

Forward-looking and energy efficient **Biomass heating**



**SWEBO
ECOFIRE**

THE SUSTAINABLE HEATING SOLUTION



- Large buildings
- Hotel complexes
- Housing estate projects





40 YEARS' EXPERIENCE IN HEATING THE WORLD!

With over 40 years' experience and a particular focus on research, we are leading the development of both current and future bioenergy solutions. Through listening to our customers and tailoring our development and production accordingly, we can remain market leaders by offering new and innovative solutions.

Our primary markets are in Europe. Having our development centre in Boden, in the north of Sweden means that we benefit from the arctic climate, which provides the ideal conditions for creating long-term bioenergy solutions, serving either farms or heating plants for industrial applications.

We are constantly developing new and innovative energy solutions to minimize the effect on the already highly-stressed environment. Bioenergy is one of the most environmentally friendly energy alternatives, and is classed as carbon dioxide-neutral, which means that it does

not contribute to the greenhouse effect. Electricity and fossil fuel prices are rising due to the current consumption of fossil fuels, tied to the demands and trends of the electricity market. With bioenergy solutions, the producer has much greater control over the cost per kilowatt-hour. We believe that these projections, together with short depreciation periods for investments and a healthier environment make bioenergy solutions the obvious choice, both in terms of new construction projects and boiler replacements for all types of heating plants.

Austrian quality products...



Swebo Ecofire are produced in Austria. The demand on quality is very high in the complete production line and ensure that the quality is top of the line from production to installation and startup. Swebos staff are involved to educate our partners all over Europe according to Swebo quality norms. In all projects

Swebo are involved in:

- Advice during the planning phase
- Planning of energy centre and fuel storage room
- Planning of chamber discharge according to customer requirements and local conditions
- Planning of installation according to customer requirements
- Comprehensive services.

SWEBO training:

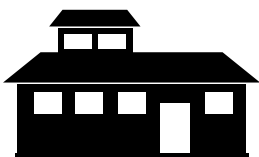
- for the machine operator
- for planners
- for technical offices
- for installers
- for assemblers
- as well as continuous training of the maintenance staff.



Swebo Ecofire can be used individually ...



Swebo Ecofire can be used individually ...



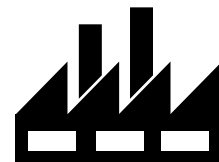
Large buildings

Hospitals, schools, public buildings, hotel complexes, heating buildings as well as heating for swimming pools, wellness areas, fitness and spa areas, ...



Housing estate projects

District heating, family homes, ...



Industrial plants

Joinery, furniture producers, ...

COMPACT

System in modular design

FLEXIBLE

**flexible & easy
to place and connecting**

The induced draft fan of the boiler can be either mounted at the back or on the side (right or left). In addition, the exhaust pipe is pivotable, therefore a flexible and easy connecting of the system is possible.

COMFORTABLE

**Automatic burner & heat
exchanger cleaning and
automatic ash removal**

LOW EMISSIONS

**Combustion technology at the
highest level**



Easy, modern and comfortable ...



With the user-friendly VGA color touch-screen controller, the burning-process, as well as heating circuits, a hot water tank, buffer tank and a solar system can be controlled.

T-CONTROL

A central control unit for:

- Buffer management
- Return flow temperature bypass (pump and mixer valve)
- Domestic hot water preparation
- Controlled heating circuits (pump and mixer valve)
- Solar circuit control
- Frost protection

The convenient menu and simple screen layout with schematic 3D-representation ensures maximum user-friendliness.

The “modular operation” of the T-CONTROL offers extension possibilities up to 55 modules. This allows the central control unit to process the combustion (with lambda sensor), buffer management, return temperature rise, heating circuits, hot water preparation, solar circuit and more optimal together. Additionally, the control system can be easily expanded or modified with the external modules.

... with the central control unit T-CONTROL



T-CONTROL



Even the control of a district heating network up to 50 customers can be realized with the T-CONTROL.

Further advantages of the T-CONTROL:

- power-saving standby mode
- status and error messages via e-mail
- data transfer and software updates via USB stick
- possibility of Modbus-communication

Cascade operation

With the Swebo T-CONTROL up to 8 boilers can be switched in cascade. That means, several boilers are merged in order to achieve a higher performance. Cascade switching offers superior load profile matching, higher efficiency, and ensures even distribution of wear by automatically switching the lead role.

Benefits and details ...

The T-CONTROL – with touch display



Central control unit as standard for:

- Buffer management
- Return flow temperature bypass (pump and mixer valve)
- Domestic hot water preparation
- Controlled heating circuit (pump and mixer valve)
- Frost protection

Automatic de-ashing

Via the two ash discharge screws the combustion and fly ash is automatically augered into the ash bins.

For even more comfort, there is the possibility of fully automatic ash removal into an external, bigger ash container. Due to the bigger volume of ash container the intervals for empty the containers are not so often. Therefore it saves time and increases the comfort.

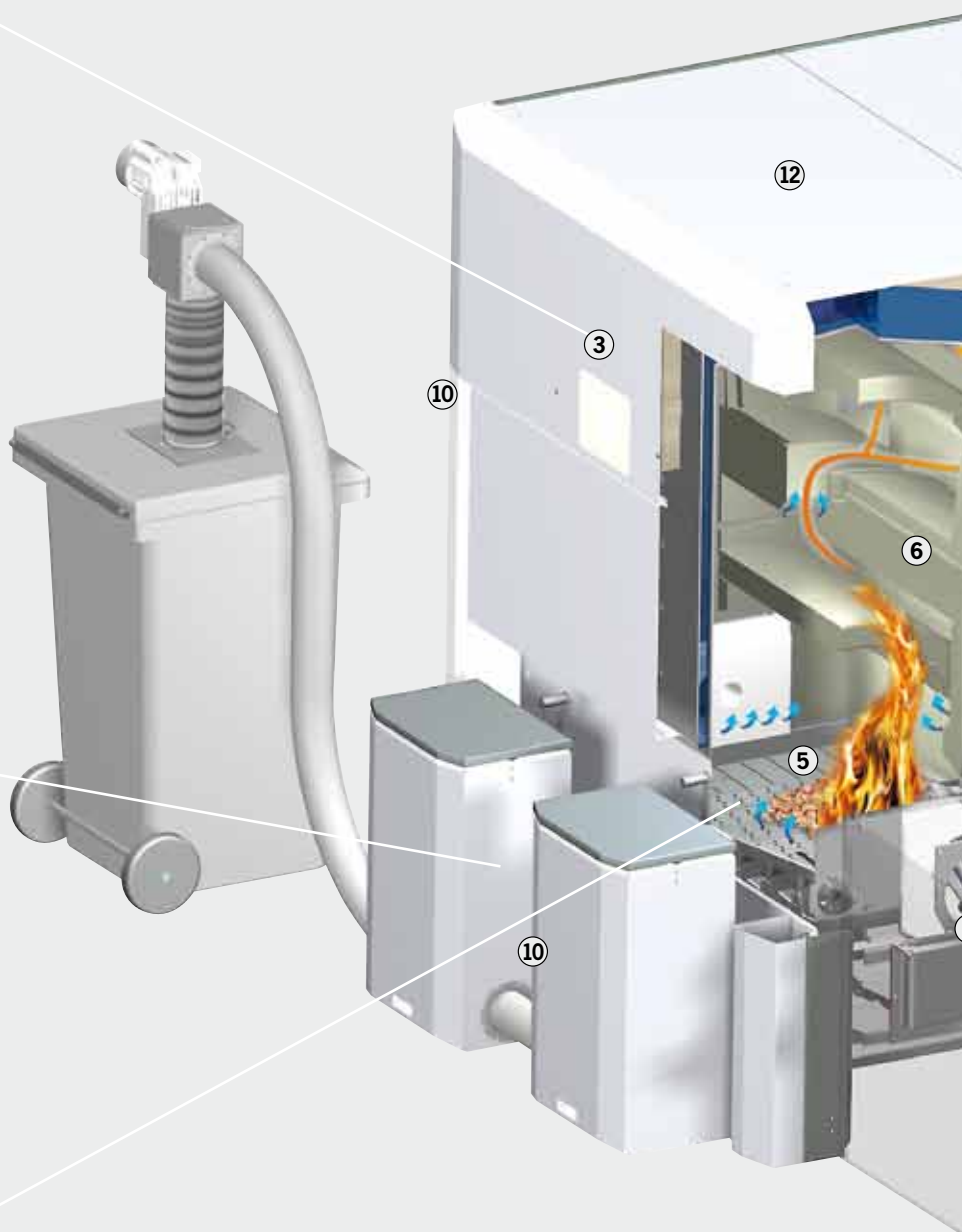
Feeding system & step- / moving grate burning chamber

Wood chips or pellets are transported from the side into the combustion chamber (with double stoker screw).

The movement of the step grate is also a cleaning mechanism of the burning chamber. These grate elements consist of special, high-quality cast iron. Through the movement of the step- /moving grid the biomass is transported through the combustion area.

The cleaning of the combustion chamber from burning ash is carried by an automatically tipping grid. The screw below transports the ash directly into the ash bin.

No manual cleaning requirement.

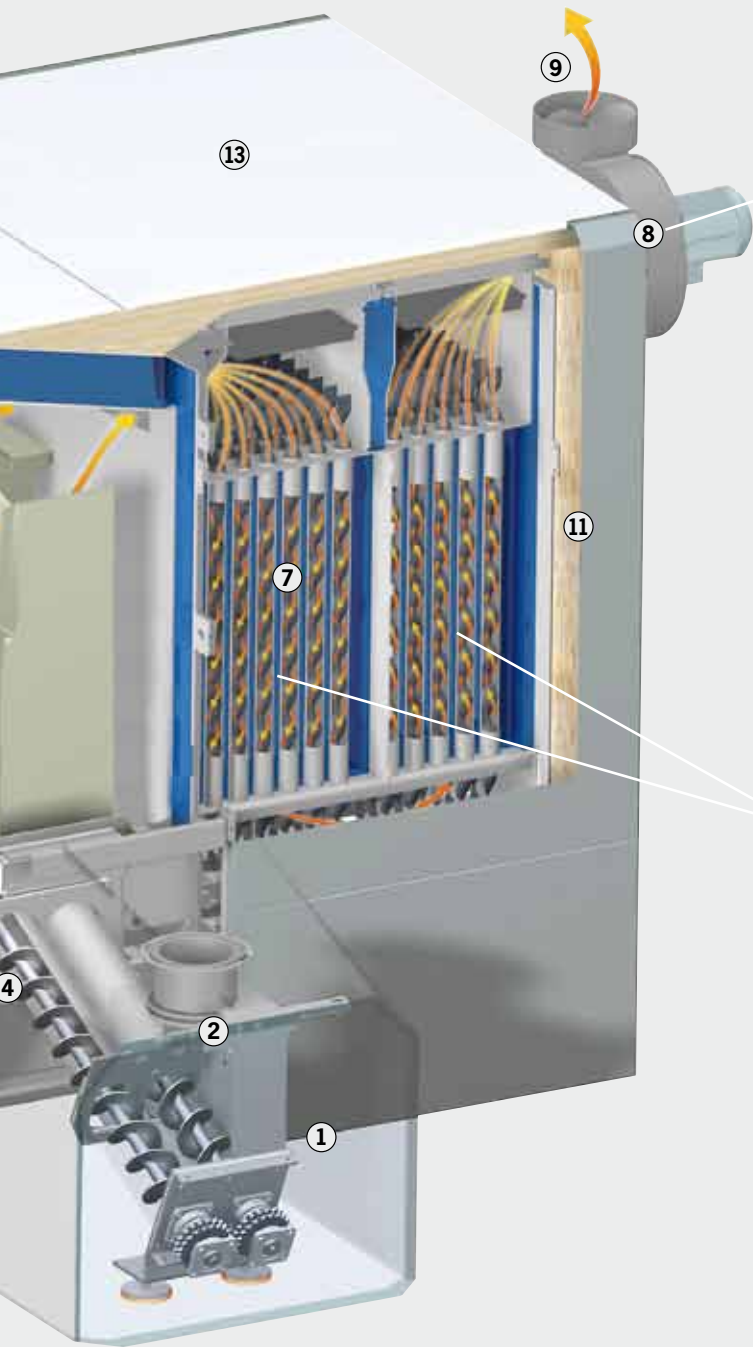


Safety devices:

Burn-back protection, currentless closing airtight flap
Independent extinguishing device, sprinkler device with water tank
Spark-back protection, fuel barrier layer
Temperature monitoring in the combustion chamber
Temperature monitoring sensor in the storage room

- | | |
|--|---|
| 1. Intermediate hopper
with infrared light barrier
system (no mechanical level
control - thereby insensitive)
and double stoker screw | 3. T-CONTROL
central control unit |
| 2. BBP (back burn protection
device; flap)
BBI (back burn inhibit
device; sprinkler system) | 4. Automatic ignition
using hot air fans |
| | 5. Step- /
moving grate
with automatic cleaning |

...of the Swebo Ecofire 349-499



Energy saving combustion due to the lambda probe

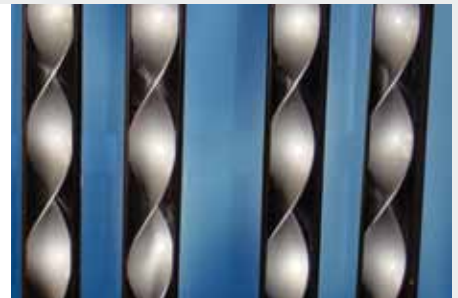


A built in lambda probe, which monitors continuously the flue gas values, detects fuel quality changes and ensures optimum combustion and low emission values.

The Lambda probe controls the primary and secondary air supply ensuring complete combustion, even in partial load operation.

The results are low fuel consumption and the lowest emission values even with different fuel qualities.

Automatic cleaning of the heat exchanger



The heat exchanger surface gets cleaned automatically via the integrated turbulators (by lifting and lowering), even during heating operation and therefore kept clean without manual effort.

A consistently high level of efficiency thanks to cleaned heat exchanger surfaces enables low fuel consumption.

Falling ash is taken into the ash bin via an auger.

6. Split 2-zone combustion chamber

made of SiC fireproof concrete (Temperature resistance up to 1550°C) with step grate (2 zones) made of solid cast chromium steel. The grate bars can be changed individually. Furthermore, the combustion chambers have 2 secondary air zones.

7. Pipe heat exchanger

with turbulators and automatic cleaning

8. Lambda probe control

Automatic flue and combustion monitoring

9. Exhaust fan

speed controlled and monitored for the highest operating safety

10. 2 front ash boxes

for combustion and fly ash

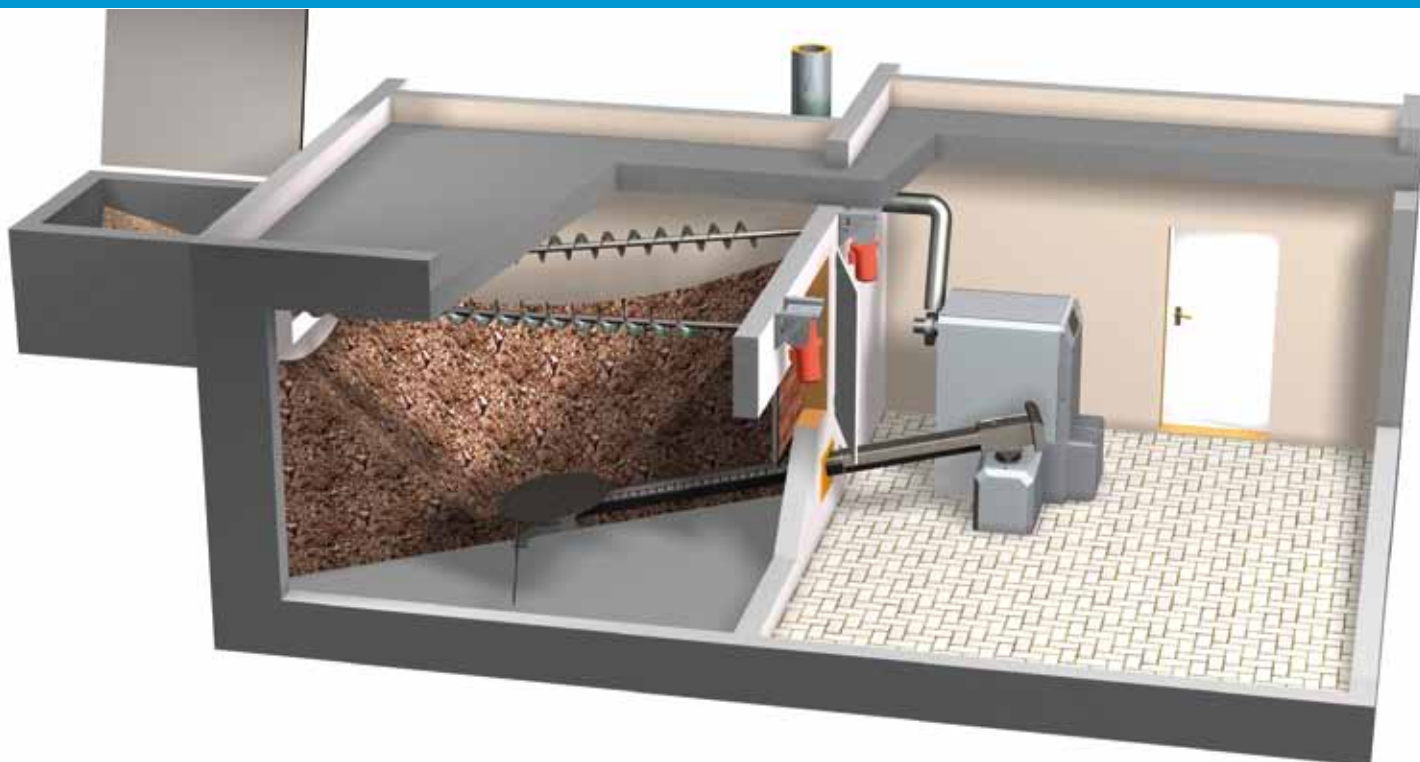
11. Efficient heat insulation

for the lowest radiated heat loss

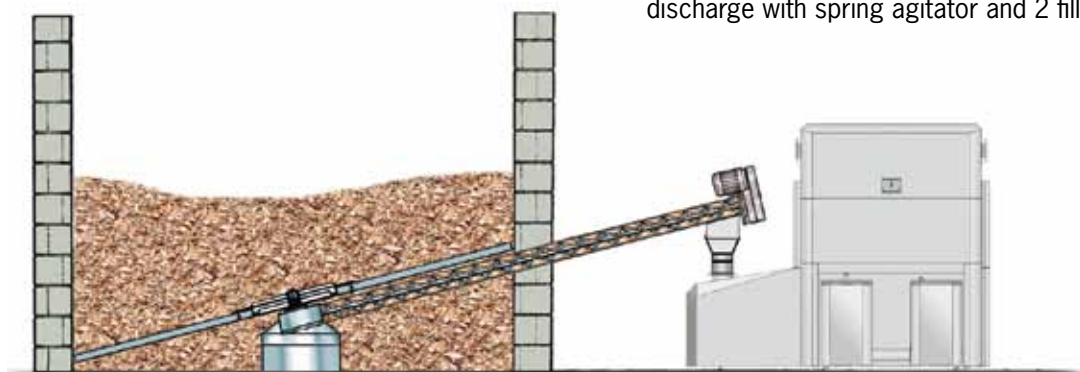
12. Combustion chamber module

13. Heat exchanger module

Discharge systems ...



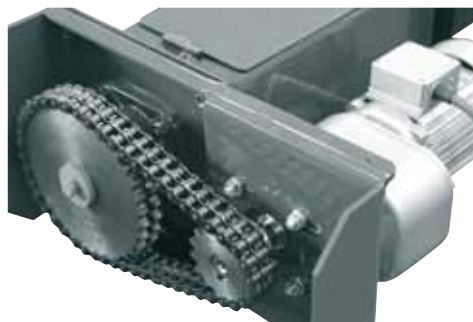
Storage room and heating room on same level. Transverse discharge with spring agitator and 2 filling screws.



Swebo fuel feeder technology – all parts under the same roof!

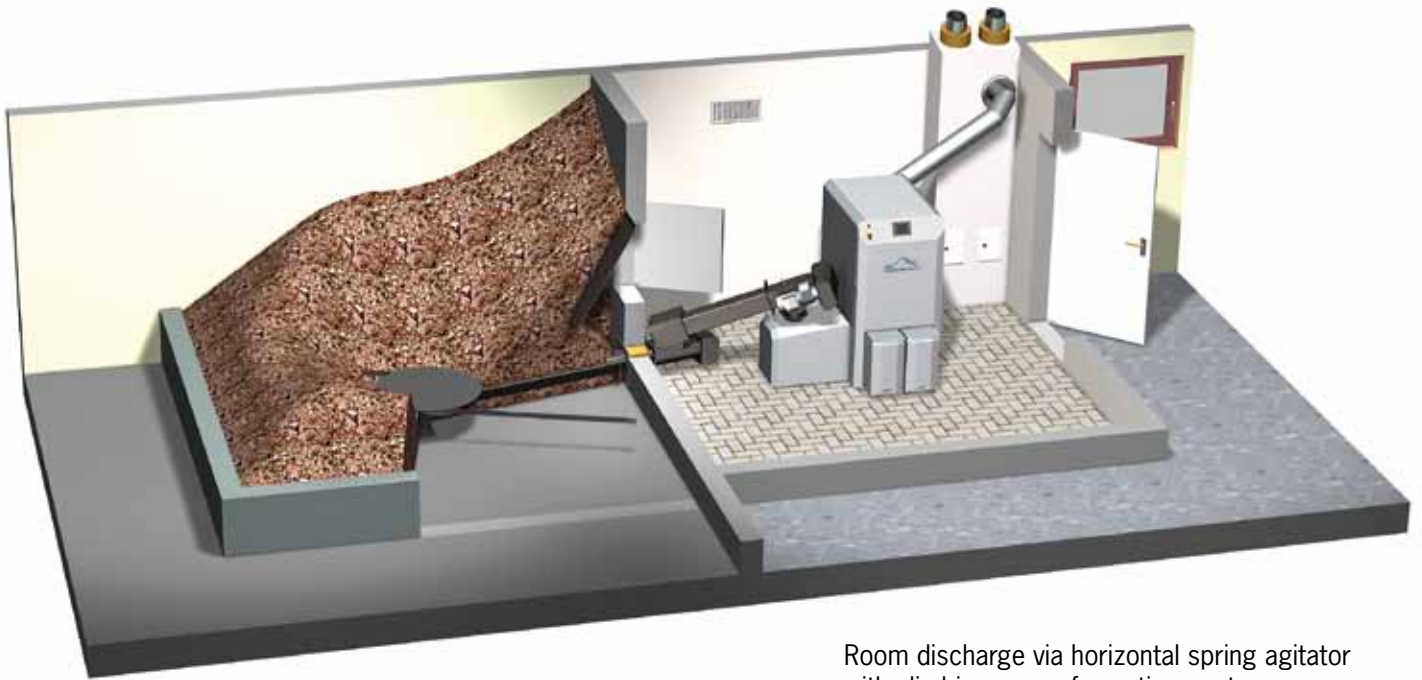


Stable screw feeder system for wood chips and pellets. The special "G-trough" shape enables stable transportation of fuel.



High-quality drive motors with chain drive (dual chain). High starting torque and low power consumption.

...for wood chips & wood pellets



Room discharge via horizontal spring agitator with climbing screw for optimum storage room utilisation.

Agitator

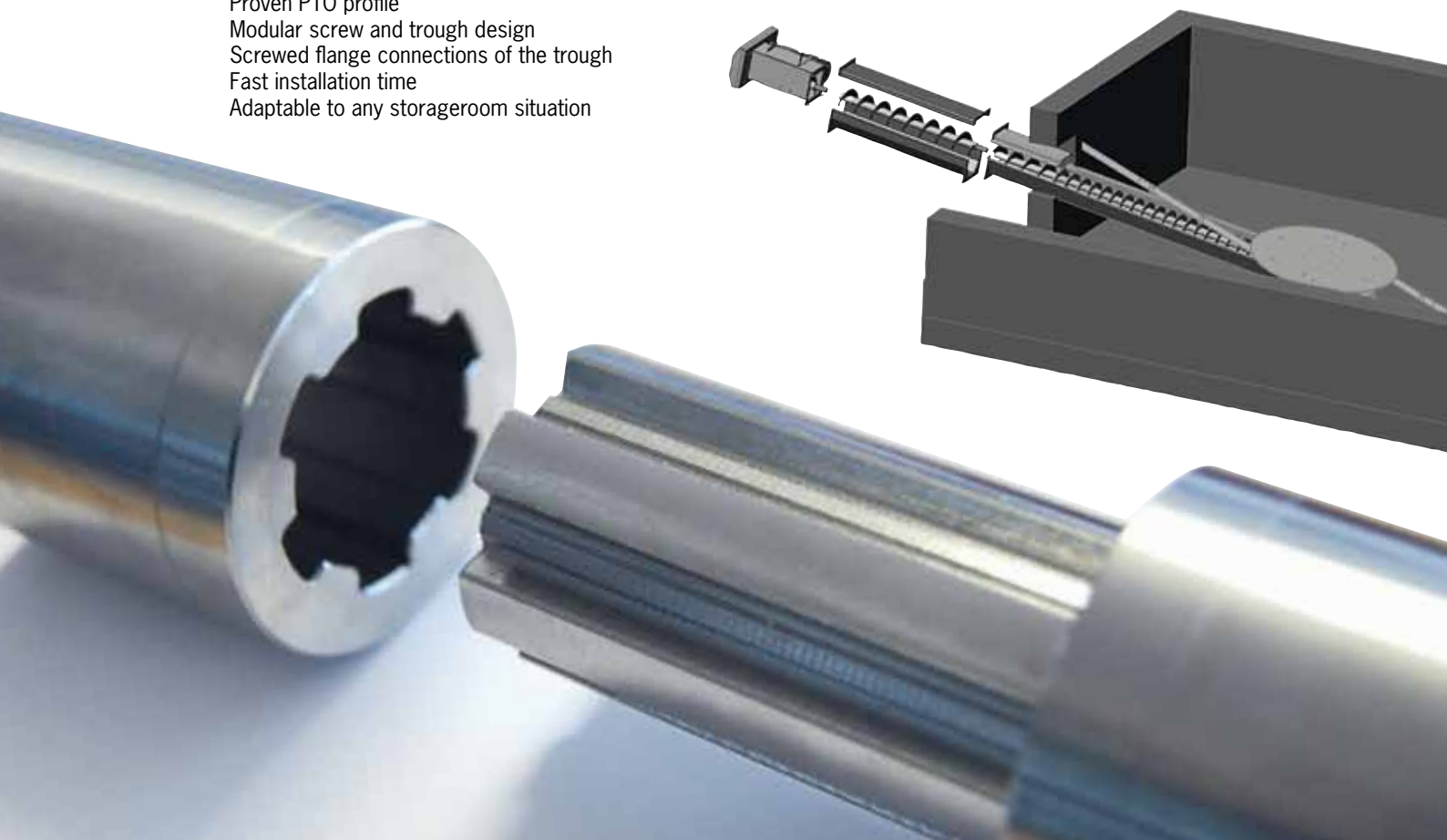
Robust agitator with heavy gearing and pressure discharge for reliable operation.

Modular system

The discharge system with agitator is modular, that means the system consists of elements which can be combined according to the room situation or room size.

The advantages

- Proven PTO profile
- Modular screw and trough design
- Screwed flange connections of the trough
- Fast installation time
- Adaptable to any storageroom situation



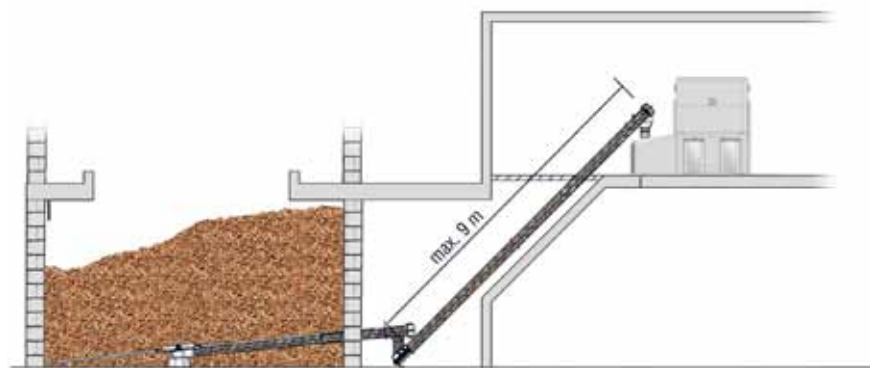
Discharge systems ...



Storage room and boiler room at different levels. Horizontal discharge with spring agitator and chute pipe.

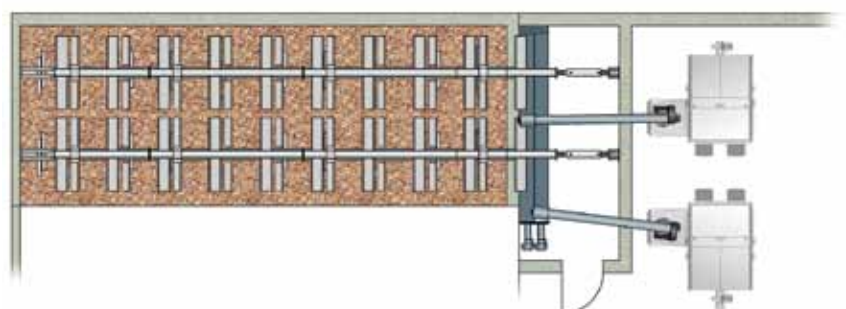
Agitator discharge system with transport screw

The advantage of agitator discharge with transport screw is the efficient use of the storage room. With the transport screw lengths up to 9 meters and angles to 45 ° can be realized.



Hydraulic walking floor discharge

Room discharge with hydraulic walking floor and transversal auger



Vertical filling system ...

The system

After filling the trough with the wood chips or wood pellets it will be fed up to 10 m height via a vertical screw into the fuel storage room. By means of the screw an optimal distribution of the fuel in the storage room is provided.

The big advantages

- Individual use
- Robust
- Reliable
- Heights up to 10 meters possible
- Corrosion-resistant because of galvanized paneling parts for permanent outdoor installation
- Optimal distribution of the fuel in the storage room by the distribution screw (up to 12 meters possible)

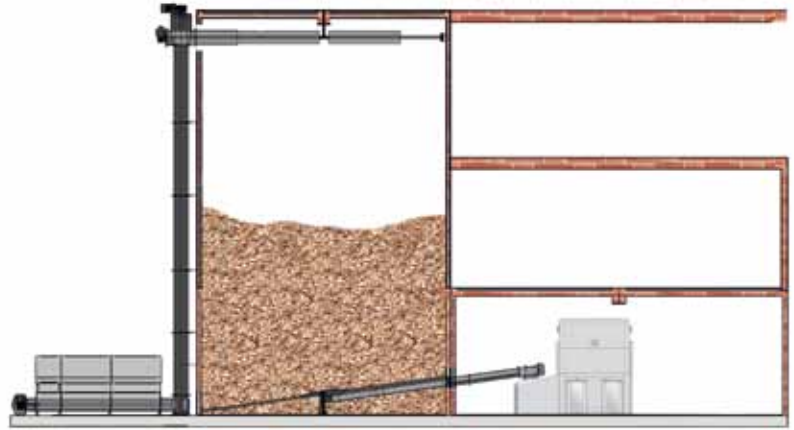


For an optimal storage room filling ...

The Swebo vertical filler can be used individually for each room and space situation with a variety of options. Below some examples:

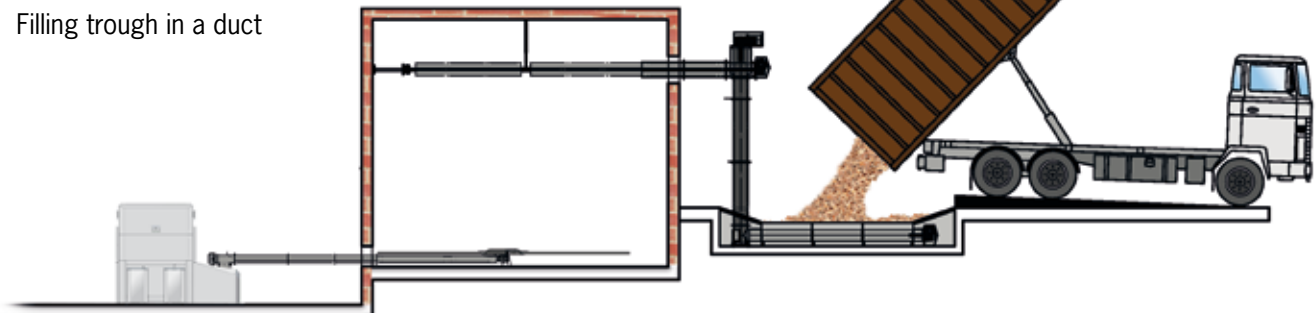


The storage room is located above the boiler room



The storage room is located next to the boiler room

Filling trough in a duct



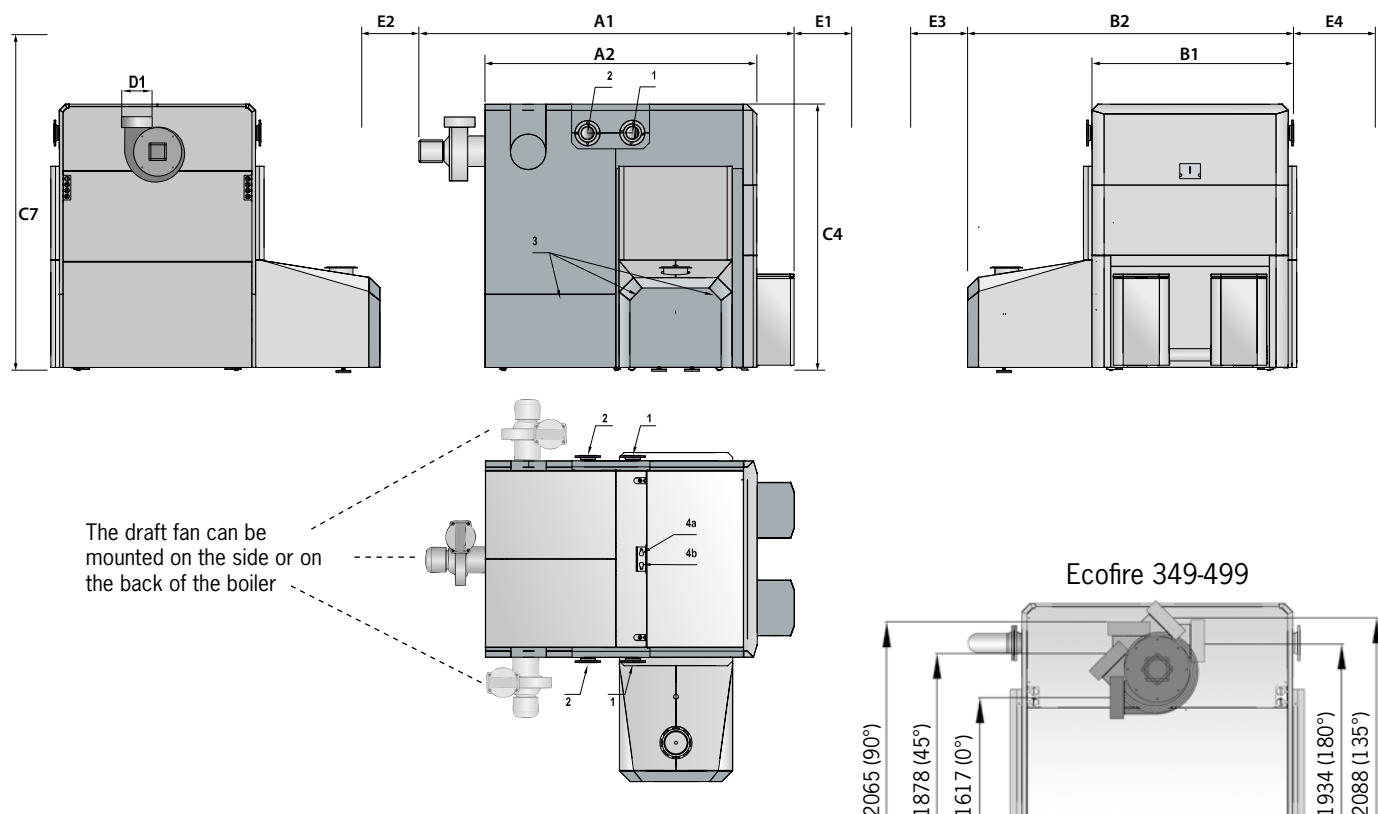
Double vertical filling system

At double installations 2 vertical screws in a double trough are used. In the trough there are 2 parallel arranged transport screws, which lead directly to the vertical screws. This achieves delivery rates up to 120 m³/h. Depending on the space situation Swebo provides customized solutions and flexible installation options.



Dimensions & technical data Ecofire 349-499

Ecofire 349-499



Ecofire 349-499

Technical data		349	351	399	401	499
Output range WOOD CHIPS (kW)		103,9-349	103,9-351	103,9-399	103,9-401	103,9-499
Output range PELLETS (kW)		104,0-349	104,0-351	104,0-399	104,0-401	104,0-499
Dimensions (mm)						
A1	Length - total	3015	3015	3015	3015	3015
A2	Length - casing	2260	2260	2260	2260	2260
B1	Width	1610	1610	1610	1610	1610
B1 *	Bring In wide	1200	1200	1200	1200	1200
B2	Width – with push-in	2655	2655	2655	2655	2655
C4	Height	2185	2185	2185	2185	2185
C5	delivery - upper edge	850	850	850	850	850
C7	Minimum room height	2800	2800	2800	2800	2800
D1	Flue pipe – diameter	250	250	250	250	250
E1	Minimum space front	1000	1000	1000	1000	1000
E2	Minimum space rear	700	700	700	700	700
E3	Minimum space left	500	500	500	500	500
E4	Minimum space right	900	900	900	900	900
Technical data						
Weight combustion chamber module	kg	2010	2010	2010	2010	2010
Weight heat exchanger module	kg	1960	1960	1960	1960	1960
Total weight (including push-in and casing)	kg	4393	4393	4393	4393	4393
Combustion efficiency F	%	>94	>94	>94	>94	>93
Permissible operating pressure	bar	5,0	5,0	5,0	5,0	5,0
Max. permissible operating temperature	°C	95	95	95	95	95
Water capacity	ltr	1130	1130	1130	1130	1130
Flue gas mass flow rate at nominal load: wood chips (wood pellets)	kg/s	0,20 (0,214)	0,20 (0,214)	0,20 (0,214)	0,20 (0,214)	0,28 (0,275)
Flue gas mass flow rate at part load: wood chips (wood pellets)	kg/s	0,067 (0,068)	0,067 (0,068)	0,067 (0,068)	0,067 (0,068)	0,067 (0,068)

Ecofire 349-499:

1...Flow DN100, PN 6 2...Return DN100, PN 6

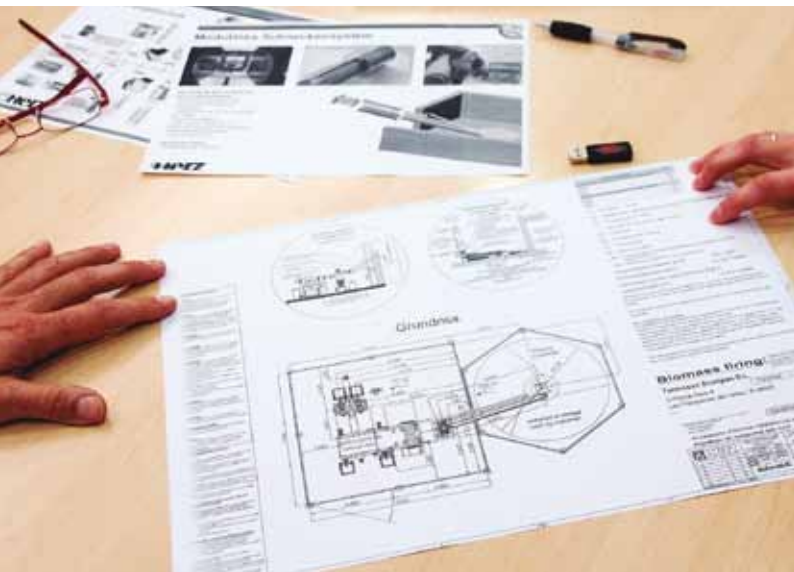
3...Filling / draining connection 3/4" IG

4a...Safety heat exchanger input

4b...Safety heat exchanger output

IG...Interior thread

Swebo customer-oriented....



Advice during the planning phase
Planning of installation & chamber discharge
according to customer requirements and local
conditions
Comprehensive services

Swebo training:

- for the plant operators
- for planners and technical offices
- for installers and assemblers
- as well as continuous training of the maintenance staff

We reserve the right of errors, misprint, typographical failures and technical modifications! Data about our products are not guaranteed characteristics. Mentioned and illustrated discharge systems are system-dependent and only available as an option. In case of discrepancies between documents with regard to the scope of supply the information in the current offer is valid. All images are representations as a symbol and serve only to illustrate our products.

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