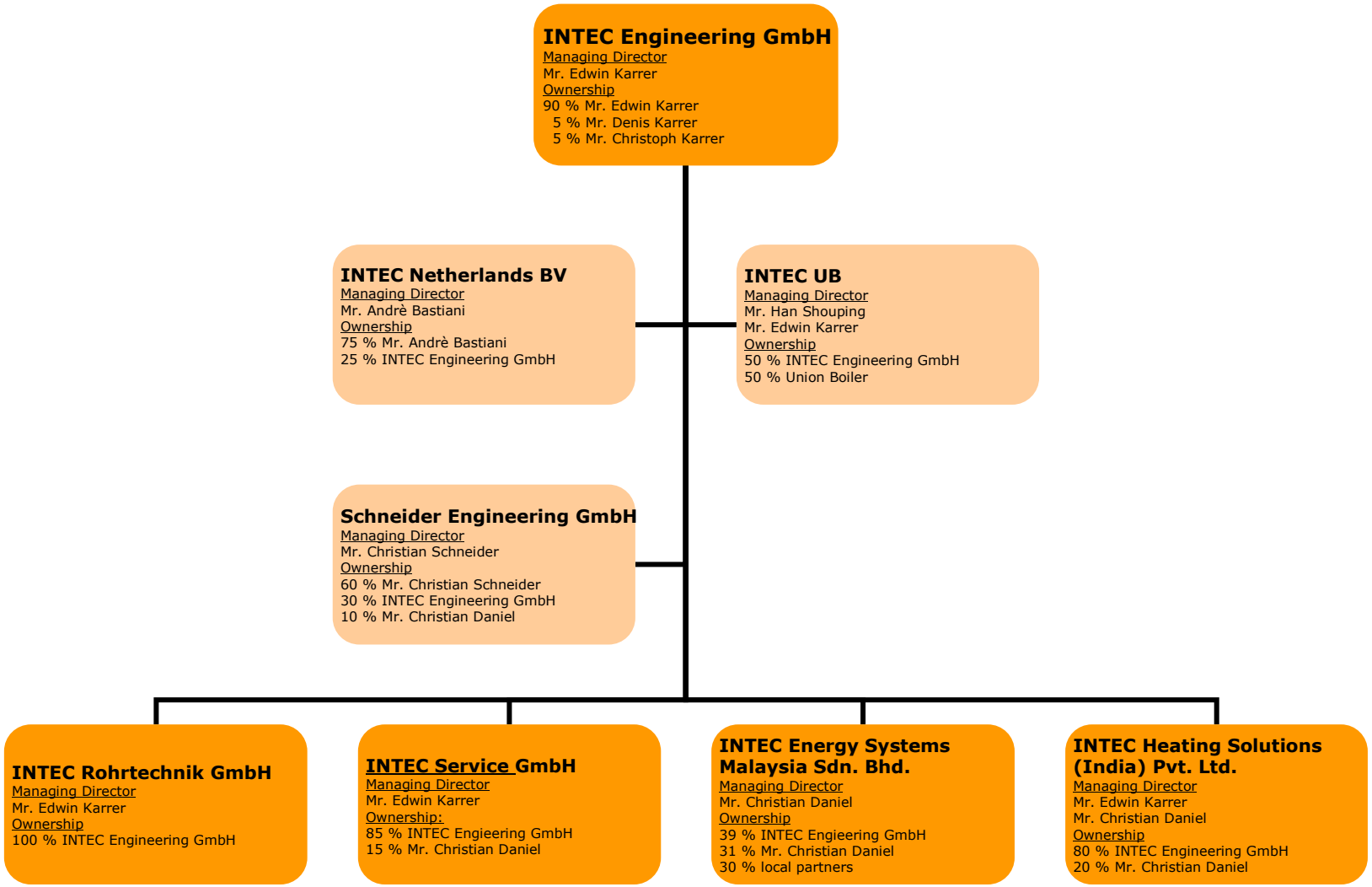
INTEC Company Profile

INTEC Engineering GmbH

energy systems

INTEC Group


INTEC Engineering GmbH
Managing Director
Mr. Edwin Karrer
Ownership
90 % Mr. Edwin Karrer
5 % Mr. Denis Karrer
5 % Mr. Christoph Karrer
INTEC Netherlands BV
Managing Director
Mr. Andrè Bastiani
Ownership
75 % Mr. Andrè Bastiani
25 % INTEC Engineering GmbH
INTEC UB
Managing Director
Mr. Han Shouping
Mr. Edwin Karrer
Ownership
50 % INTEC Engineering GmbH
50 % Union Boiler
Schneider Engineering GmbH
Managing Director
Mr. Christian Schneider
Ownership
60 % Mr. Christian Schneider
30 % INTEC Engineering GmbH
10 % Mr. Christian Daniel
INTEC Rohrtechnik GmbH
Managing Director
Mr. Edwin Karrer
Ownership
100 % INTEC Engineering GmbH
INTEC Service GmbH
Managing Director
Mr. Edwin Karrer
Ownership:
85 % INTEC Engieering GmbH
15 % Mr. Christian Daniel
INTEC Energy Systems Malaysia Sdn. Bhd.
Managing Director
Mr. Christian Daniel
Ownership
39 % INTEC Engieering GmbH
31 % Mr. Christian Daniel
30 % local partners
INTEC Heating Solutions (India) Pvt. Ltd.
Managing Director
Mr. Edwin Karrer
Mr. Christian Daniel
Ownership
80 % INTEC Engineering GmbH
20 % Mr. Christian Daniel

INTEC Engineering GmbH
Germany

- INTEC supplies industrial process heating equipment using heat transfer media like:
  - thermal oil
  - steam
  - hot water
  - hot gases for dryers

and offers a wide range of products, engineering, manufacturing, delivery up to turn key installations, site support services and after sales service.

INTEC Engineering GmbH
Germany

- Established in 1995,
  INTEC is developing successfully and expanding the network of representations as well as own offices around the world.
  This gives our customer a good service and short reaction times.

- A turnover of 18 million Euro within the involved companies of the INTEC group, generated by approx 50 employees

INTEC Rohrtechnik GmbH

Quality „Made in Germany“

- INTEC manufacturing takes place at our own premises in Bruchsal, Germany

- Production of step grates, heater coils and tube bundles, complete heaters and boilers

- Certification for according:
  - Marine industry: GL, LR, BV, RINA, DNV
  - ASME*
  - GOST (Ru)
  - SELO (China) **

* ASME Section VIII Boiler & Pressure Vessel Code
** Boiler & Pressure Vessel Manufacture Licensing of P.R. China

INTEC Service GmbH
Germany

- Maintenance service by skilled engineers and professionals
- Supervision of installation
- Commissioning and start-up
- Spare parts service
- Repairs, refurbishment and upgrading of existing installations
- Assistance for customers from damage analysis until the re-commissioning, independent of make

INTEC Energy Systems Sdn. Bhd.
Malaysia

- INTEC Office serving since 2007 South-East Asia, located in Kuala Lumpur area
- Offers support in consultancy, sales, project management, service and commissioning of steam and thermal oil installations

INTEC Heating Solutions Pvt. Ltd.
India

- INTEC Office serving since 2009 Indian sub-continent
- Offices in Pune & Mumbai
- Offers support in consultancy, sales, project management, service and commissioning of steam and thermal oil installations

INTEC Netherlands BV
The Netherlands

- INTEC Office located in AC Heerde, serving Belgium, Netherlands and Luxembourg

- Offers support in consultancy, sales, project management, service and commissioning of steam and thermal oil installations

INTEC UB Pte. Ltd.
Singapore

- Joint Venture between INTEC Germany and Union Boiler & Vessel China, founded in 2010, located in Singapore

- An experienced team of specialists for biomass fired energy plants in the region of Asia

Schneider-Kessel Berlin
Germany

- Family-owned boiler manufacturer, 5th Generation since 1881
- More than 5,000 delivered boilers world-wide
- Holder of Kessel Licence
- Design, development, tailor-made solutions
- Engineering, Consultancy, Project Management
- Commissioning, Supervision of installation
- After Sales Services

Products

- Thermal oil heaters, oil or gas fired
- Electrical heaters
- Solid fuels firing systems with moving grate
- Solid fuels firing systems with fluidised bed combustion
- Biomass fired power plants
- Biomass fired energy plants
- Heat recovery boilers
- Hot water and steam boilers
- High pressure steam boilers
- Steam generators
- Combustion air preheater
- Secondary control circuits

Thermal oil heaters

INTEC Type: ET

Thermal oil as operated heat transfer medium offers the advantage that it can be without any pressure build-up until temperatures of 320 °C. With synthetic oils, even temperatures up to 400 °C can be achieved.

INTEC Thermal oil heaters are characterized by the following features:

- Optimized heat transfer and high efficiency design
- Tailor-made design to individual customer requirements
- Environmental friendly operation due to low emission values
- High operational reliability
- Low operating costs
- Long service life

Thermal oil heaters

vertical Design

- Range of capacity: 50 to 25,000 kW
- Fired by natural gas or fuel oil
- High efficiency up to 93 %
- Air pre-heater, stack optionally
- Easy maintenance
- Safe design and operation
- Down firing
- Up firing option

Thermal oil heaters

horizontal Design

- Range of capacity: 50 to 25,000 kW
- Fired by natural gas or fuel oil
- High efficiency up to 93 %
- Air pre-heater, stack optionally
- Easy maintenance
- Safe design and operation

Electrical heaters

INTEC Type: ETE

- Range of capacity: 20 to 5,000 kW
- Available as pre-mounted units

Waste heat boilers

INTEC Type: ETA

Heat Recovery Boilers using the energy of flue gases to heat up liquid heat transfer medium

Available as:

- One pass radiation heater
- One pass convection heater in tube bandle design
- Three pass heater
- One pass heater with multiple concentrical coils

High pressure steam boilers

INTEC Type : iNOOK

Natural circulation boiler

- High pressure boiler for closed circuits
- Up to 10 t/h, 100 barg
- Fired by natural gas or fuel oil

Steam Generators

- Indirect, thermal oil heated steam generators
- Capacity up to 30 t/h of saturated steam
- Pressure up to 35 bar
- Easy regulation
- Operation without permanent attendance
- Complete systems with water treatment equipment

Secondary Control Circuits

- Secondary control circuits for heating and cooling processes
- Precise control of heat transfer to consumer
- Delivery as completely preassembled unit with pumps and accessories as option
- Low loads and forces on pump through fixed point construction

Air preheater

- For heat recovery from flue gas
- Preheating of combustion air
- Stainless steel piping optionally
- Cross-counter flow for improved efficiency

Energy plants

- Complete energy plants for particleboard, MDF or OSB production with heat transfer by thermal oil, steam or hot gas

  Capacity range: up to 100 MW

- Fuels like bark, wood chips, production waste, fines, sanding dust, saw dust, rice husk, empty fruit bunches and other biomass fuels.
  Other fuels like coal, natural gas or fuel oil may be used additionally

- Low emissions, modular design, high reliability

Power and co-generation plants

- Combustion systems for power plants, output up to 10 MWel
- Fuels like bark, wood chips, production waste, rice husks, other biomass fuels or coal may be used
- High degree of local manufacturing is possible

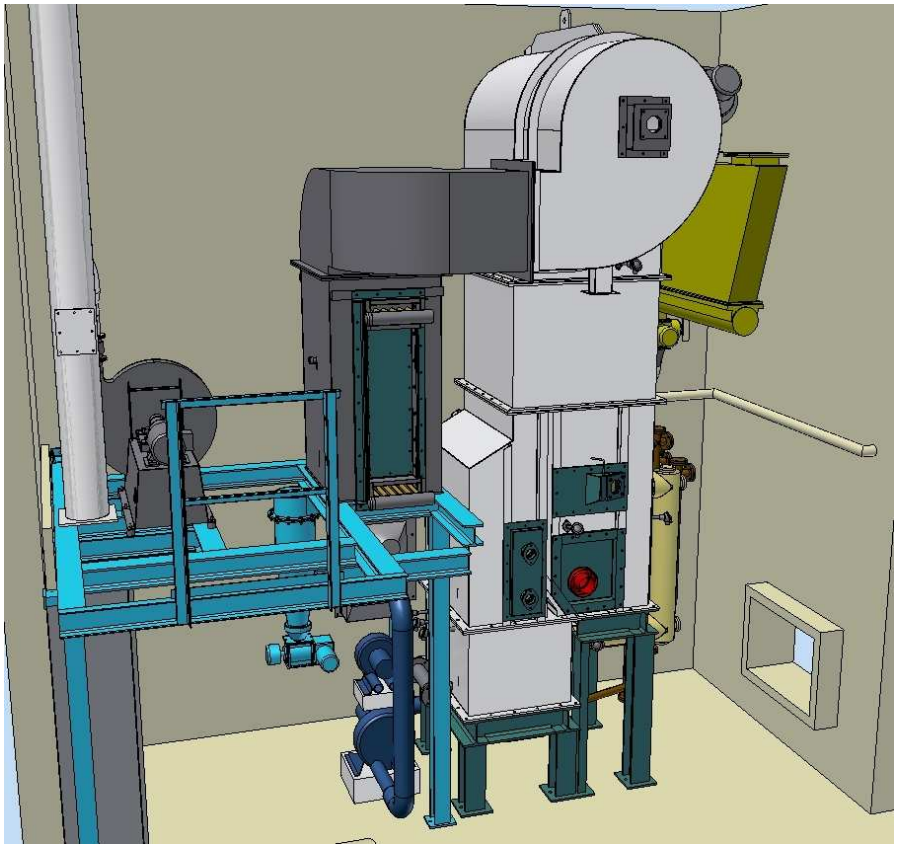
Solid fuel firing systems

- Capacity up to 80 MW
- Reliable operation with high availability
- Low emission values for CO and NOx
- High efficiency
- Automatic fuel feeding and de-ashing
- Operation with “low quality fuel” or high moisture up to 180 % o.d.b.
- Burning wastes like bark, chips, wood waste, off-cuts, trimmings, production waste, sanderdust and even critical fuels such as rice husks, cotton stalks, sunflower seeds etc.

Combustion chamber of an INTEC step grate firing system VRCS

Fluidised bed combustion systems

- Fluidised bed combustion with controled ash recirculation
- Ash cooling heat exchanger positioned outside of combustion area
- Capacity: 500 kW – 50,000 kW
- Fuels: Biomass, coal (anthracite and lignite)
- Waste heat recovery media: Thermal oil, steam, hot water



Schneider-Kessel Berlin

Products:

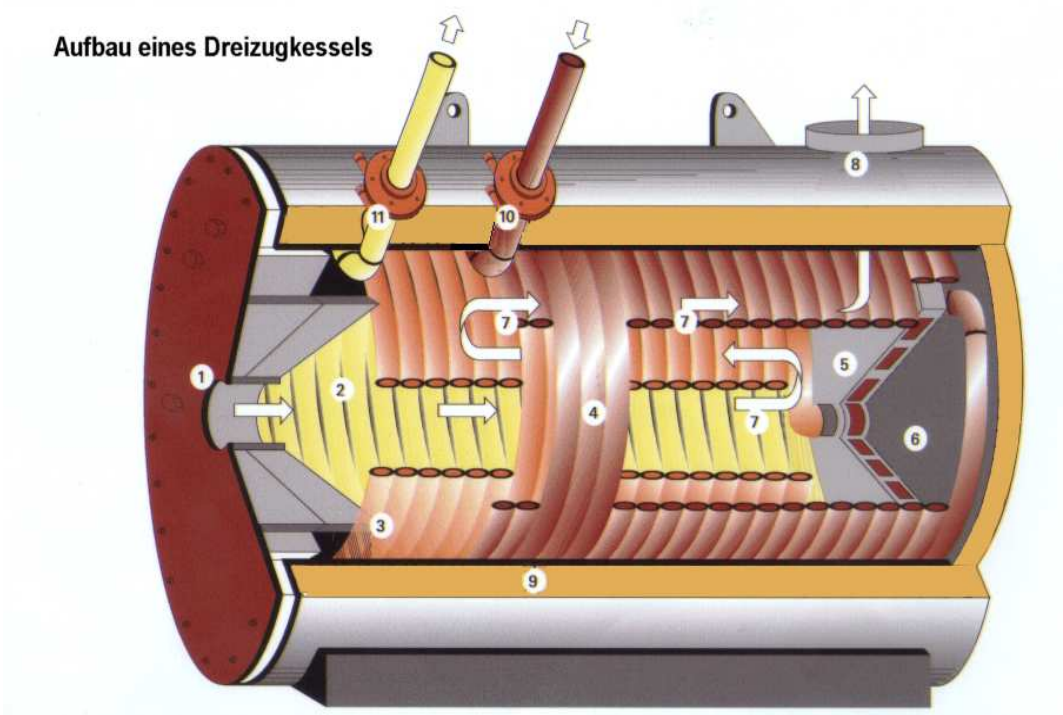
- **Flame-tube-smoke-tube boiler**
  Single-flame-tube boiler
  up to 25 t/h

- **Flame-tube-smoke-tube boiler**
  Double-flame-tube boiler
  up to 45 t/h

- **Waste-heat recovery boiler WHR-Type**
  - Smoke tube design
  - 0.1-65 MW / 0,2-100 t/h
    up to 100 bar/450°
  - indirect heated by gas engine, gas turbine, industrial processes

- **Water-tube boiler ERK Type**
  Eckrohrboiler design
  up to 100 t/h, 100 barg

Schnittbild eines Dreizug-Erhitzers
Cross-sectional view of a three pass heater



1 Kesselfronplatte mit Brennerflammrohr
Heater front plate with burner flame tube
2 Flammraum
Combustion chamber
3 Innere Rohrschlange
Inner coil
4 Äußere Rohrschlange
Outer coil
5 Gekühlte Wendeplatte
Cooled turning plate
6 Rauchgassammelraum
Flue gas collecting chamber
7 Rauchgaszüge
Flue gas pass
8 Rauchgasstutzen
Flue gas outlet
9 Isolierung
Insulation
10 Thermalöleintrittsstutzen
Thermal oil inlet
11 Thermalölaustrittsstutzen
Thermal oil outlet

Erhitzer mit Tür, Weishaupt-Leichölbrenner Schaltschrank u. Pumpe

Heater with front door, Weishaupt light oil burner, switch panel and pump

Erhitzer mit Gasbrenner und Umwälzpumpe in Container montiert

Heater with gas burner und circulation pump assembled in a container

Erhitzer mit geöffneter Frontplatte

Heater with opened front plate

Erhitzer mit Saacke-Rotationbrenner und angbautem Verbrennungsluftventilator
Heater with Saacke rotation cup burner and mounted combustion air fan

Fertigung einer Brennermuffel, Teil 1/3

Production of a Burner Muffle, step 1/3

Fertigung einer Brennermuffel, Teil 2/3

Production of a Burner Muffle, Step 2/3

Fertigung einer Brennermuffel, Teil 3/3

Production of a Burner Muffle, Step 3/3

Fertigung eines Kesseldeckel
Production of a boiler lid

Fertigung gekühlte Wendeplatte

Manufacturing of a cooled turning plate

Gekühlte Wendeplatte

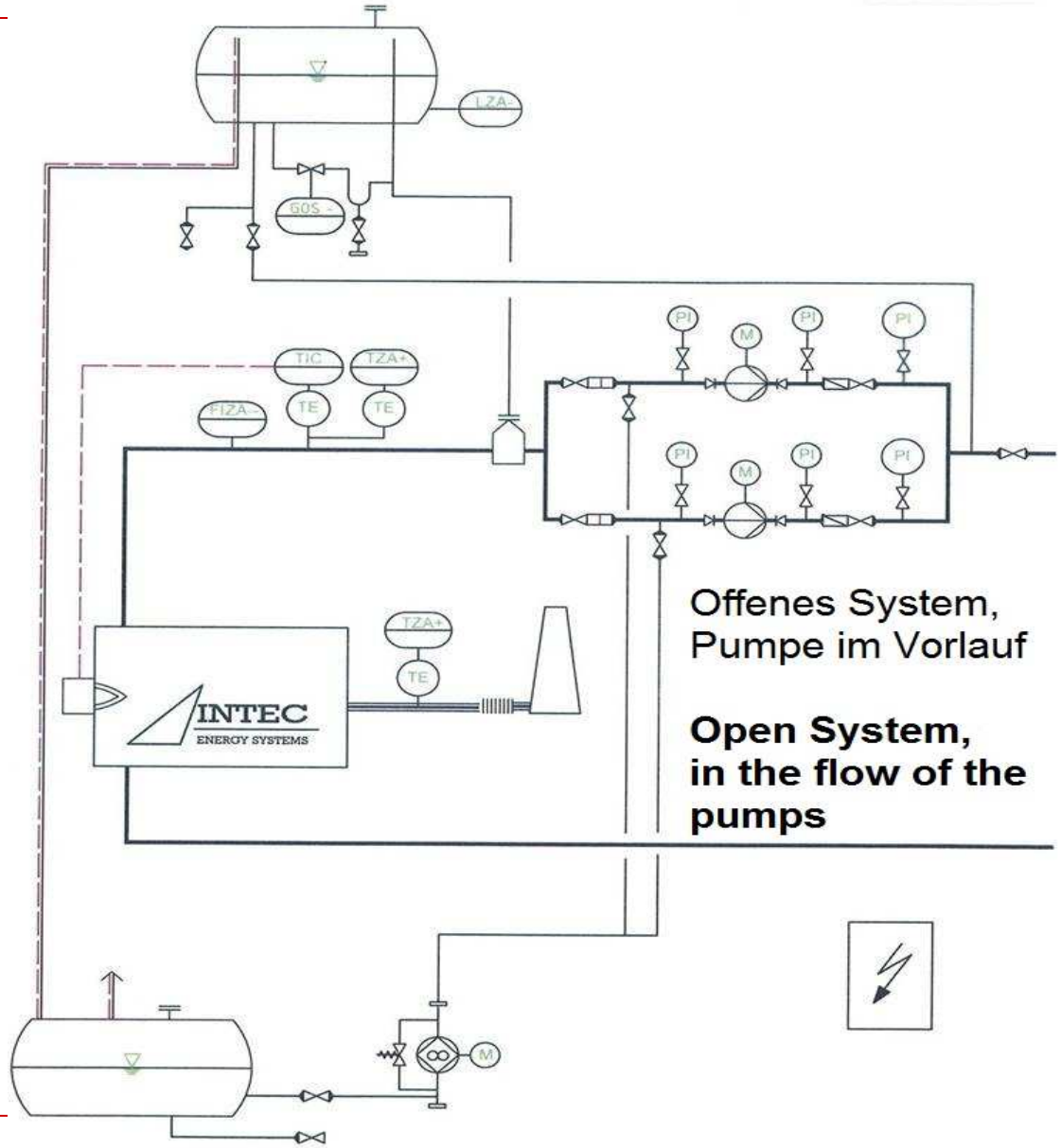
Cooled turning plate

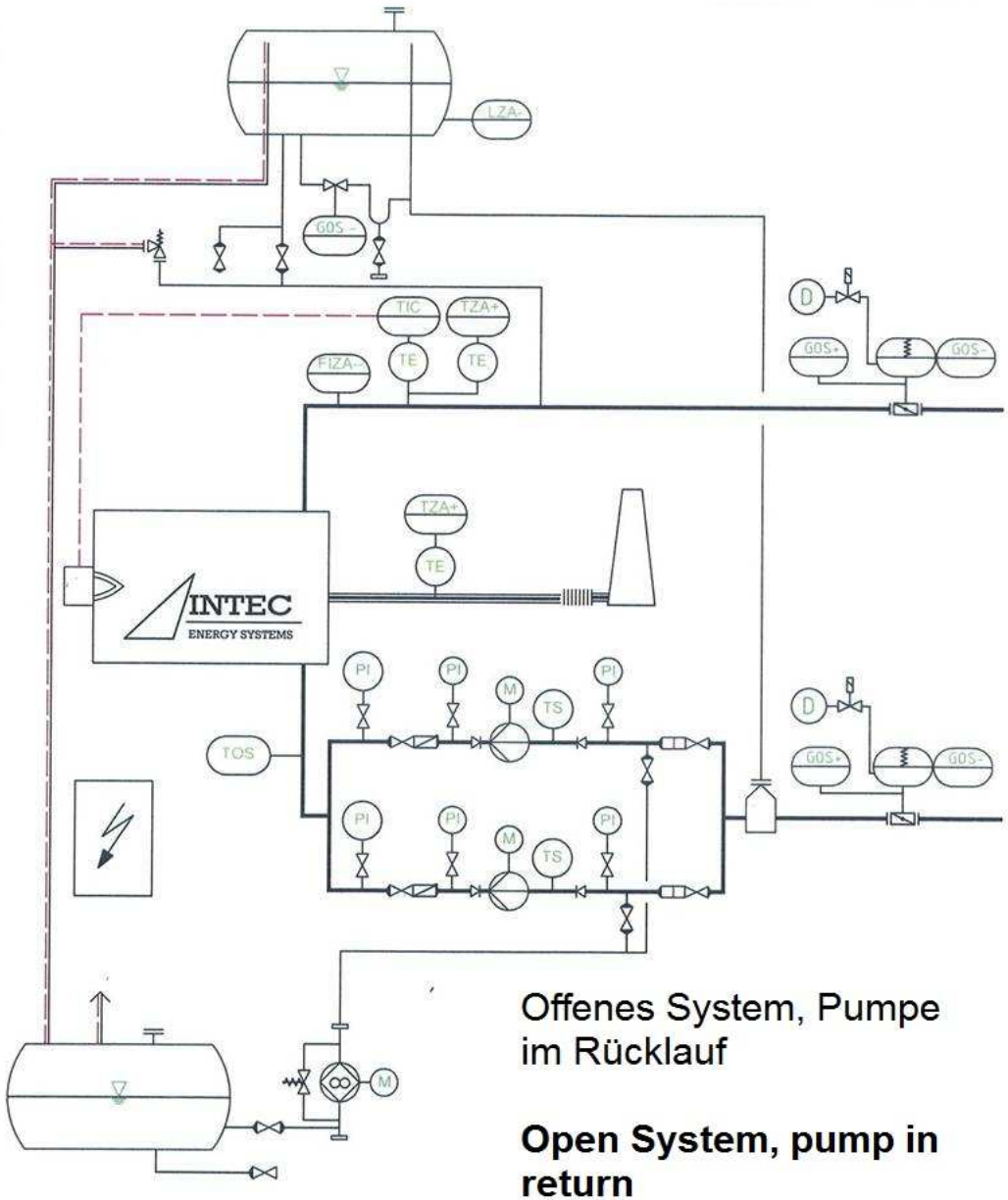
Erhitzer mit abnehmbaren Reinigungssegmenten 8.000 KW

Hot oil heater with removable cleaning segments

INTEC Thermalöl-Erhitzer als Kompaktanlage

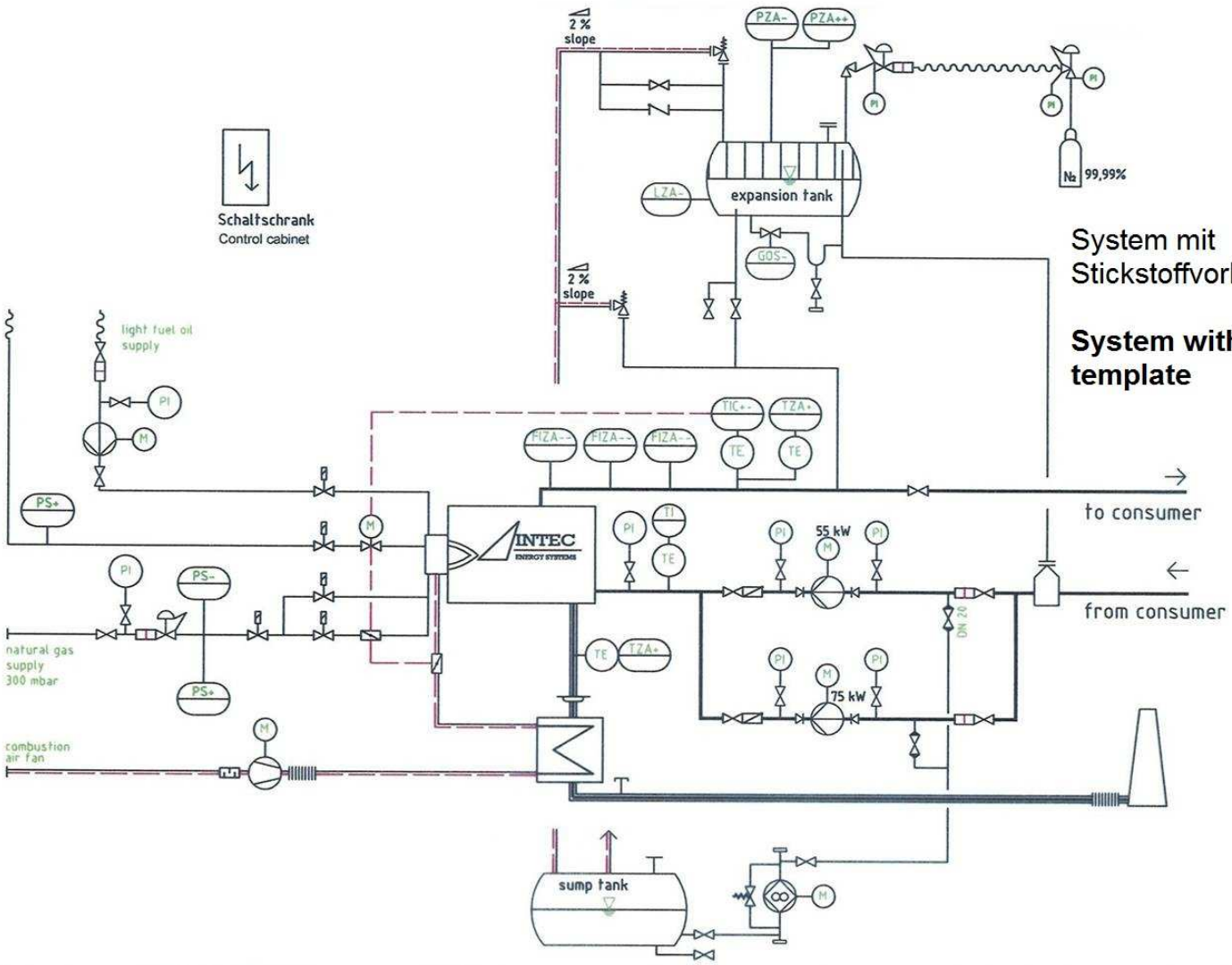
An INTEC heater as compact unit


LZA-
SOS -
PI
M
TIC
TZA+
TE
FIZA-
INTEC
ENERGY SYSTEMS
Offenes System,
Pumpe im Vorlauf
Open System,
in the flow of the
pumps



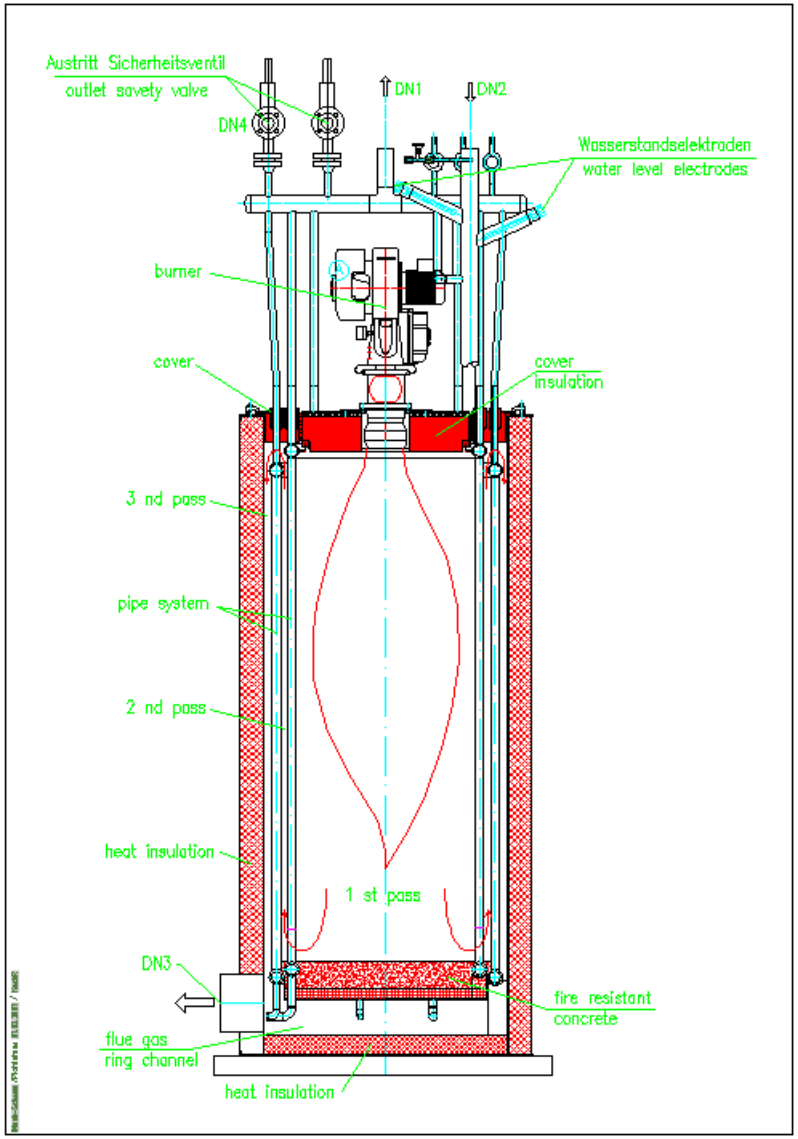
Offenes System, Pumpe im Rücklauf

Open System, pump in return

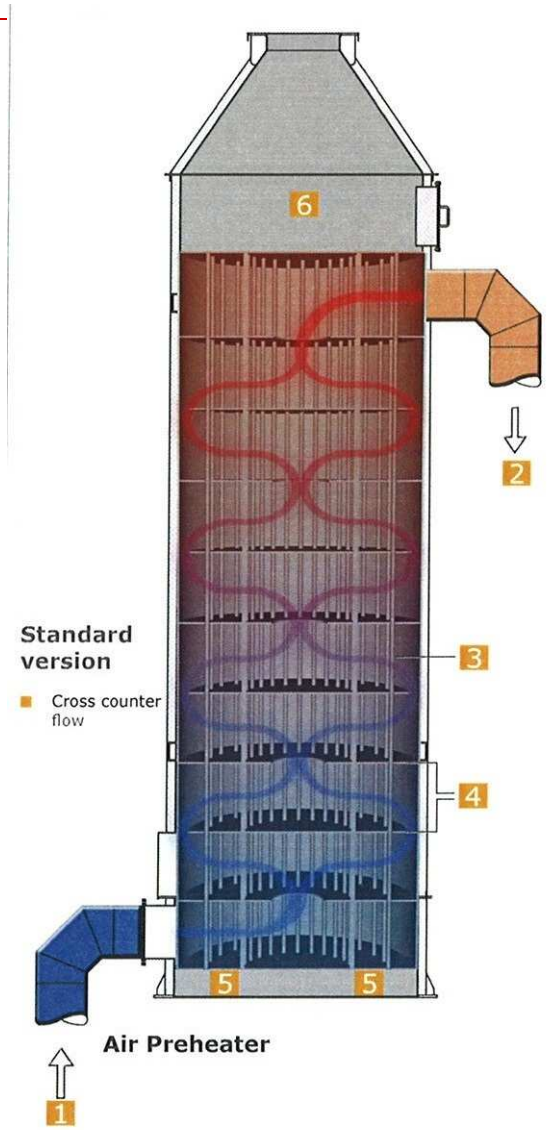


System mit
Stickstoffvorlage

System with nitrogen template



INTEC High pressure steam boiler „iNOOK"



INTEC Air Preheater
Standard Version

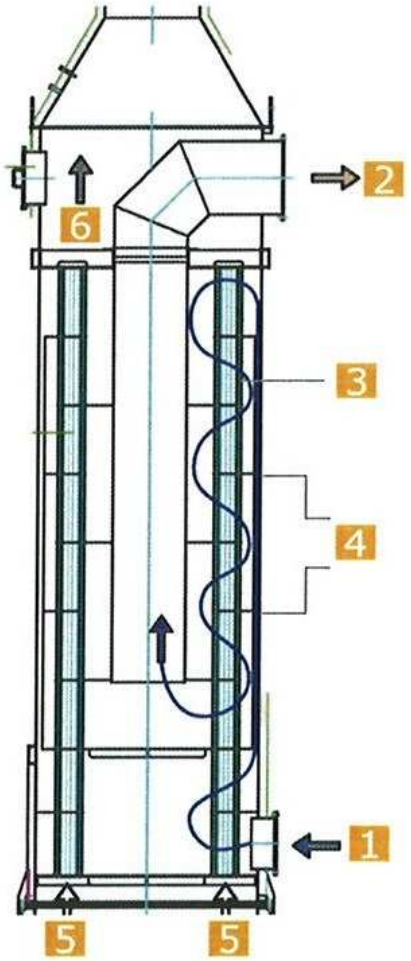
1. Preheated combustion air
2. High efficiency burner
3. Coil for thermal oil heating
4. Insulation
5. Feed line collector
6. Return line distributor
7. Access door for burner maintenance
8. Access for heater maintenance

INTEC Air Preheater

High-Efficiency Design

INTEC High-Efficiency Design

- Parallel and cross counter flow
- Increased efficiency up to 93%



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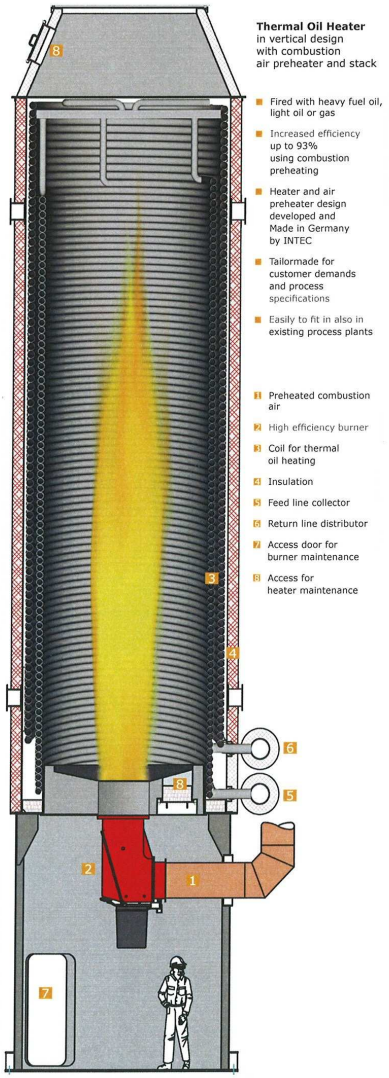

Thermal Oil Heater
in vertical design
with combustion
air preheater and stack

- Fired with heavy fuel oil, light oil or gas
- Increased efficiency up to 93% using combustion preheating
- Heater and air preheater design developed and Made in Germany by INTEC
- Tailormade for customer demands and process specifications
- Easily to fit in also in existing process plants

1. Preheated combustion air
2. High efficiency burner
3. Coil for thermal oil heating
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Contact Addresses

INTEC Engineering GmbH
John-Deere-Str. 43
D-76646 Bruchsal/Germany
Tel.: +49 7251 93 243-0
Fax: +49 7251 93 243-99
info@intec-energy.de

INTEC Rohrtechnik GmbH
John-Deere-Str. 41
D-76646 Bruchsal
Germany
Tel.: +49 7251 3 66 29-10
Fax: +49 7251 3 66 29-25
intecrohr@aol.com

INTEC Netherlands BV
PO Box 101
NL-8180 AC Heerde
The Netherlands
Tel.: +31 653231730
Fax: +31 842299814
andre.bastiani@intec-energy.de

INTEC Service GmbH
John-Deere-Str. 43
D-76646 Bruchsal
Germany
Tel.: +49 7251 30272-22
Fax: +49 7251 30272-27
service@intec-energy.de

INTEC Energy Systems Sdn Bhd.
6F-21, IOI Business Park,
47170 Puchong, Selangor;
Malaysia
Tel.: +6 03 8071 1842
Fax.:+6 03 8071 1824
yap.fw.@intec-energy.de

INTEC Heating Solutions (India) Ltd.
B – 410/A, Galleria
Opp. Bayer House, Hiranandani Gardens
Powai, Mumbai – 400 076
India
Tel./Fax: +91 22 259 42292
bharat.k@intec-energy.de

Schneider Engineering GmbH
Hildburghauser Straße 79
D-12249 Berlin
Germany
Tel.: +49 30-75 44 93 99-0
info@schneider-kessel.de

INTEC UB Pte Ltd.
4 Battery Road
Bank of China Building # 25-01
Singapore 049908
Telefon +65 6408 8000
Telefax +65 6408 8001
info@intec-ub.com
www.intec-ub.com

www.intec-energy.de