INTEC ENERGY SYSTEMS

PROCESS HEAT & POWER GENERATION

INTEC ENGINEERING

INTEC LOCATION

INTEC Engineering GmbH
John-Deere-Str. 43
D- 76646 Bruchsal
Germany

- Family owned business
- Established in 1995
- Turnover of 25-40 million Euro /year
- approx. 80 employees
- Successfully expanded the network of own offices and representations around the world.

FIELD OF ACTIVITIES

Engineering

- Project development
- Complete plant engineering
- Customized design
- Modular plant design
- Decades of knowledge in the field of industrial combustion and heat transfer

Fabrication

- Manufacturing of:
  - Heaters
  - Pressure vessels
  - Combustion systems
  - Other components

Installation

- Complete plants or key components only
- Local manufacturing is possible

Service

- Service engineers for field activities
- Worldwide maintenance
- Spare parts supply

INTEC PRODUCTS

Heating solutions

Heat Transfer Medium

- Thermal oil
- Steam
- Hot water
- Warm water
- Hot gases

Oil / Gas fired heaters
Electrical heater

Waste heat Recovery boilers

Solid fuel fired thermal plants






INTEC PRODUCTS

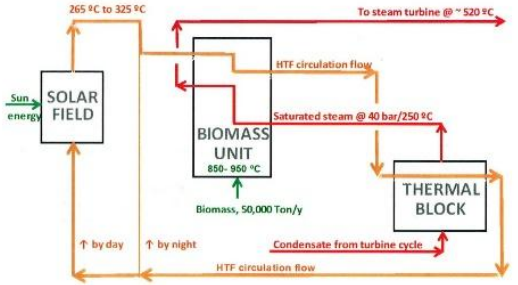
Power generation solutions

Heat Transfer Medium

- Thermal oil
- Steam
- Hot water
- Warm water

Steam turbine

Hybrid power plant CSP/Biomass



ORC power generation module

INTEC PRODUCTS

Industrial sludges drying and incineration

Heat Transfer Medium

- Thermal oil
- Steam

Sludge drying

Sludge incineration

STATUS QUO

- **Over 2500 installations in 80 countries**
- **Over 6000 MW thermal energy installed**
- **Contributed in projects with > 500 MW electrical power generation**

13.5 MW power plant in Denizli

5 x 14 MW Thermal oil heaters in Adana

INTEC PRODUCTS FOR HEAT RECUPERATION

/ Energy efficiency for industrial applications

Application:

- Utility: increase of effiency in operation as direct reduction of fuel consumption
- Process: recovery of heat for other usage in heating process
- Process: recovery of heat for power generation

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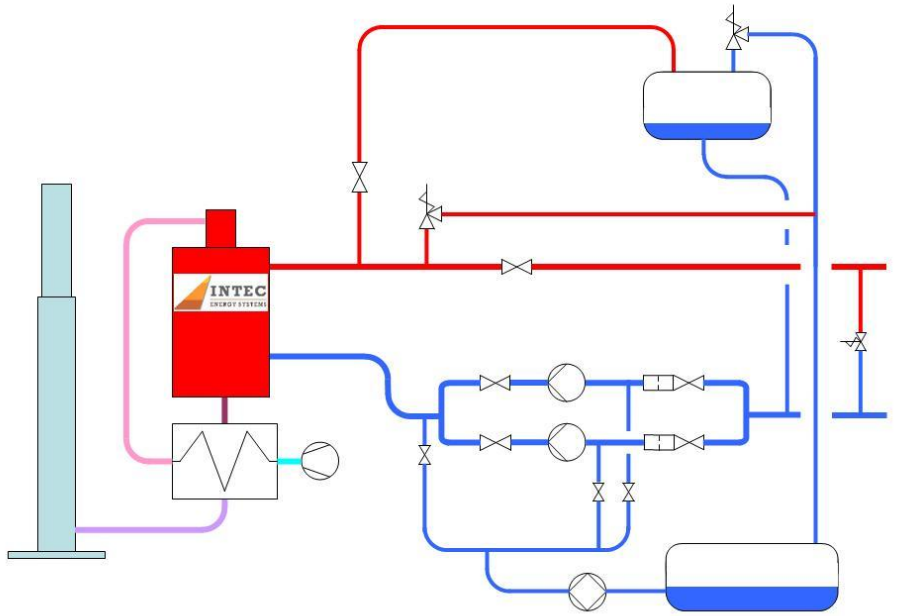
Heat recovery for utility applications

- Heat recovery by transfer of heat from flue gas to combustion air
- Increase of efficiency of 6 - 7%
- Influence of the fuel on possible corrosion
- Vertical oder horizontal installation



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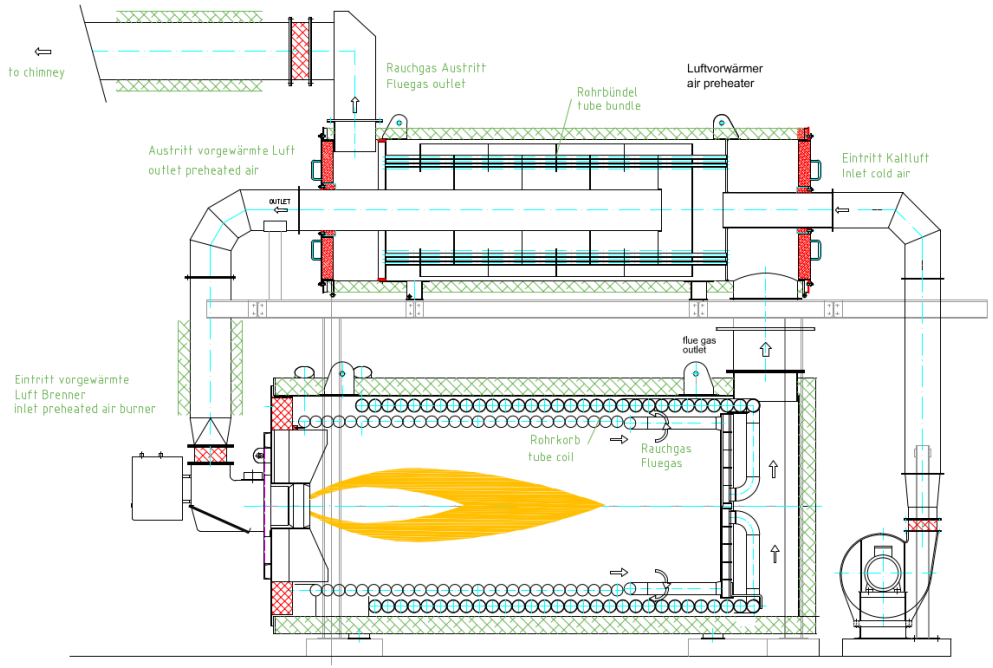
Heat recovery for utility applications

- Thermal oil heater application



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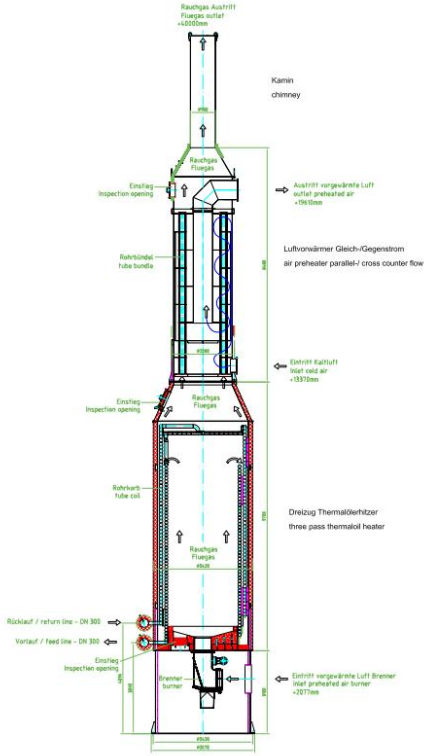
Heat recovery for utility applications

- Thermal oil heater application

  as air preheater

  Heat transfer from flue gas to thermal oil



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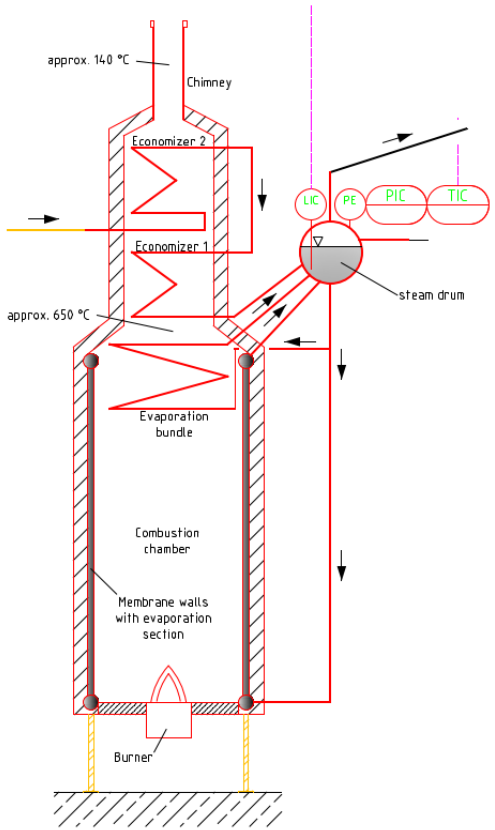
Heat recovery for utility applications

- Steam boiler application

  as economizer

Heat transfer from flue gas to feed water



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Heat recovery for process applications

- Industrial WHR with heat transfer to thermal oil, steam, hot water
- Application in Cement, Steel, Glass, Wood industry etc.

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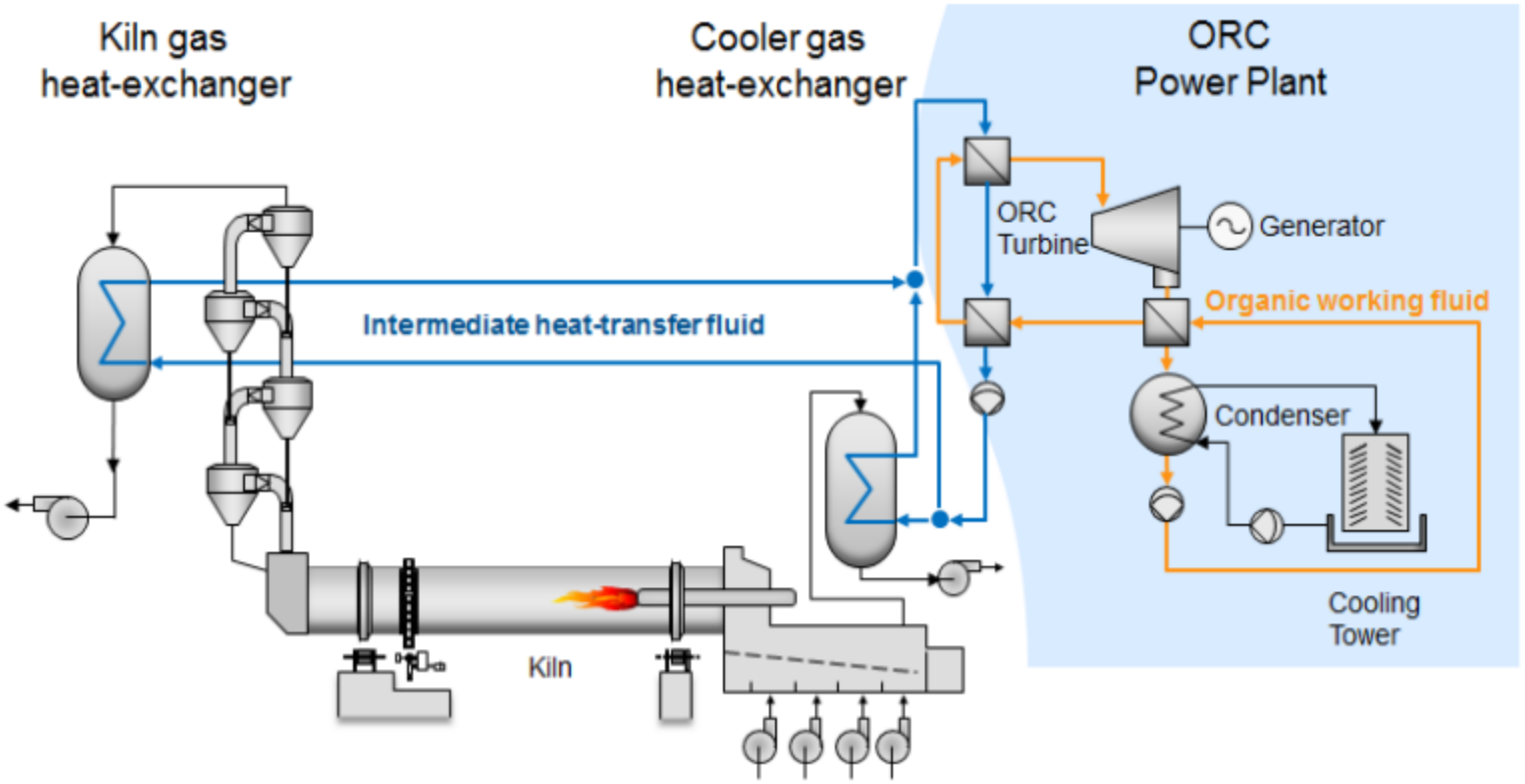
Heat recovery for process applications with power generation by ORC

- **Cement kiln application**
- Cement kiln Waste Heat to Power (WHP) Systems mostly use Water-Steam-Rankine Cycle (WSRC).
- For temperatures < 300°C Organic-Rankine Cycle (ORC) is the better option.



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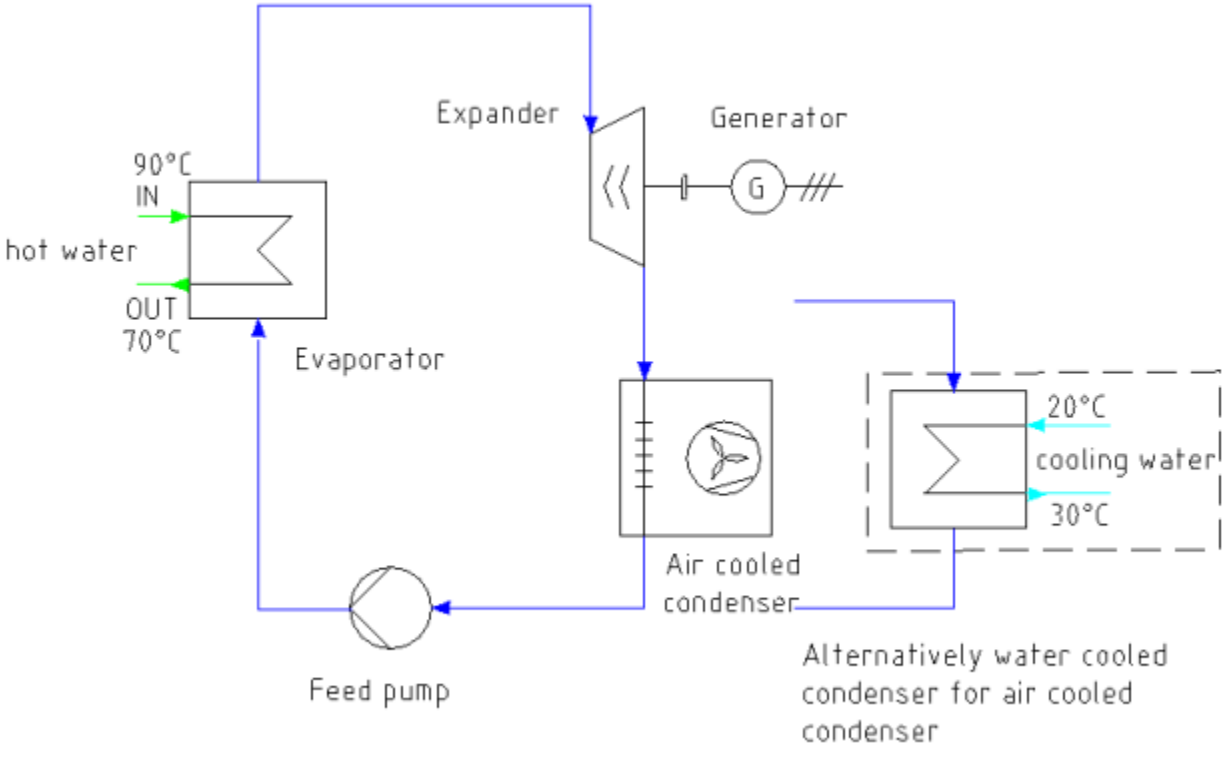
Heat recovery for process applications with power generation by ORC

- **Industrial WHR from low temperature sources**
- Primary heat source: Hot water 70° - 90 °C or low pressure steam



clean energy efficiency

SELECTED REFERENCES

Germany – Sldge combustion

Germany– Sewage sludge drying and incineration

Malaysia – Step grate firing system with thermal oil heater

Turkey – Power plant

Belgium – Thermal oil heating installation

Taiwan – Thermal oil heating installation

Japan – Power plant

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Thank you for your attention !