches.

In all of these discussions there are two basic factors that are used in nearly all comparisons:

1. Which main actions have influence on the quality of the combustion process?

2. Which measured parameters can be accurately compared to estimate the combustion quality?

Simplistically there are 3 main actions which have influence on the combustion process.

- 1. Adding fuel into the burning chamber
- 2. Blowing oxygen into the fire
- 3. Mixing the fuel with combustion air

Key words:

- technology of fire
- combustion optimisation
- retrofitting of wte bte plants
- forward moving grate
- new grate technology
- reliability
- profitability





Due to appropriate control of the grate (1), primary and secondary air (2) and the feeder (3), considerable technical/ commercial advantages can be achieved. Please note that the requirement to fine-tune 3 specified main parameters offers billions of possible combinations that should be updated every few seconds. Very strong software and extremely powerful processors are required for this complex task!

For a better understanding, some measured results of the WIC implementation are shown in the following diagrams.

Stabilization and enhancement of steam production





Steam production controlled by DCS







Ceiling temperature with WiC (same line)

Ceiling temperature with DCS

Please NOTE! The average temperature is, of course higher because of enhancement of waste throughput/steam production

Stabilization of combustion air flow





Primary air controlled by DCS Primary air flow controlled by WiC (same line) Please NOTE! The higher amount of primary air is related to an increase of waste throughput/steam production

During the years of use of WiC, it can be documented that long-term stabilization of steam generation is possible. Due to the fact that WiC can avoid large peaks and dips in steam generation, it can be stated after detailed analysis that there are almost always reserves in the boiler design and that WiC has improved steam generation WITHOUT any significant system changes. Below is a brief case history.

During the years of exploatation of WIC it is possible to document that long therm stabilisations of steam production are possible.Because of facts that WIC can avoid great picks and great disturbances in steam production in some cases (NOT ALWAYS POSSIBLE) it is possible(after DETAILED analyses) to confirm that reserves in boiler design exist, and that steam production enhancements (WITHOUT MECHANICAL CHANGES) are possible. Below is case story.







After stabilization of steam production the real capacity could be estimated.

If during planning of DCS MODERNISATION (retrofitting) or during designing of DCS for new plants, the implementation of WiC is considered, big savings are possible because WIC and DCS can use a lot of same components and software packages.

Save twice



- With our special Combustion Manager (WIC) it is possible to set new plants in operation within a few hours. This will provide additional, considerable cost savings in man power and auxiliary fuel (for test runs) and decrease CO₂ related to the erection of the plant.
- 2 If the WIC is integrated in the DCS a major part of DCS costs can be saved because many DCS functions (entire boiler and combustion) are already included in the WIC.

During the years of plant exploatation charachteristics of fuel can be changed. In that cases possibilities for changings of grate type can be considered. Newerthless if together with changing of grate type addittional usage of WIC is combined great advantages can be possible. Technical experts of TECHNIKGRUPPE can provide independent analyse of souch possibilities. (your enquiries are welcome).





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