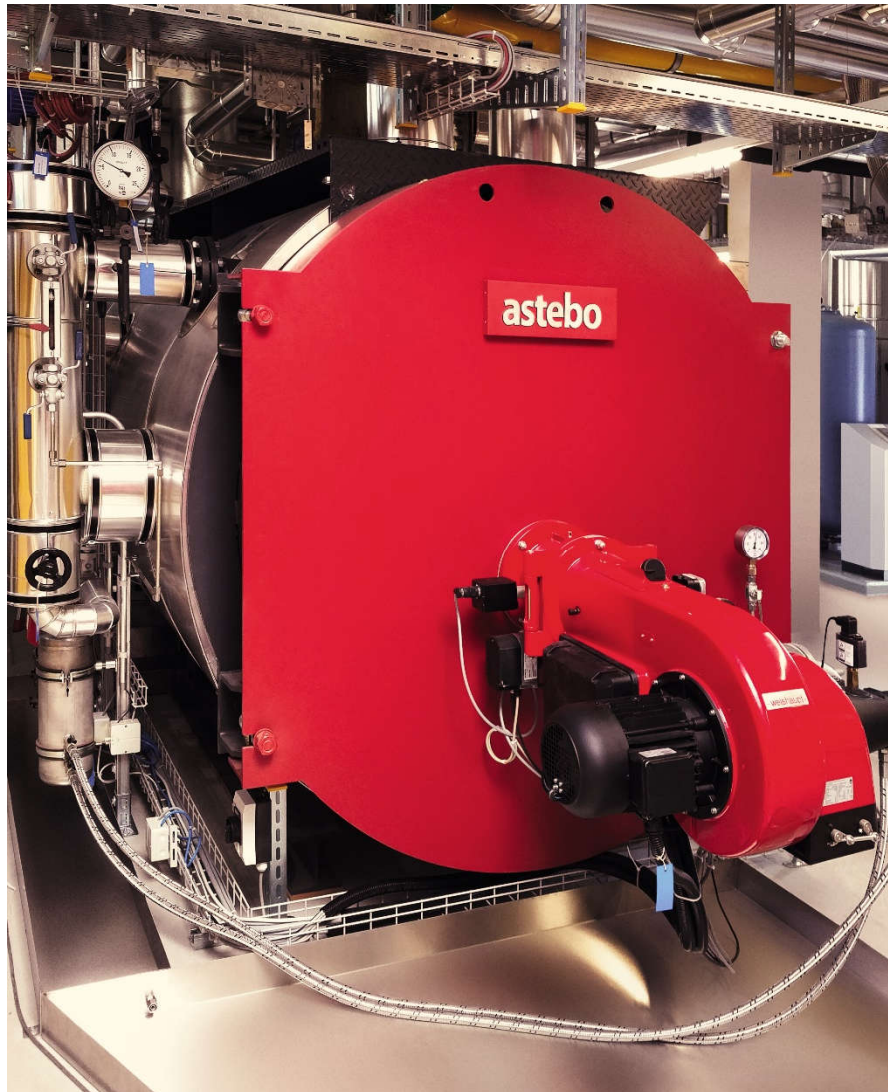


**astebo**

austrian steam boilers



## **Industrial Steam Boilers as Shell Boiler**

## ASTEBO Industrial Boiler durable, efficient and economical.



**astebo gmbh** is a medium-sized manufacturer of shell boiler systems with combined planning and manufacturing expertise from Austria that is recognized in many industries. With innovative, customer-specific solution concepts for commercial and industrial steam and hot water boiler applications, **astebo gmbh** convinces with the know-how, flexibility and commitment of its employees. In the course of the development, production and servicing of boiler plants, **astebo gmbh** always strives to make a contribution to maximum energy efficiency and availability, thus actively contributing to the achievement of global climate targets.

### The astebo gmbh

- has the mission to always strive for what is physically feasible and economically viable in terms of efficiency, availability and convenience of its products and services.
- pursues the vision of setting new standards for energy efficiency, availability and comfort in the boiler market.
- has the objective to position itself as a technically and qualitatively outstanding boiler manufacturer.

## Your advantages at a glance



### COST-EFFECTIVENESS

- Best efficiency due to a built-in, fully water-cooled flue gas reversal chamber with astebo fin tube wall
- High boiler efficiencies can be achieved individually, depending on the customer's needs, with economizers as an economically interesting option.
- Cost-effective solution due to low investment costs



### ENVIRONMENTAL FRIENDLY

- Generously dimensioned flame tube with a low heat load guarantees excellent combustion and reduces emissions of carbon monoxide and nitrogen oxides
- Excellent emission values due to power adjustment (modulation) of low NOx burners
- The large water content of the boiler ensures continuous burner operation and thus reduces burner switching frequency
- Low fuel consumption due to specially calculated heat transfer surfaces result in high boiler efficiency



### MAINTENANCE-FRIENDLY

- Easy operation due to intelligent design details
- Boiler control via Siemens S7, 1200 touch panel
- Large hinged boiler door facilitates access for service and cleaning
- No refractory concrete on the back wall of the boiler



### CLEVER SOLUTION / SPECIAL DESIGNS

- Wide range of applications due to flexible combination options
- Space-saving, compact design
- Easy installation due to high flexibility in positioning
- Wide range of accessories and special solutions possible
- Through the use of special boilers, we have the possibility to adapt the steam space with regard to steam quality, economy and for very low pressures, which individually meets the customer's requirements, compared to standard boiler manufacturers

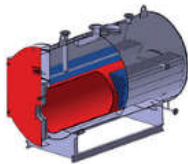
## Steam Boiler

astebo steam boilers are characterised by a solid and robust construction. They are made of quality steel and are particularly convincing due to their ease of operation, simple maintenance and optimum efficiency. The operator receives an economical, environmentally friendly and ready-to-connect compact unit.

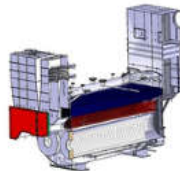
The boiler units are designed for the combustion of natural gas and EL fuel oil. Other fuels (e.g. hydrogen, biogas, ...) on request.

## Product variety Steam Boiler

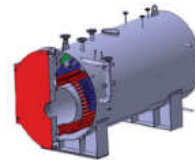
The following figure represents a schematic exemplary boiler plant. Project-related deviations for customer-specific solutions are possible.



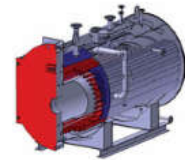
Low pressure range  
Saturated steam TND-U



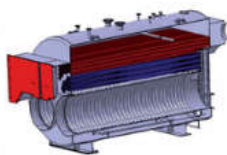
High pressure product line  
Saturated steam THD-IZ Ü



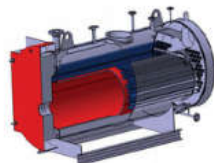
High pressure product line  
Saturated steam THSD-I



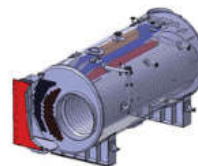
High pressure range  
Saturated steam THSD-IE



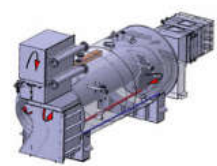
High pressure series  
Saturated steam THD-IZ



High pressure range  
Saturated steam THD-U



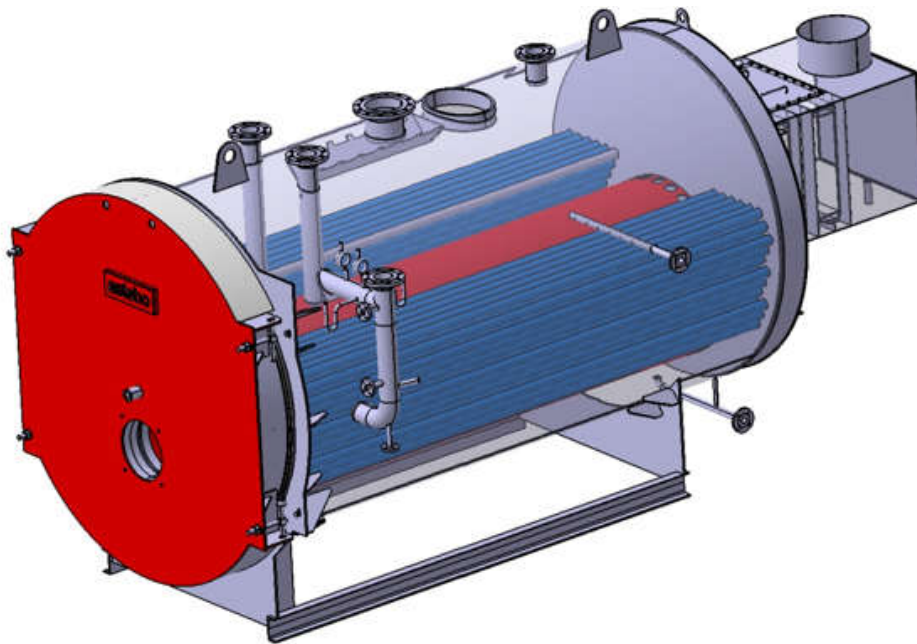
High pressure range  
Saturated steam THD-I



High pressure range  
Saturated steam THD-I-Ü

## astebo Steam Boiler TND-U

„Thermal low pressure steam boiler with reverse flame tube“



The three-pass flame tube-smoke tube boiler type TND-U with reverse flame tube and astebo fin tube wall guarantees high efficiency. The boiler body consists of the cylindrical shell, the front and rear base, the centrally arranged flame tube and the flue tube flues. The boiler door serves to accommodate the burner, is thermally insulated and can be closed flue gas-tight. The boiler body is provided with all necessary inspection openings.

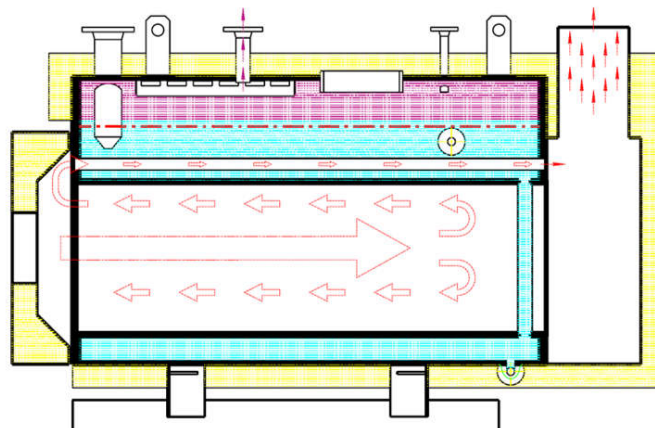
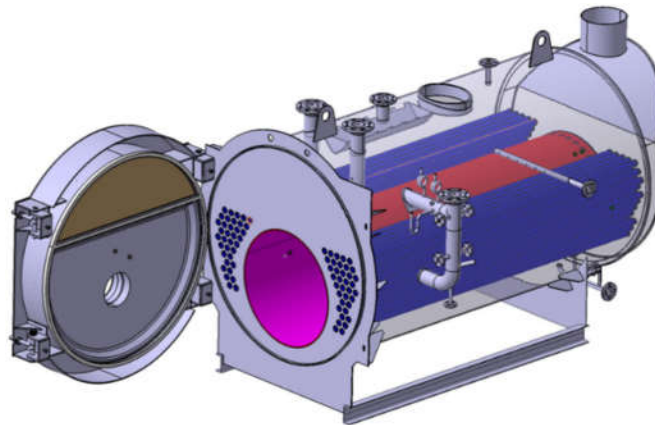
The generously dimensioned flame tube with a low heat load guarantees outstanding combustion and reduces the emission of carbon monoxide and nitrogen oxides. The large water content of the boiler ensures a continuous burner running time and thus reduces the burner switching frequency.

**Permissible operating pressure:** 0,5 and 1 barg (other pressure on request)



## astebo Steam Boiler THD-U

„Thermal high pressure steam boiler with reverse flame tube“



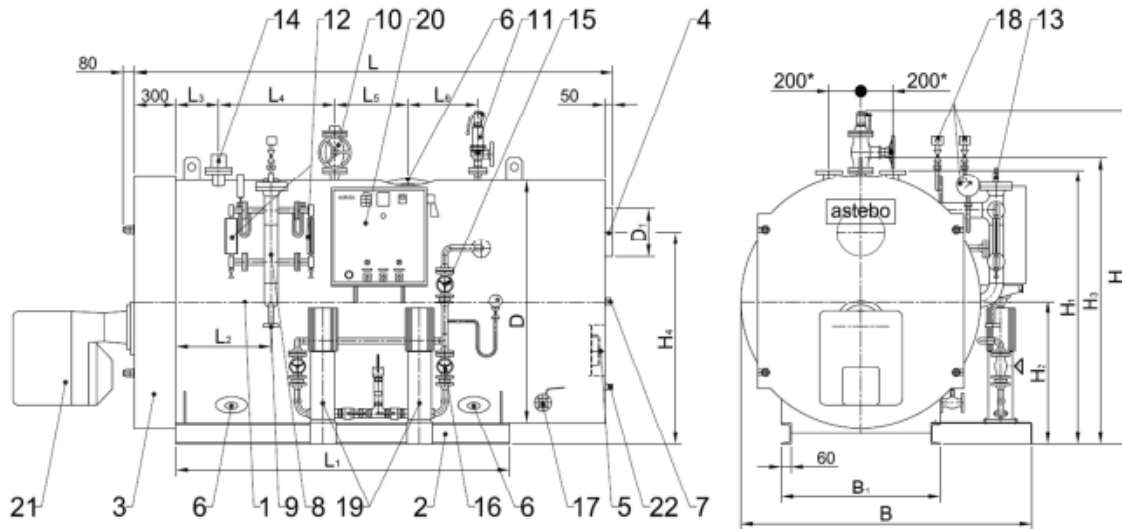
The THD-U type three-pass flame tube-smoke tube boiler with reverse flame tube and astebo fin tube wall guarantees high efficiency. The boiler body consists of the cylindrical shell, the front and rear base, the centrally arranged flame tube and the flue tube flues. The boiler door serves to accommodate the burner, is thermally insulated and can be closed flue gas-tight. The boiler body is provided with all necessary inspection openings.

The generously dimensioned flame tube with a low heat load guarantees outstanding combustion and reduces the emission of carbon monoxide and nitrogen oxides. The large water content of the boiler ensures a continuous burner running time and thus reduces the burner switching frequency.

**Permissible operating pressure:** 10, 13 and 16 barg (other pressure on request)

## Technical data:

### Series THD-U



- |                                       |                                |                                    |
|---------------------------------------|--------------------------------|------------------------------------|
| 1 Boiler (with flue gas collector)    | 9 Desalting- and Samplingvalve | 17 Blow down valve                 |
| 2 Boiler base                         | 10 Steam valve                 | 18 Pressurestats                   |
| 3 Boiler door                         | 11 Safety valve                | 19 Feedwater pumps                 |
| 4 Flue gas outlet                     | 12 Water level gauge           | 20 Electrical control panel        |
| 5 Explosion flap and cleaning opening | 13 Water level control         | 21 Burner                          |
| 6 Inspection opening                  | 14 Water level control 1 + 2   | 22 Drain nozzle flue gas collector |
| 7 Sight glass                         | 15 Feedwater piping            |                                    |
| 8 Armature tube                       | 16 Feedwater valve             |                                    |

Boiler Type	Main dimensions							Boiler base		Nozzles				Flue gas collector		Transport dimensions width <sub>min</sub> and height <sub>min</sub>				
	L	B *	H *	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	D	L <sub>2</sub>	L <sub>1</sub>	B <sub>1</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	H <sub>4</sub>	D <sub>1</sub>	with Armature	without Armature	width <sub>min</sub>	height <sub>min</sub>
500	2205	1935	1950	1560	800	1600	1300	350	1250	850	200	300	350	350	1150	200	2050	2100	1750	1750
650	2355	1985	2000	1610	825	1650	1350	350	1400	900	200	300	350	350	1200	200	2200	2150	1800	1800
800	2505	2085	2100	1710	875	1750	1450	400	1550	1000	200	400	400	400	1300	250	2300	2250	1900	1900
1000	2755	2085	2100	1710	875	1750	1450	500	1800	1000	250	500	450	450	1300	250	2300	2250	1900	1900
1200	3105	2135	2150	1760	900	1800	1500	500	2150	1050	250	500	600	600	1350	300	2350	2300	1950	1950
1600	3205	2235	2250	1860	950	1900	1600	500	2250	1150	250	500	600	600	1400	350	2450	2400	2050	2050
2000	3255	2335	2410	1960	1000	2000	1700	650	2300	1250	300	500	600	600	1500	350	2550	2550	2150	2150
2500	3355	2435	2510	2060	1050	2100	1800	650	2400	1350	300	500	600	600	1550	400	2650	2650	2250	2250
3000	3605	2585	2660	2210	1125	2250	1950	750	2650	1450	350	600	650	650	1675	450	2800	2800	2400	2400
3500	3605	2785	2950	2410	1225	2450	2150	750	2650	1650	350	600	650	650	1825	500	3000	3100	2600	2600
4000	4105	2785	2950	2410	1225	2450	2150	950	3150	1650	350	600	850	850	1825	500	3000	3100	2600	2600
4500	4105	2835	3000	2460	1250	2500	2200	950	3150	1700	350	600	850	850	1825	550	3050	3150	2650	2650
5000	4105	2935	3150	2560	1300	2600	2300	950	3150	1800	350	600	850	850	1925	600	3150	3300	2750	2750

H \* Dimension for 10 bar design.

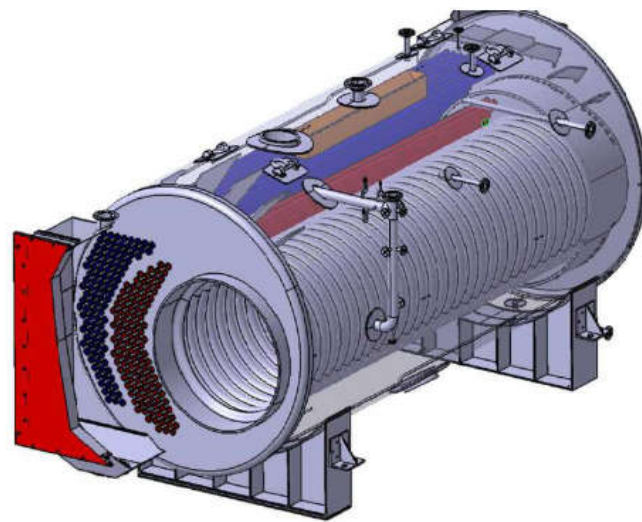
B \* Dimensions may vary Specific pumps.

200 \* starting THD-U 2000 distance = 250mm

Subject to alterations!

## astebo Steam Boiler THD-I

„Thermal high pressure steam boiler with internal reversing chamber“



The classic three-pass flame tube boiler type THD-I with internal, fully water-cooled flue gas reversing chamber with fin tube wall guarantees high efficiency. The boiler body consists of a cylindrical shell, the front and rear bottom, the asymmetrically arranged flame tube including the rear flue gas reversal chamber with water-cooled fin tube wall, the flue tube flues and the laterally mounted valve tube either on the right (standard) or on the left.

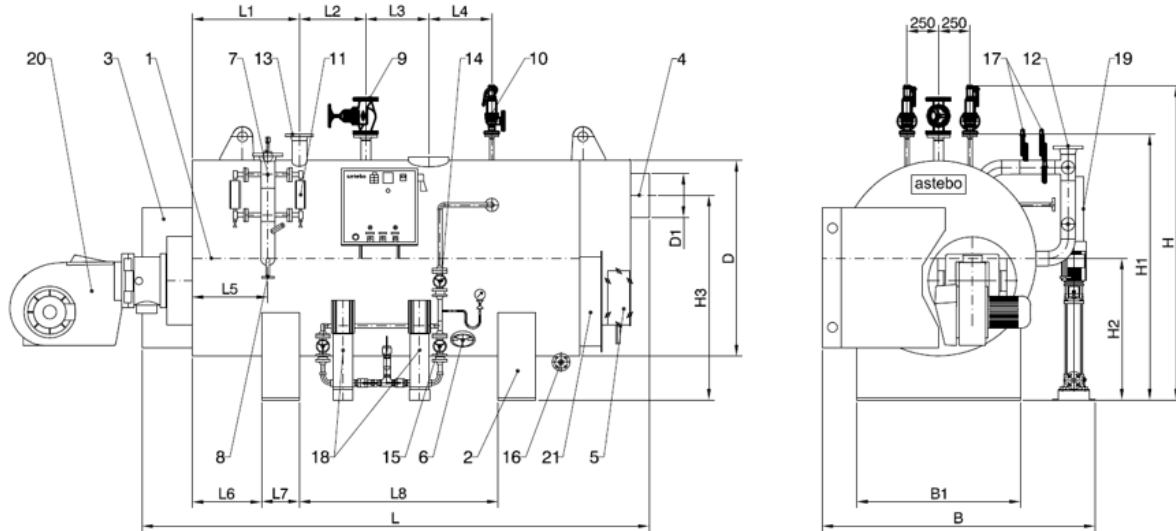
The boiler design allows the use of a superheater between the 2nd and 3rd flue. Furthermore, cleaning of the flue tubes is very easy with this type of boiler. The boiler door is thermally insulated to accommodate the burner and can be closed flue gas-tight. The boiler body is completely electrically welded and provided with all necessary inspection openings.

The generously dimensioned flame tube with a low heat load guarantees excellent combustion and reduces emissions. The large water content of the boiler ensures a continuous burner running time and thus reduces the burner switching frequency.

**Permissible operating pressure:** 10, 13 and 16 barg (other pressure on request)

## Technical data:

### Series THD-I



- |                                       |                              |                             |
|---------------------------------------|------------------------------|-----------------------------|
| 1 Boiler                              | 9 Steam valve                | 17 Pressurestats            |
| 2 Boiler base                         | 10 Safety valve(s)           | 18 Feedwater pump(s)        |
| 3 Hinged door                         | 11 Water level gauge         | 19 Electrical control panel |
| 4 Flue gas outlet                     | 12 Water level control       | 20 Burner                   |
| 5 Explosion flap and cleaning opening | 13 Water level control 1 + 2 | 21 Inspection opening       |
| 6 Inspection opening                  | 14 Feedwater piping          |                             |
| 7 Tube assembly                       | 15 Feedwater valve(s)        |                             |
| 8 Continuous blowdown valve           | 16 Blow down valve           |                             |

Capacity kg/h	Main dimensions				Connecting dimensions								Base frame				Flue gas connection		Required space B x H			
	L	B	H	D	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	H <sub>1</sub>	H <sub>2</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	B <sub>1</sub>	H <sub>3</sub>	D <sub>1</sub>	with tube assemblies		without tube assemblies		
2000	4450	2169	2555	1750	850	950	500	500	600	2110	1125	550	300	2000	1300	1625	350	2200	2600	2100	2200	
2500	4750	2280	2655	1850	850	1050	600	600	600	2185	1150	550	300	2300	1400	1650	400	2300	2700	2200	2300	
3200	4950	2530	2991	2100	850	1150	600	700	600	2460	1300	550	300	2500	1550	1950	450	2550	3050	2450	2550	
4000	5250	2670	3091	2200	850	1300	600	700	650	2560	1350	550	400	2500	1650	2050	500	2700	3150	2550	2650	
5000	5550	2870	3349	2400	850	1450	600	700	650	2760	1450	550	400	2800	1800	2200	550	2900	3400	2750	2850	
6000	5850	2971	3449	2500	850	1600	600	700	650	2860	1500	550	400	3100	1850	2275	600	3000	3500	2850	2950	
8000	6950	3071	3675	2600	850	2150	800	800	650	2960	1550	750	400	4000	1950	2300	700	3100	3700	2950	3050	
10000	6950	3296	3873	2800	850	2150	800	800	650	3160	1650	750	500	3800	2050	2450	750	3350	3900	3150	3250	
12000	7250	3496	4075	3000	850	2275	800	800	650	3360	1750	750	500	4050	2200	2700	850	3550	4100	3350	3450	
15000	7250	3796	4466	3300	850	2275	800	800	650	3660	1900	750	600	3850	2400	2800	950	3850	4500	3650	3750	
18000	7350	4095	4765	3600	850	2325	800	800	650	3960	2050	750	600	3950	2700	3050	1050	4150	4800	3950	4050	
22000	7650	4230	4972	3700	850	2500	800	800	650	4060	2100	750	600	4300	2900	3200	1150	4250	5000	4050	4150	
27500	7950	4430	5173	3900	850	2650	800	800	650	4260	2200	750	600	4600	3100	3300	1300	4450	5200	4250	4350	

Transport dimensions for pressure level 10 bar.

Design pressure 10, 13 und 16 barü

Other pressure levels on request

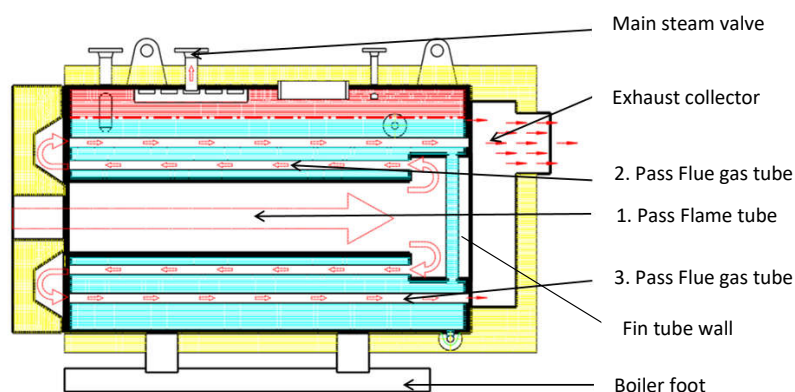
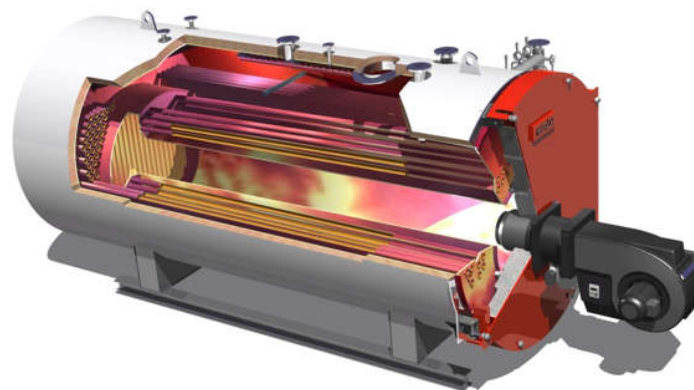
\* Add 40mm to H<sub>1</sub> for crane hooks.

Dimensions incl. 100 mm isolation.

Subject to alterations !

## astebo Steam Boiler THSD-I and THSD-I ...E

„Thermal high-pressure saturated steam boiler with internal reversing chamber“



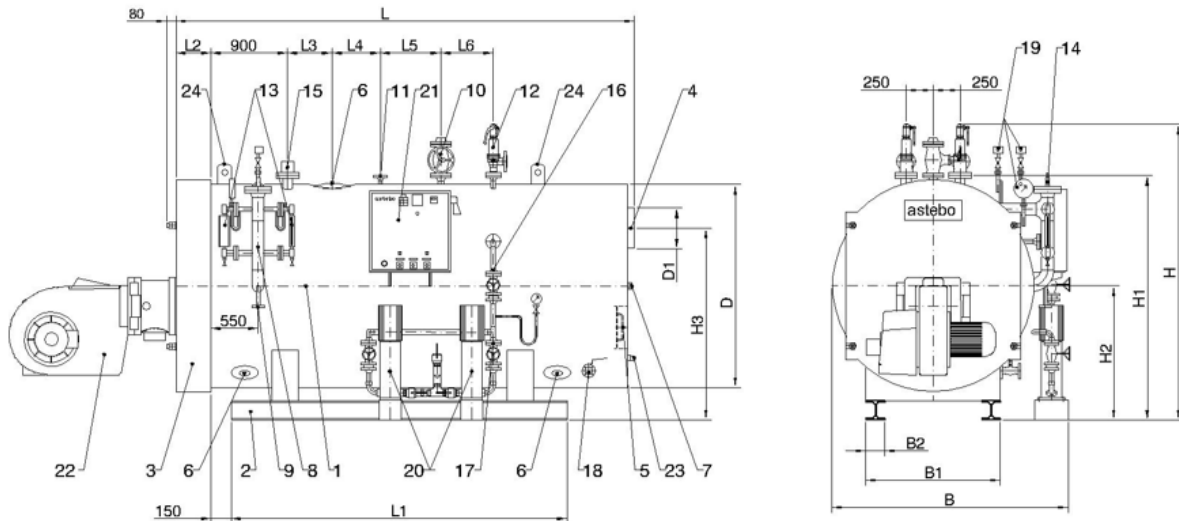
The classic three-pass flame tube-smoke tube boiler type THSD-I and THSD-I ... E with internal, fully water-cooled flue gas reversing chamber with astebo fin tube wall guarantees high efficiency. The boiler body consists of the cylindrical shell, the front and rear base, the centrally arranged flame tube together with the rear flue gas reversal chamber, the flue tube flues and the laterally attached fitting tube. The boiler door serves to accommodate the burner and is thermally insulated and can be closed flue gas-tight. The boiler body is provided with all necessary inspection openings. By using economisers (ECO), an improvement in the efficiency of the steam boiler system of approx. 4-8% can be achieved.

The THSD-I...E type also offers the advantage of a smaller, more compact design for installation situations with limited space.

**Permissible operating pressure:** 10, 13 and 16 barg (other pressure on request)

## Technical data:

### Series THSD-I



- |                                       |                              |                             |
|---------------------------------------|------------------------------|-----------------------------|
| 1 Boiler                              | 9 Continuous blowdown valve  | 17 Feedwater valves         |
| 2 Boiler base                         | 10 Steam valve               | 18 Blow down valve          |
| 3 Hinged front door                   | 11 Vent valve                | 19 Pressurestats            |
| 4 Flue gas outlet                     | 12 Safety valve(s)           | 20 Feedwater pumps          |
| 5 Explosion flap and cleaning opening | 13 Water level gauge         | 21 Electrical control panel |
| 6 Inspection opening                  | 14 Water level control       | 22 Burner                   |
| 7 Inspection glass                    | 15 Water level control 1 + 2 | 23 Condensate drain nozzle  |
| 8 Tube assembly                       | 16 Feedwater piping          | 24 Crane hooks              |

capacity kg/h	Main dimensions				Connecting dimensions								Base frame			Flue gas connection		Required space B x H			
	L	B	H	D	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	H <sub>1</sub>	H <sub>2</sub>	L <sub>1</sub>	B <sub>1</sub>	B <sub>2</sub>	H <sub>3</sub>	D <sub>1</sub>	with tube assemblies		without tube assemblies		
2000	4130	2444	2891	2050	230	500	400	400	400	2360*	1225	3000	1500	160	1850	350	2500	2950	2400	2450	
2500	4330	2504	2941	2100	230	500	400	400	400	1850*	1250	3200	1550	160	1850	450	2550	3000	2450	2500	
3200	4530	2604	3149	2200	230	500	400	400	400	2560*	1350	3400	1650	160	2000	450	2650	3200	2550	2650	
4000	5130	2715	3250	2300	230	600	600	600	600	2660*	1400	4000	1700	160	2050	550	2750	3300	2650	2750	
5000	5330	2950	3575	2500	230	600	600	600	600	2860*	1500	4100	1850	160	2250	550	3000	3600	2850	2950	
6000	5630	3056	3677	2600	230	600	600	600	600	2960*	1550	4400	1950	160	2300	650	3100	3700	2950	3050	
8000	6130	3156	3775	2700	230	600	600	600	600	3060	1600	4900	2000	160	2400	650	3200	3800	3005	3100	
10000	6380	3355	4025	2900	280	600	600	600	600	3310	1750	5100	2150	200	2550	800	3400	4050	3250	3350	
12000	6480	3481	4125	3000	280	600	600	600	600	3410	1800	5200	2200	200	2650	850	3500	4150	3350	3450	
15000	6915	3855	4622	3300	315	600	600	600	600	3710	1950	5600	2400	200	2900	950	3900	4650	3650	3750	
18000	7215	4055	4872	3500	315	600	600	600	600	3960	2100	5900	2600	200	3100	1000	4100	4900	3850	4000	
22000	7715	4415	5272	3900	315	600	600	600	600	4360	2300	6000	3100	200	3450	1150	4450	5300	4250	4400	
27500	7900	4615	5472	4100	315	600	600	600	600	4560	2400	6000	3300	200	3600	1250	4650	5500	4450	4600	

Transport dimensions for pressure level 10 bar.

Design pressure 10, 13 und 16 barü

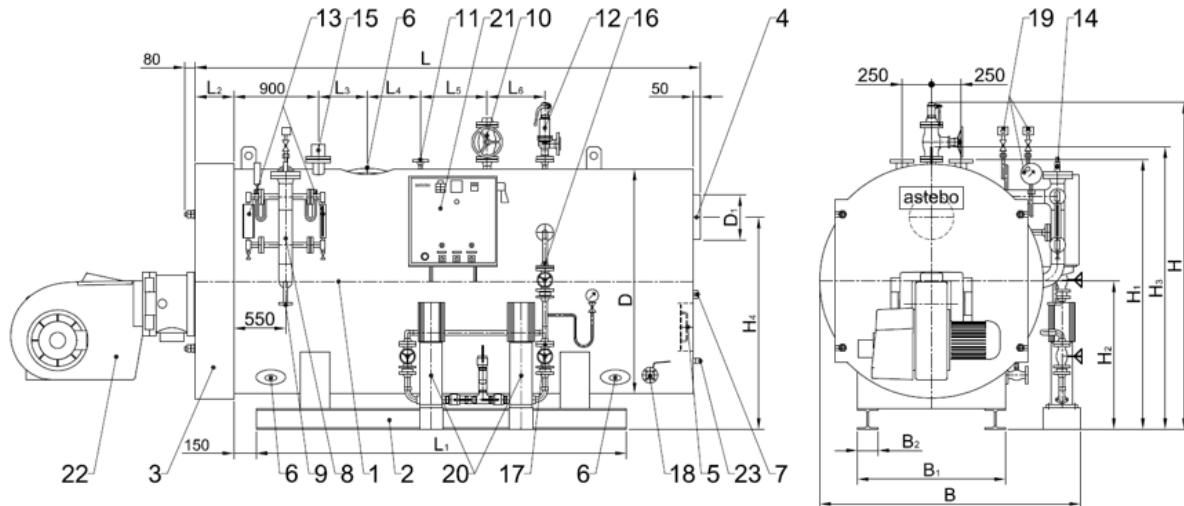
Other pressure levels on request!

\* Add 40mm to H<sub>1</sub> for crane hooks.

Dimensions incl. 100 mm isolation.

Subject to alterations!

## Series THSD-I ... E



- |                                       |                                |                                    |
|---------------------------------------|--------------------------------|------------------------------------|
| 1 Boiler (with flue gas collector)    | 9 Desalting- and Samplingvalve | 17 Feedwater valve                 |
| 2 Boiler base                         | 10 Steam valve                 | 18 Blow down valve                 |
| 3 Boiler door                         | 11 Vent valve                  | 19 Pressurestats                   |
| 4 Flue gas outlet                     | 12 Safety valve                | 20 Feedwater pumps                 |
| 5 Explosion flap and cleaning opening | 13 Water level gauge           | 21 Electrical control panel        |
| 6 Inspection opening                  | 14 Water level control         | 22 Burner                          |
| 7 Sight glass                         | 15 Water level control 1 + 2   | 23 Drain nozzle flue gas collector |
| 8 Armature tube                       | 16 Feedwater piping            |                                    |

Boiler Type	Main dimensions							Boiler base				Nozzles				Flue gas collector		Transport dimensions width <sub>min</sub> and height <sub>min</sub>			
	L	B*	H*	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub> *	D	L <sub>2</sub>	L <sub>1</sub>	B <sub>1</sub>	B <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	H <sub>4</sub>	D <sub>1</sub>	with Armature		without Armature	
25/20	3330	2585	2710	2260	1175	2290	1950	230	2200	1500	160	350	350	300	600	1750	400	2600	2750	2300	2300
30/25	3530	2685	2810	2360	1225	2390	2050	230	2400	1500	160	350	350	300	800	1825	450	2700	2850	2400	2400
35/30	3730	2735	2950	2410	1250	2440	2100	230	2600	1550	160	400	400	350	350	1850	450	2750	3000	2450	2500
45/40	4080	2835	3100	2560	1350	2590	2200	230	2950	1650	160	500	400	400	400	1950	550	2850	3100	2550	2600
55/50	4530	2935	3250	2660	1400	2690	2300	230	3400	1700	160	600	500	500	500	2050	600	2950	3300	2650	2700
70/60	4830	3035	3350	2760	1450	2790	2400	230	3600	1800	160	600	500	600	600	2100	650	3050	3400	2750	2800
90/80	5330	3235	3680	2960	1550	2990	2600	230	4100	1950	160	600	600	600	600	2250	750	3250	3700	2950	3000
110/100	5850	3435	3930	3210	1700	3160	2800	280	4500	2050	200	600	600	600	800	2450	850	3450	3950	3150	3250
130/120	6180	3635	4220	3410	1800	3370	3000	280	4900	2200	200	600	600	700	1000	2650	950	3650	4250	3350	3450
150/140	6480	3735	4320	3510	1850	3470	3100	280	5200	2250	200	600	600	800	1100	2675	1000	3750	4350	3450	3550
170/160	6680	3835	4420	3610	1900	-	3200	280	5400	2300	200	600	600	900	1200	2750	1050	3850	4450	3550	3650
190/180	7015	3935	4630	3710	1950	-	3300	315	5700	2400	200	600	600	1000	1300	2800	1100	3950	4650	3650	3750
220/200	7515	4035	4730	3810	2000	-	3400	315	6000	2500	200	600	600	1100	1400	2850	1200	4050	4750	3750	3850
240/220	8015	4135	4880	3960	2100	-	3500	315	6000	2600	200	600	600	1300	1600	2975	1250	4150	4900	3850	4000
275/250	8315	4235	5030	4110	2200	-	3600	315	6000	2700	200	600	600	1500	1800	3100	1300	4250	5050	3950	4150

H\* Dimension for 10 bar design.  
 B\* Dimensions may vary Specific pumps.  
 H<sub>3</sub>\* up from ø 3000mm water jacket → 4 load ring

## Accessories

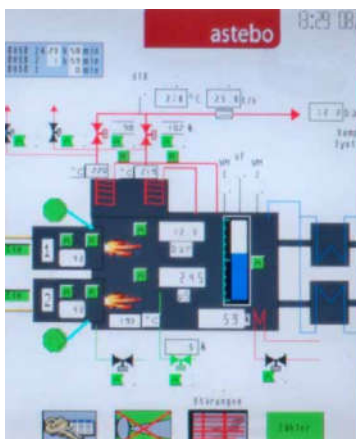
According to the customer's requirements, our boiler plants can be equipped and supplied with built-in or free-standing economizers, combustion units, control and safety technology, feed water tanks as well as with all other necessary additional equipment.



Feed water tank with full degassing



Economizer for efficiency increase with accessories



EMSR -technology, boiler systems



Burner systems



Condensate tank with pump station

## Customer Service

astebo's established customer service organization offers its clients the necessary safety in plant service, examination and maintenance.



### Customized spare part packages

As an installation project is completed, astebo compiles customized spare parts packages to guarantee a permanent availability even in case of failure. For existing systems, astebo offers an option of revitalization and modernization.

### Plant analysis

No matter whether it's a BosB-modernization (BosB=Operation without Constant Supervision) or a rebuild of a complete boiler system: astebo has the

technical personnel to analyze the plant and to optimize it according to the customer's request. So the economic operation of existing boiler plants can be guaranteed permanently.

### Remote diagnosis and remote maintenance

After installing appropriate remote access modems, the astebo customer service will be at your disposal as fast as possible. Using the latest tool of state of the art, our technicians quickly analyze your situation and implement an adequate solution from afar.

### Boiler repairs

astebo is your reliable partner for maintenance, plant safety, control and water treatment. Boiler repairs and maintenance activities are executed by experienced boiler welders according to all relevant standards.

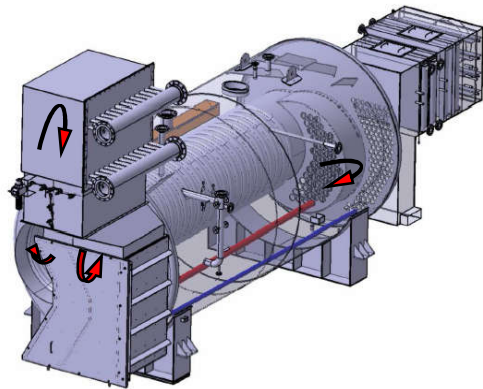


### Plant rehabilitation and optimization

For operators of steam and hot water plants, astebo gmbh offers a profitability analysis. We are looking forward to finding efficiency-enhancing measures for you to support you in implementing them.

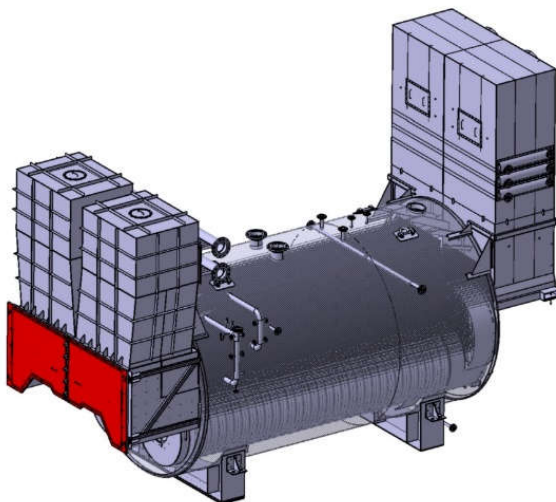
## Large Plants

### astebo Single Flame Tube – Hot Steam Boiler in three-pass design



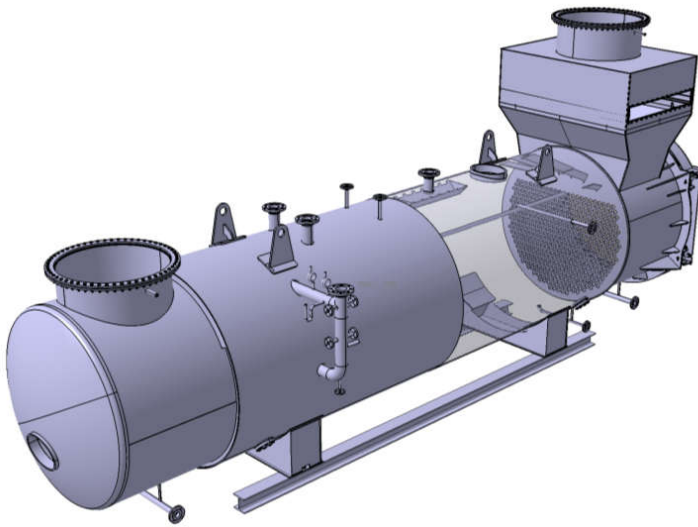
Flue gas routing 3-pass-boiler  
Performance range up to 27,5 t/h

### astebo Two Flame Tube Steam Boiler

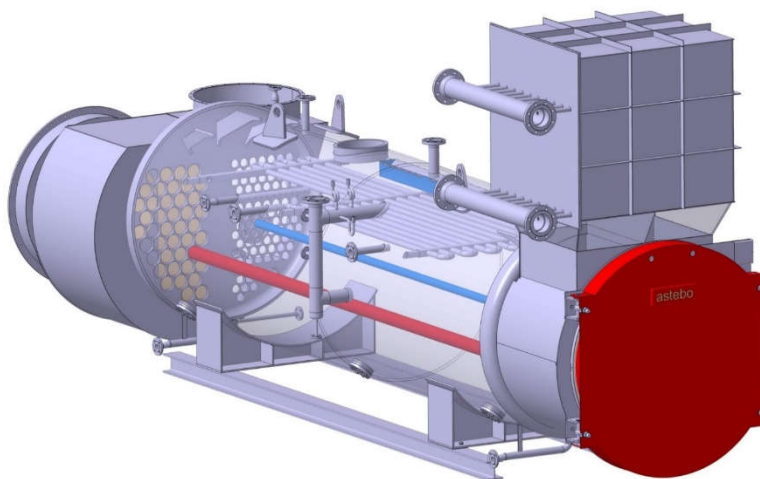


- for saturated steam and overheated steam up to 32 barg and 330°C (450°C)
- up to 60.000 kg/h

## astebo Heat Recovery Boiler



- Boiler with / without flame tube, with / without attached cooling shield
- Tailor made for biomass combustion
- Application behind gas turbines – and motors
- As well as for different waste heat applications



## astebo Container – Boiler Plants

Container- and mobile boiler systems are characterized by the following features:

- Prefabrication of the unit in the factory
- Transportable plants for flexible use
- Fast assembly time on the construction site
- Reduction of assembly costs on the construction site
- Ready for use quickly at any time



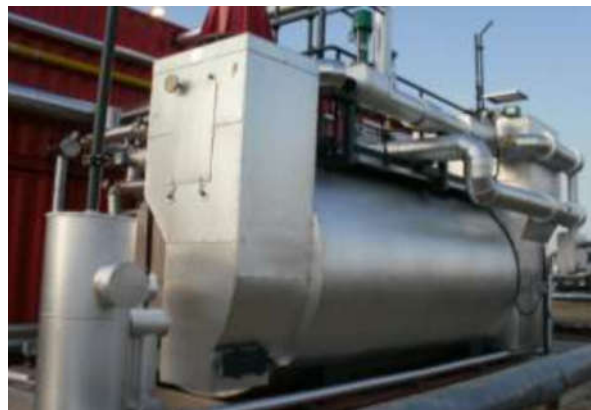
Boiler on Trailer



Feed Water Tank in Container



Steam Boiler Plant 6.000 kg/h



Special Container with Steam Boiler

**astebo**

austrian steam boilers

**Notes :**

# astebo

austrian steam boilers



# astebo

austrian steam boilers

Technical changes and errors excepted.

For technical information and further details on the design, please do not hesitate to contact your astebo contact person at your disposal at any time.

Your partner

 **Thermotrade**

**Thermotrade Kft.**

H-2112 Veresegyház, Szadai u. 13.

+36 28 588 810

info@thermotrade.hu

www.thermotrade.hu