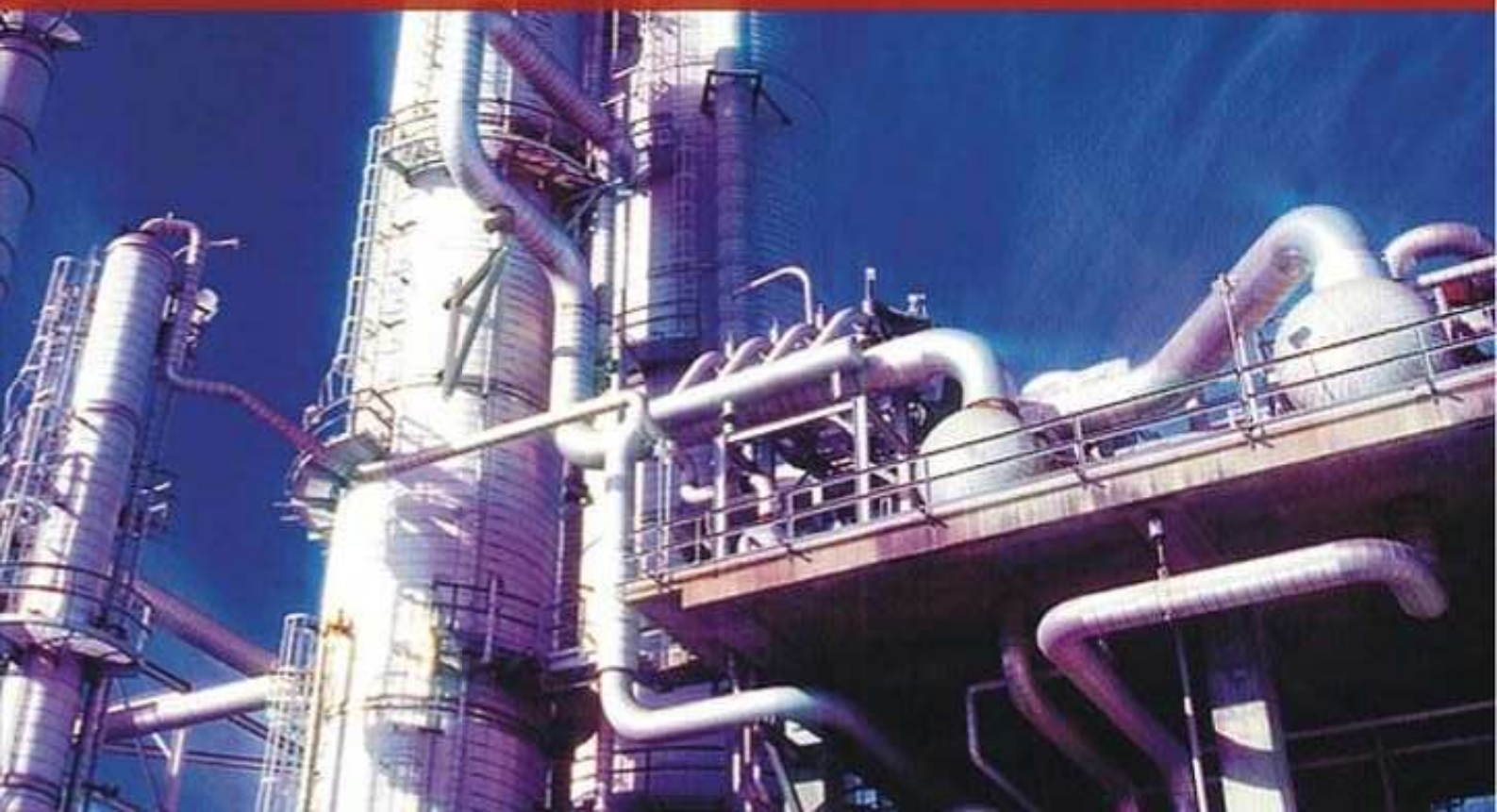




**OPTIMUM**  
ENVIRONMENTAL & ENERGY  
TECHNOLOGIES

**Waste heat recovery  
making sense**





# Automatic pipe cleaning system APCS

Automatic pipe cleaning system APCS

- A combination of an OPTIMUM designed waste heat boiler with the APCS guarantees a maximum availability and trouble free operation
- APCS cleans the surface area while the system is in operation. There is no need for shut down
- Stable process conditions for the up- and downstream processes



## Waste heat recovery concepts

OPTIMUM has developed different waste heat recovery concepts. In the glass industry for instance, we are able to recover the heat to reduce the energy consumption of the primary process by using the steam to preheat furnace feed streams like cullet and pelletized batch. In other industries we mainly focus on using the thermal energy to generate electrical power or to generate cold using an absorption chiller. Of course there are many other ways to apply thermal energy, provided the energy can be recovered. Expanded with an OPTIMUM waste heat boiler system, industrial processes can now contribute tremendously in CO<sub>2</sub> emission reduction and their carbon footprint! It is obvious that the increasing costs of fossil fuel provides the best incentive for waste heat recovery projects as a sustainable and cost reducing concept.



# Waste heat recovery by preventing fouling problems

Often waste heat recovery cannot be realized as a consequence of fouling or heavy dust loads in flue gases. Waste heat then remains what it is: waste heat, to be discharged through the chimney. OPTIMUM developed a system for the in line cleaning of tubes in heat exchangers, combined with a specially designed heat exchanger or boiler. With this system – APCS Automatic Pipe Cleaning System – heat exchangers and boilers can be cleaned during operation. Down time is no longer required for the removal of heavy loads of dust and other kinds of fouling. With the APCS – worldwide patented by OPTIMUM – waste heat recovery has now become reality and opens wide and new perspectives for different kinds of industrial processes, where up till now heat recovery was something to dream of.

OPTIMUM has realised waste heat recovery references in a wide range of industries:

- Demolition wood combustion
- Rendering industry
- Industrial waste combustion
- Activation and reactivation furnaces of activated carbon
- Municipal waste combustion
- Biomass combustion (several agricultural residues)
- Glass industry



*Tubes before and after cleaning with an APCS*



*Fouling biomass*



*Fouling glass furnace*



*Fouled boiler*



# Testimonials

After replacing a water tube boiler by an OPTIMUM waste heat recovery system Albert Sluiter, Chief-Engineering, AGC Flat Glass Tiel, comments in the January 2008 edition of Glass International.

"Our main objective was to find a more reliable heat recovery technology. The combination of the specially designed fire tube boiler with the APCS systems results in an availability of the heat recovery system of 100% over the first operational year. The unpredictable characteristics of the fouling is under control with this system. This is an ideal starting point to evaluate potential applications for the surplus of steam like the production of electrical power."

OPTIMUM supplied a low fouling waste heat boiler with APCS to Cargill for a clean biomass combustion plant (CBC) within the frame of a joined development program between Cargill, WTS and OPTIMUM.

Kees van de Watering, Cargill's CBC project manager comments:

"We concluded that the combination of the OPTIMUM boiler with APCS is an effective method to prevent the fouling problems typical for the biomass fuels available within Cargill"

**OPTIMUM is your experienced partner in dealing with fouling and erosion issues.**

**OPTIMUM provides innovative heat recovery solutions !**



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