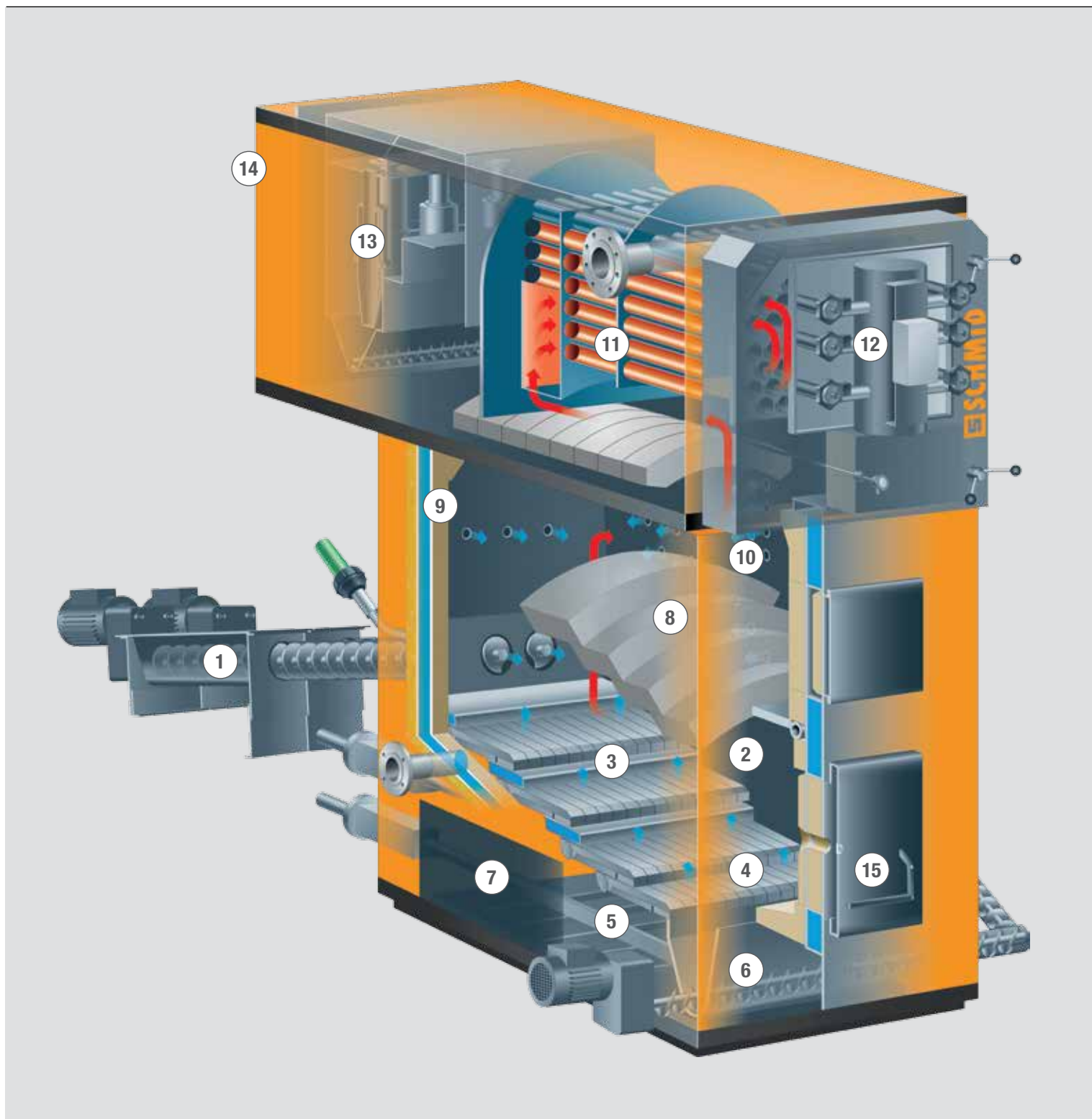
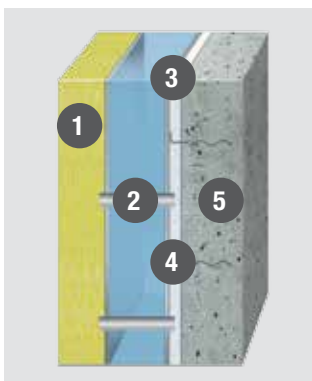


UNDERFEED STOKER FIRING SYSTEM UTSW

For demanding dry fuels



1. Fuel supply with stoker screw
2. Combustion chamber with water cooling
3. Water-cooled step grate
4. Burnout zone
5. Under-grate de-ashing – automatic or manual
6. Automatic grate ash discharge
7. Access door to under-grate
8. Radiation vault
9. Refractory concrete with defined heat passage
10. Secondary combustion chamber – in accordance with low NOx process by means of air stages
11. 3-pass steam boiler
12. Boiler door with automatic pulse-jet cleaning system of the boiler tubes
13. Flue gas cleaning by multi-cyclone with automatic fly ash discharge
14. Flue gas fan – can be positioned either on the right, left or at the rear
15. Grate door with safety lock



COMBUSTION CHAMBER DESIGN

1. Insulation of the combustion chamber (100 mm) with external cladding plate
2. Water cooling inside double-walled steel plate structure connected with tension bolts
3. Fireproof ceramic fibre mat coated with aluminium foil
4. Heat resistant wall anchors
5. Fireproof cast concrete (100 mm)

The refractory concrete is secured to the steel structure of the combustion chamber with heat resistant wall anchors. The refractory concrete has a high density as well as a high temperature resistance and is cast in sections. Dilation seams between the sections compensate for expansion of the refractory concrete when the temperature fluctuates. The ceramic fibre mat behind the refractory concrete protects the steel plate structure against overheating.

AT A GLANCE

- Underfeed stoker firing system
- Operating medium:
 - Water
 - Hot water
 - Steam
- Combustion chamber & grate cooling: Water
- Operating range: 300 - 4'200 kW
- Capacity control: Modulating
- Fuel moisture content M 8 - 44
- Nominal capacity up to a fuel moisture content of M 35
- Fuel types:
 - scrap wood
 - residual wood
 - pellets
 - alternative fuels
- Standard:
 - LOW particle system (controlled air routing)
 - NOx-reduction (in accordance with the stepped combustion principle)
- Optional:
 - Combustion chamber camera
 - Flue gas recirculation
 - SNCR process (Nitrogen oxide reduction)

TRACK-PROVEN COMPONENTS FOR TAILORED SYSTEM SOLUTIONS



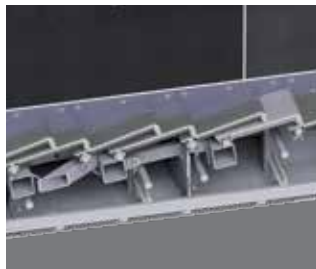
PNEUMATIC CLEANING SYSTEM

Clean boiler tubes are essential for the service life and efficiency of a system. All boiler tubes are cleaned with periodic compressed air pulses during operation.



IGNITION

Up to 900 kW nominal capacity and up to a maximum fuel moisture content of M 35, electrical industrial hot air blowers are available for igniting the fuel in the combustion tray or on the moving grate. From a nominal capacity of 900 kW and up to a maximum fuel moisture content of M 55, ignition burners run with propane gas can be used for the UTSR and UTSW combustion systems.



AUTOMATIC UNDER-GRATE DE-ASHING

Automatic discharge of the ash below the moving grate with the moving floor system directly into the grate de-ashing screw or into a gravity chute.



AUTOMATIC DE-ASHING

Central or separate automatic de-ashing of grate and cyclone ash. With the central version, the ash is discharged mechanically from the combustion grate and the multi-cyclone into a joint ash container on wheels. With the separate version, the ash is discharged from the combustion grate and the multi-cyclone into individual containers.





ECONOMISER

Economiser for lowering the flue gas temperature and increasing the efficiency by 3 – 7 %.



FLUE GAS RECIRCULATION

With difficult fuels we can also install a flue gas recirculation system to lower the combustion chamber temperature.

- With fuels with a low ash melting point
- With dry fuel with a high heating value
- With systems with urea injection
- Combined with flue gas condensation systems



DE NOX

During the combustion of wood, nitrogen oxide is formed from the nitrogen in the fuel. The nitrogen dioxides (NOx) can be lowered with the SNCR (Selective Non Catalytic Reduction) process. A urea solution is used as a reduction medium and is injected directly into the combustion chamber.



RADIATION-VAULT CLEANING SYSTEM

Automatic pulse-jet cleaning for the fault ceiling. Manual cleaning is then no longer necessary.



BOILER BYPASS

Boiler bypass to increase the flue gas temperature during the start-up and shut-down phases of the combustion system. This increases the filter availability.



THE CONTROL UNIT –
THE HEART OF EVERY SCHMID SYSTEM

The Schmid PersonalTouch boiler control has been in successful operation for many years in hundreds of plants. The wide range of adjustment options is unique. Operation is carried out conveniently from the touch screen.

The third generation of the PersonalTouch control unit is a Schmid development. The company know-how guarantees continuous improvements. Update options are available.

DESIGN AND USABILITY

The most obvious change in the third generation of the PersonalTouch boiler control unit is the new user interface. It employs the very latest technology. Great attention was paid to intuitive operation during its design. The Schmid boiler control unit should not only be extremely functional and look good, but should also be easy to use.

TRACK-PROVEN CONTROL

It is to be expected that a combustion system generates heat and features controls for capacity, combustion temperature, underpressure, residual oxygen and air flow. It becomes really interesting when complex control tasks are required for heating groups as well as steam and hot water systems. In this field Schmid AG has many decades of experience at its disposal.

STABLE AIR FLOWS FOR ALL FUEL TYPES

An outstanding feature of the Schmid control units is that the air flows supplied to the combustion system are measured and controlled. The PersonalTouch control unit therefore ensures that the exact air flow is supplied to the combustion system irrespective of the operating mode, grate occupancy or the fuel density.

THE LATEST O₂ CONTROL

For optimum control of the residual oxygen volume, either the air flow or the fuel quantity can be automatically varied. The PersonalTouch control unit supports both control methods and even permits a combination of both. The optimum control can therefore be defined for each application.

BOILER CONTROL ADAPTED TO THE ENERGY REQUIREMENTS

The aim of the control of the buffer boiler is to ensure that sufficient energy is available at all times and that the wood combustion system requires as few starts as possible. The PersonalTouch control unit offers an optimised solution. Depending

on requirements, the following operating modes can be selected: Control to ensure a constant accumulator level, control to a set accumulator charge value by a higher-level control, diagram-based operation depending on the outside temperature and accumulator charge level as well as control on a weather-sensitive basis.

For further optimisation foreseeable demand peaks or low-load phases can be proactively managed by increasing or lowering the set accumulator level. The respective times can be set on weekly timers.

AUTOMATIC FUEL DETECTION

The moisture of the supplied fuel influences optimum combustion to a degree which should not be underestimated. This moisture can be measured directly and indirectly and therefore automatically modify the setup of the boiler control.

BIGDATA MEANS ADDED BENEFITS

Each measured value is recorded in the PersonalTouch control unit for an entire year. This generates an unimaginable volume of data. But who should ever look at and evaluate this data? This is where the automatic remote maintenance option comes into play and analyses the BigData fully automatically.



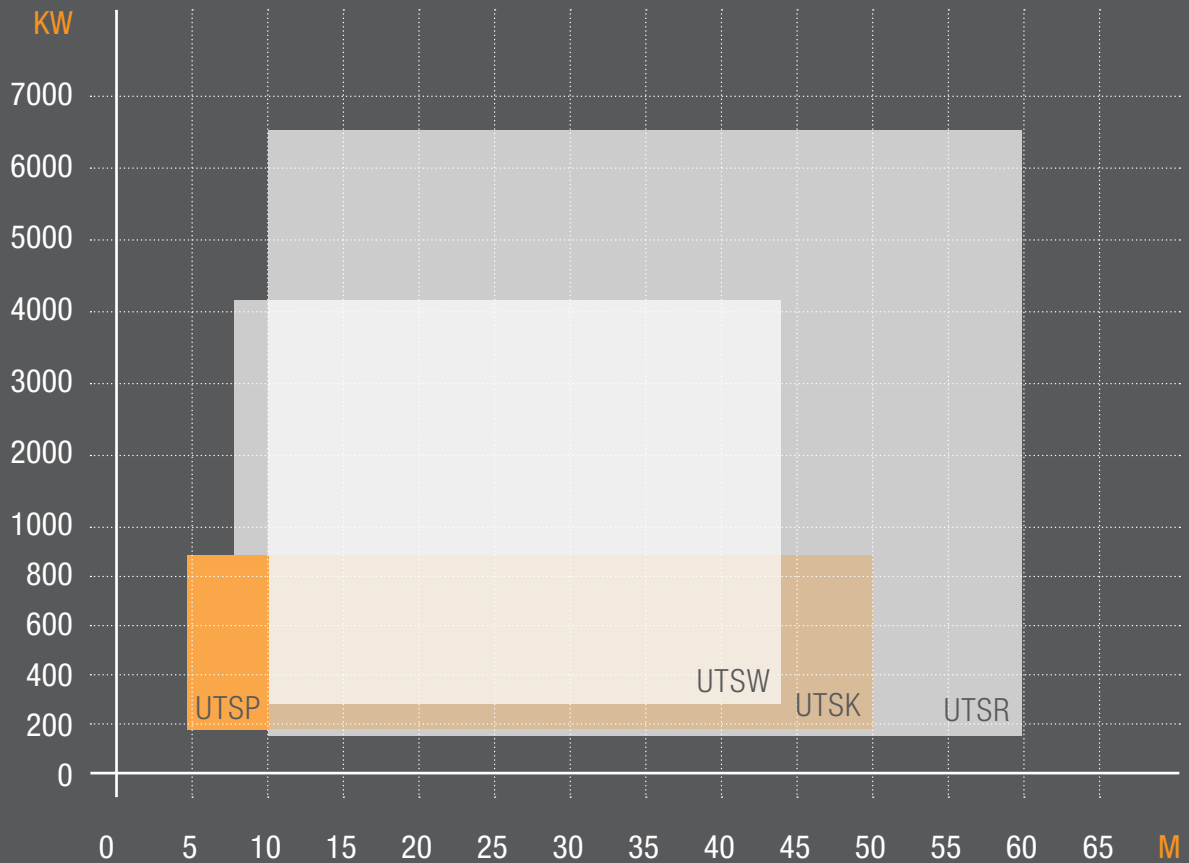


Figure 1: Application range of the combustion systems depending on the fuel moisture content and nominal capacity

FROM THE RAW MATERIAL TO ENERGY!

Profit from our many years of experience in planning and installation of wood combustion systems. We would be pleased to offer you a solution that is fully tailored to your requirements.

SELECTION OF THE BOILER CAPACITY:

Correct dimensioning is decisive for efficient and low-maintenance operation of the combustion system. During planning, continuous operation should be aimed for. Single boiler systems with summer operation should have a sufficiently long minimum service life. Other-wise we recommend planning multiple boiler systems, also taking the minimum service life into account.

ACCUMULATOR:

The energy accumulator covers peak loads, has a positive effect on the control behaviour of the combustion system and makes it possible to achieve the minimum service life and ensure filter availability. As a rule of thumb we recommend an installed capacity of 30 litres per kW for the largest boiler.

FUEL:

Changes in the fuel moisture level, the heating value and the composition during ongoing operation of the combustion system influences the combustion settings. To ensure optimum combustion at any time, three manual or automatically programmable memory settings are available for selection of the settings that are most suitable for the fuel. During summer operation we recommend use of fuel with a fuel moisture content of $\leq M35$ to optimise the minimum service life of the combustion system.

FUEL SUPPLY:

The fuel supply is finely dosed and continuously adapted to the currently required boiler capacity during both screw transport and pusher systems. As a result, the required capacity is generated at all load levels.

AUTOMATIC IGNITION UNIT:

With the use of an ignition combustion unit, automatic sequential control is possible with multiple boiler systems. Operation with firebed maintenance is therefore no longer necessary.

FLUE GAS RECIRCULATION:

When combined with flue gas condensation systems, with fuel with a low ash melting point or a low fuel moisture content, we recommend the use of flue gas recirculation. This guarantees a high level of efficiency with gentle operation and prevents the formation of slag.

FLUE GAS CLEANING:

To achieve a high filter efficiency, the minimum heat reduction in low-load operation must be observed. Planning of an energy accumulator is decisive for optimum operation of dry filter systems in addition to the correct dimensions of the combustion system.

CONTROL SYSTEM:

To benefit completely from the power of the Industrial Systems product range, we recommend the integration of the

- Boiler pump incl. the return temperature control group for return temperature increase and constant regulation of the flow temperature into the technical control design.

- Automatic ignition
- Cascade circuit
- Accumulator management

in the PersonalTouch boiler control unit.

This ensures maximum efficiency, availability, and continuous compliance with the required emissions.

REMOTE ACCESS:

Remote access via PC, tablet or smartphone enables you to conveniently control your system from any location. Profit from the optional combustion chamber camera for visual monitoring of the combustion chamber. The remote access solution also permits access to the full range of Schmid After Sales services.

HEAT GENERATION WITH ACCUMULATOR:

Load peaks are covered by the accumulator. As a result the combustion systems can be designed with a lower capacity and the number of activation and deactivation operations of the combustion system is lowered. The longer service life that is achieved as a result guarantees filter availability. Systems with summer operation or extension reserves are preferably designed as multiple boiler systems.

MONOVALENT SYSTEM:

Wood combustion system 1 for the base load, wood combustion system 2 for peak and low load operation (summer time).

Dimensioning examples:

- 80 - 90 % of the annual heat requirements from wood energy, distributed as 2/3 of the annual heat requirements to boiler 1 and 1/3 of the annual heat requirements to boiler 2.
- The load peaks are covered by the accumulator.

BIVALENT SYSTEM (FIG. 2):

Wood combustion system 1 for the base load, wood combustion system 2 for peak and low load operation (summer time). Oil/gas boiler as extension reserve or for redundancy.

Dimensioning examples:

- 80 - 90 % of the annual heat requirements from wood energy, distributed as 2/3 of the annual heat requirements to boiler 1 and 1/3 of the annual heat requirements to boiler 2.
- The load peaks are covered by the accumulator.
- Oil/gas boiler as extension reserve for redundancy

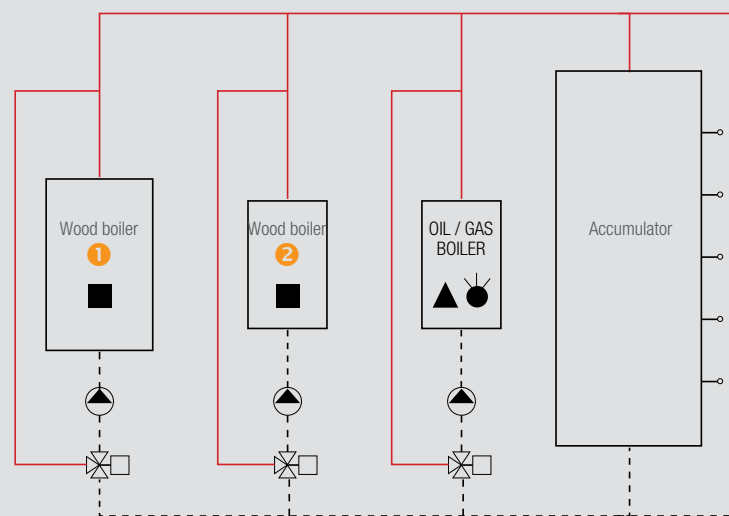


Figure 2: Diagram of a bivalent system with accumulator

SYSTEM OPERATOR

System



LOCAL ACCESS VIA LAN

CUSTOMER ACCESS



HARDWARE VPN-CLIENT



SERVER

WEB ACCESS



SERVICE

SCHMID ACCESS

THE REMOTE MAINTENANCE PRINCIPLE

Schmid remote maintenance focuses on operational safety, operational analysis, system optimisation and reduction of service costs. With the Remote Basic remote maintenance subscription you will receive a daily report on the operation of your system and are notified in the event of a fault.

1. Permanent remote access to the system control is possible.
2. The trend data of the system are automatically output at regular intervals and saved in the Schmid database.
3. The trend data can be viewed by authorised persons from any PC, tablet or smartphone.
4. The trend data can be used for making diagnoses and their analysis



SAFETY IS A MAIN PRIORITY AT SCHMID AG!

Remote access is compliant with the latest safety standards. The VPN-CLIENT hardware is used to establish an encrypted connection. This connection can only be established if the user holds a certificate issued by Schmid AG. All data is encrypted and communicated through a VPN tunnel and is therefore protected against external intervention.

OPERATIONAL OPTIMISATION WITH THE REMOTE MAINTENANCE CONCEPT

THE RIGHT SERVICE PACKAGE FOR YOUR NEEDS

Services	Remote View	Remote Basic	Remote Standard	Remote Premium
Efficient phone support	■	■	■	■
Access to Touch Panel	■	■	■	■
Weekly report		■	■	■
Web access to the trend data		■	■	■
Pattern recognition			■	■
Annual report				■
Specific analysis and operational optimisation				■



COMPREHENSIVE SERVICES –
TO SAFEGUARD YOUR INVESTMENT



We plan and supply not only solutions that are geared to individual requirements, but also support you with a global first class 24-hour, 365 day service.

SCHMID PERSONNEL

- Competent all-rounders
- Reliable
- Conscientious
- Customer-oriented
- Solution-oriented

SERVICE

- 24-hour hotline / stand-by
- Repair and trouble-shooting
- Remote maintenance and technical support
- System maintenance and servicing
- Retrofitting and operational optimisation
- Third-party system maintenance

SERVICE AGREEMENTS

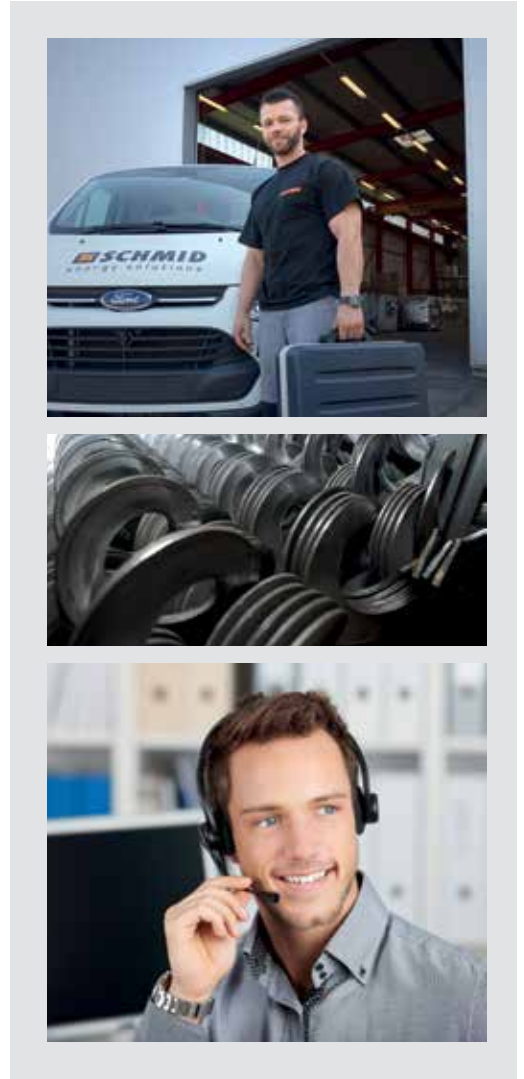
- Preventative and emission maintenance, either annually or upon appointment
- Monitoring of official measurement
- Remote maintenance to boost efficiency
- System maintenance and operation

SPARE PARTS

- Global spare parts service
- Requirement-based emergency packages
- Fast availability

TRAINING

- System maintenance and control unit basics
- Control behaviour and combustion temperature
- Operational optimisation
- Operation of steam and thermal oil systems
- Professional training



AGRICULTURE



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