maxxtec heat-recovery-systems for industrial waste heat

The energy recovery of decentralized industrial waste heat has often not been economic. maxxtec ORC processes allow the economic power generation already for relatively small capacities and low exhaust gas temperatures. In this way, an enormous potential of waste heat, e.g. in the cement, glass, ceramic or steel industry, can reasonably be made accessible.

The different compositions of these exhaust gas streams require many different types of heating surfaces.

maxxtec has a lot of experience with various exhaust gases and can offer different types of heating surfaces depending on the operating conditions.

For gases with high dust content **maxxtec** has developed different heating surface cleaning systems, e.g. the air**maxx**4.

In this way, we realize customer-oriented solutions with high reliability and ease of maintenance, even for difficult gas consistencies.

Product range

Renewable Energy Sources
+ ORC - plants for combined heat/power generation from solid biomass
+ **orc**modules and -packages
+ Exhaust gas heaters for wood combustion
+ air**maxx**4
  Automatic heating surface cleaning system
+ steam**maxx**
  High pressure steam boiler plants for natural circulation

Waste heat recovery
+ ORC-power plants for generating energy from waste heat
+ **orc**modules and -packages
+ Exhaust gas heater and heat exchanger
+ Heat recovery systems
+ Heating surface cleaning system

Process heat supply
+ thermo**maxx**
  Thermal oil heater for liquid and gaseous fuels
+ High temperature heat transfer systems
+ hps**maxx**
  High pressure steam boilers with natural circulation
+ elektro**maxx**
  Electric heaters
+ scs**maxx**
  High precision temperature control loops
+ Heat exchangers for liquids, vapours and gases

support**maxx**
+ Commissioning and monitoring
+ Plant service
+ Maintenance and repair service
+ Spare parts service
+ Plant modernization and upgrading
+ Training and consulting

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heat-recovery-systems

for solid biomass and industrial waste heat

hot solutions for high demands

maxxtec®
hot solutions for high demands

maxxtec heat-recovery-systems for solid biomass

Ever since time immemorial wood is fired to produce heat. Growing environmental awareness and the finite nature of fossil fuels have lead to an increasing use of solid biomass for power generation.

At **maxxtec** we have early concentrated on CO_2 neutral energy production from solid biomass.

Our innovative technologies provide the opportunity for economic and environmentally friendly energy production from renewable biomass - directly at your location.

Besides the classical generation of heat or process heat, modern ORC cogeneration plants already produce energy and heat economically in relatively small capacities.

Power plants make much higher demands on heat recovery systems than many industrial plants. For these higher demands **maxxtec** has developed air**maxx**4 and pump**maxx** as well as a whole range of innovative solutions.

The superior maxxtec technology is the reason why the majority of ORC biomass CHP plants in Europe is equipped with maxxtec systems.

maxxtec is the only manufacturer that supplies heat recovery systems and ORC modules from a single source.
This package provides the **maxximum** efficiency and minimal environmental impact
+ when generating power from biomass
+ when generating power from industrial waste heat.

Today maxxtec is one of the leading suppliers of cogeneration plants based on the organic ranking cycle.

maxxtec heat-recovery-systems for biomass firing plants

The use of wood for the generation of energy always needs two essential modules. On the one hand, a firing is needed in order to produce hot flue gasses. On the other hand a heat transfer system is necessary for absorbing the thermal energy from the hot flue gasses and for transferring it to the heat consumers.

Regrowing and solid fuels may, depending on origin and storage, vary considerably.

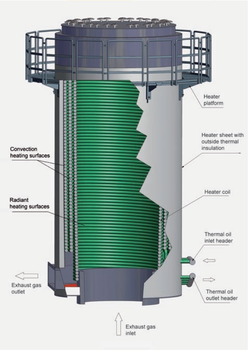
Fluctuating moisture, ash and calorific content make high demands on the combustion of wood. Strict emission limits require a sophisticated measurement and control technology and highly effective filter systems in order to avoid an impact on the environment.

Nevertheless, ashes and other particles deposit on the heating surfaces which are installed before the filter in the waste gas flow.

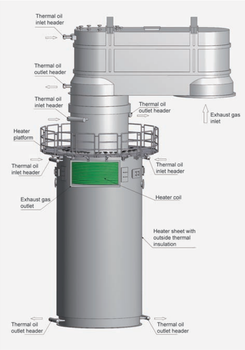
Heat recovery boilers for modern, environmentally friendly combustion plants therefore have to bear up under extraordinary load.

The modern maxxtec 2 pass waste heat boilers have especially been developed for this purpose.

recomaxx 2 pass heat recovery system - two versions, many advantages



Vertical 2 pass heat recovery boiler



Hanging 2 pass heat recovery boiler

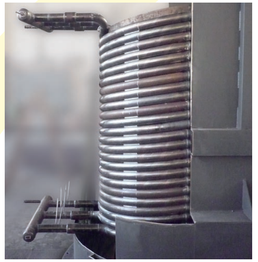
+ Lid sealing between the two passes is not required – temperature problems of exhaust gas are therefore no longer possible.
+ The flue gas temperature in the lower deflection chamber corresponds to the gas outlet temperature and is monitored.
+ Reduced pressure losses on the gas and liquid side reduce the energy consumption of pumps and blowers.
+ A low construction height saves costs
+ The cleaning is done only from above, the complexity of the air installation is significantly reduced.
+ The boiler shell is cooled by the outside fitting tube coil. Thus, an overheating by soiled heating surfaces is excluded.
+ A large-scale ashpit in the lower deflection chamber of vertical heaters reduces the cleaning effort.
+ At hanging heaters, which can be equipped with an automatic ash removing system. If required, a generous ash collection chamber reduces the ash mass flow through the second pass and prevents the heating surface from damage.

recomaxx heat-recovery-systems - the core

The waste heat boiler is the core of a maxxtec-heat-recovery-system. Here the energy of the hot flue gases is passed on to the heat transfer medium. With this special, organic medium, the thermal energy can unpressurised be transferred to e.g. an orcmodule at a high temperature level.

In order to meet the high standards in continuous operation and to increase the operational reliability **maxxtec** has developed the new **recomaxx** 2 pass heat recovery boiler. This design is a further development of the conventional 3 pass heat recovery heater and offers many advantages.

After the 1st pass the flue gases are diverted into the 2nd pass in which they stream along the central tube basket before leaving the heater. This way the pressure loss on the gas side and the risk of deposits and cakings is considerably reduced.



On the oil side the tube channel is partly passed through in parallel. In this way, also on the liquid side the pressure loss decreases and electric energy can be saved.

The external fitting 3rd tube protects the boiler shell from too hot flue gases that could arise from e.g. heavily soiled heating surfaces. Only at the flue gas outlet, where the temperatures are monitored by a safety temperature limiter, the heater shell is exposed to the flue gases without cooling. An overheating is thus reliably prevented.

maxxtec-orcpackages - Efficient power generation from one source

maxxtec supplies orcmodules and heat recovery systems from one source and perfectly coordinated. So we have the whole system continuously overlooked and offer:

+ Fully automatic operation with minimal maintenance and operating costs
+ Optimal overall efficiency and profitability
+ Long life with high functionality
+ Full-service from a single source for the entire plant
+ Cross-system operation and security concepts

airmaxx4 - The innovative and automatic heating surface cleaning system

In order to ensure a continuous operation without interruptions our heat recovery systems are equipped with the highly effective and efficient fully automatic heating surface cleaning system airmaxx4.

Compared to traditional, fix installed nozzles, this system offers many advantages. The cleaning medium is released directly at the body that has to be cleaned. So we reach **maxximum** impact with minimum resource consumption.

The increased wear that is caused by the cleaning fluid is avoided.

In addition, all components are accessible from outside and can be controlled and maintained without service interruption.