

**FRÖLING**  
WARMTH FROM WOOD



# FHGTurbo 3000



**Lovely and warm.  
Just how you like it.**

**Froeling FHG Turbo 3000.  
Automated wood-boiler**



## From the best House

*The name Fröling  
implies the best in  
modern heating  
technology*

Whether with chopped fuel or log firing, Fröling's success is apparent. Fröling was awarded first prize for special innovation in a competitive concept for »chopped fuel firing«, against sixteen participating manufacturers. Moreover, this unique achievement also won appropriate recognition through the award of the prize for environmental conservation from the province of Upper Austria and the award of the Austrian national prize.

And now Fröling has again set new standards with the TURBO 3000. Standards in looks, in operation and in domestic life.

## Look! Look!

*Really much too good  
for the cellar!*

Times have changed. Where once the motto »so long as it functions«, was a good yardstick, today more and more emphasis is placed on external appearance. And rightly so. Technology should be linked in harmony with appearance, resulting in perfectly functioning equipment coupled with aesthetic expression and futuristic design. This concept is reflected in the Turbo 3000.

The soft lines and excellent user-friendliness point the way to the future. A boiler that is certain to be the showpiece of your domestic heating installation.



## LESS WORK . . . FROM FUELLING THROUGH TO CLEANING . . .

. . . and therefore more time. For you. For others. For other things. Even the smallest boiler from Fröling can be comfortably filled with big logs and bulky fuel material through the large charging doors. The 56 cm deep fuel compartment enables even oversized logs to be loaded without problem. The large fuel space volumes (140-210 l) mean long intervals between refuelling (up to 20 hours, depending on energy output). The fuel compartment is fitted with an inner »hot lining«, to prevent the usual build-up of pitch and tar.

## INDUCED DRAUGHT BLOWER

In order to guarantee maximum operating ease, the TURBO 3000 is equipped with a compact integrated induced draught fan. So the boiler can be started with ease, even when the flue is cold.

Heating-up problems and smoke leakage - a common problem on boilers without induced draught fans - are completely eliminated on this boiler. The induced draught fan also stabilises combustion throughout the full burning period, to ensure absolute trouble-free operation.

After combustion of the fuel, the primary and secondary air dampers are closed and the induced draught blower is switched off. The residual incandescence is retained over a long period, so that the boiler can be easily started again, without re-heating.

## REMOVAL OF PARTIALLY BURNED GASES

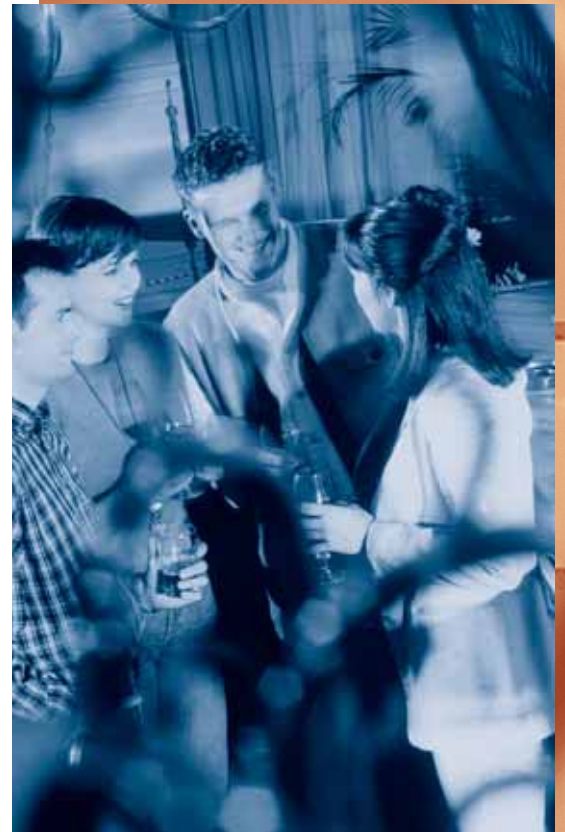
Another special concept of great interest is the removal of partially burned gases. This guarantees the absolute prevention of smoke escape, even after refilling ... and in every phase of combustion. The technique provides optimum external operating conditions and clean conditions in the heating area.

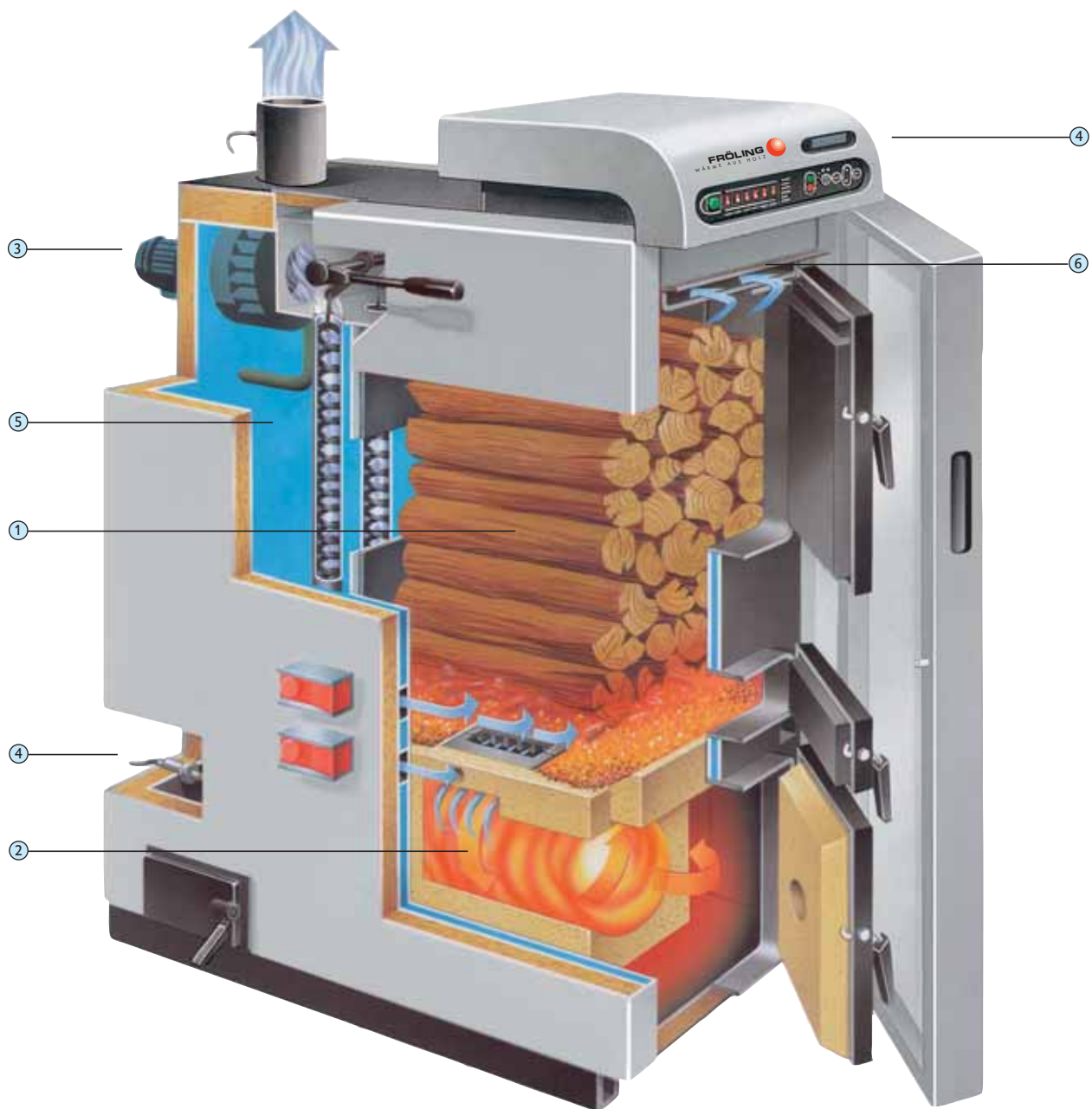
## YET GREATER REFINEMENT DUE TO THE NEW »WOS« TECHNOLOGY FROM FRÖLING

For those seeking even greater comfort, there is the Efficiency Optimising System (Fröling's new »WOS« technology). This additional device consists of special »turbulators« fitted in the heat exchanger tubes, which are caused to vibrate by a special mechanism, to permit easy cleaning of the heating surfaces from outside the boiler. This means that manual cleaning of the heat exchanger surfaces can be dispensed with. Thus boiler cleaning can be effected with the minimum of effort, without dirt and dust. Cleaner heating surfaces mean higher efficiency and lower energy consumption.

# HANDLING: uncomplicated

*The Turbo 3000 promises heating with convenience previously unknown.*





### THE WOOD BOILER WITH SPECIAL ADVANTAGES:

- ❖ Large filling capacity for half meter logs and coarse chopped fuels (1)
- ❖ Extremely long burning duration of up to 20 hours
- ❖ Twin block construction - combustion and heat exchange are completely separate
- ❖ Patented high temperature vortex combustion chamber; Patent No. 400180 (2)
- ❖ Electronically controlled induced draught fan (3)
- ❖ Modular control concept with intelligent microprocessor (4)
- ❖ New WOS technology (efficiency optimising system) for extremely high efficiency (up to 91.8%)\* (5)
- ❖ Special system for removal of partially burnt gases, to prevent any smoke escape (6)
- ❖ Full insulation all-round, resulting in extremely low radiation losses (0.66%)\*

**91.8% BOILER EFFICIENCY DURING PARTIAL LOAD OPERATION, 91 MG/MJ CO IN PARTIAL LOAD OPERATION (MEAN VALUE OVER THE FULL BURN OFF PERIOD), RADIATION LOSS 0.66%.**

Values for a modern oil or gas boiler? No, the readings are actually from a Fröling wood burning boiler of the new generation. These values were measured at the Prüfanstalt für Landtechnik (laboratory for agricultural engineering) in Wieselburg (Report No. 014/94) on a Fröling boiler and are sensational. This data remains valid.

## **THE INDOOR LIFE: Warm hearted...**

### **THERE IS ONLY ONE ORIGINAL**

The concept of the FHG Turbo 3000 has been copied many times, due to its unusual innovations, but so far it remains unequalled in any respect. The heart of the boiler, - the patented vortex combustion chamber (Patent No. 400130) - is protected and cannot be used by other manufacturers in this form. In association with the optimum charging compartment geometry, not only are the combustion values superior, but above all, an extraordinary operating capability is achieved. The combustion chamber and grate form one unit and the fuel, which lies directly above the combustion chamber and grate, is continuously pre-dried. The gases which are generated in the gasification process, enter tangentially the cylindrical high temperature vortex combustion chamber below, which is made from special fire clay. On entry, the gases are mixed with metered pre-heated secondary air. Complete combustion takes place at high temperatures and high levels of turbulence, over a long period. Only on completion of combustion, do the clean, burnt-out gases, contact the generously dimensioned heat exchanger surfaces, where they are cooled to low exhaust temperatures.

### **MAXIMUM FUEL USAGE THANKS TO THE NEW WOS TECHNOLOGY**

Exhaust gas temperatures of approx. 200°C, at nominal load, already result in excellent fuel usage characteristics and represent the state of the art on modern boilers. But Fröling goes one step further with the new WOS technology.

By using special turbulators in the heat exchanger tubes, a reduction in exhaust gas temperature is achieved, down to an absolute minimum of approx. 150°C, at nominal load.

## **...almost perfection**


### **THE UNIQUE COMPLETE INSULATION**

Even at first glance, the unusual insulation concept of the FHG Turbo 3000 catches the attention. The boiler is completely insulated with thick insulating panels. Operating doors are provided at an inner level and are also protected by a special insulating door. The radiated heat beyond is recovered as pre-heated combustion air. It is this attention to detail that makes the low radiation losses of 0.66% possible - unique for a solid fuel boiler. Test report BLI Wieselburg, No. 014/94.

### **SOLID CONSTRUCTION**

Not apparent at first glance but taken for granted by Froeling: Extremely solid construction and design, internal wall made of 6mm steel.

The combustion chamber is corrosion protected through additional 3mm steel cover plates guaranteeing a long life-span of the boiler.



*Our efficiencies are more than warm hearted and the emission values close to perfection.*



**...with build-on capability**

### **INTENSIVE RESEARCH AND DEVELOPMENT WORK BRING DECIDED ADVANTAGES**

A significant proportion of the improvement in wood fired heating is due to modern control technology. FRÖLING, more so than any other manufacturer, has come to terms with these possibilities. In long term practical tests on a factory test rig, the fundamentals for the optimum application of modern micro computers have been developed. That FRÖLING has a decided lead in this respect is confirmed, not least, by the number of awards it has received.

### **NEW DIMENSIONS OF CONTROL**

The standard Digitronic control system covers all the important control functions and the operating status is indicated on a display. The new generation of Lambdatronic microprocessor controls opens up a whole new array of possibilities:

- ❖ Modulated regulation of performance through precise control of the speed of the induced draught fan.
- ❖ Automatic matching to different fuels.
- ❖ Continual optimisation of combustion through exhaust gas analysis via lambda probe and adjustment of exhaust gas temperature.
- ❖ Optimised buffer storage management with power-dependent loading by temperature difference regulation and rpm regulation of the booster pumps.
- ❖ Use of residual heat through control of the return pump.
- ❖ Weather-driven heating regulation for the control of up to four mixing circuits.

Due to the modular construction, the boiler can be upgraded at any time to incorporate additional features within the range of variants.

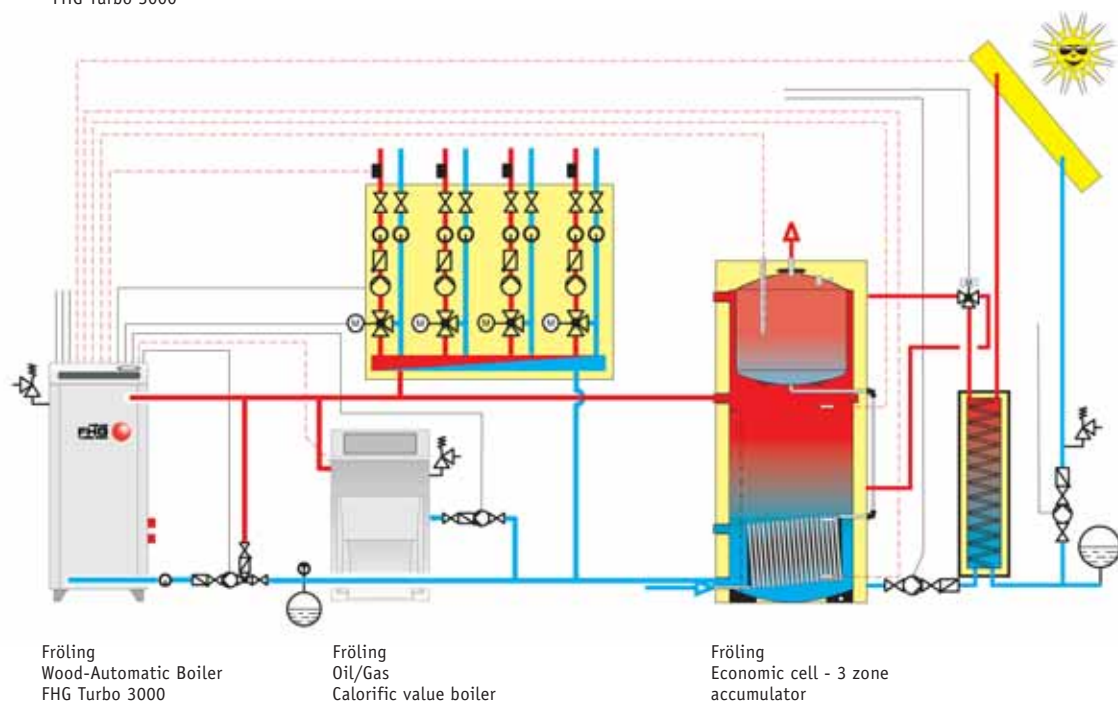
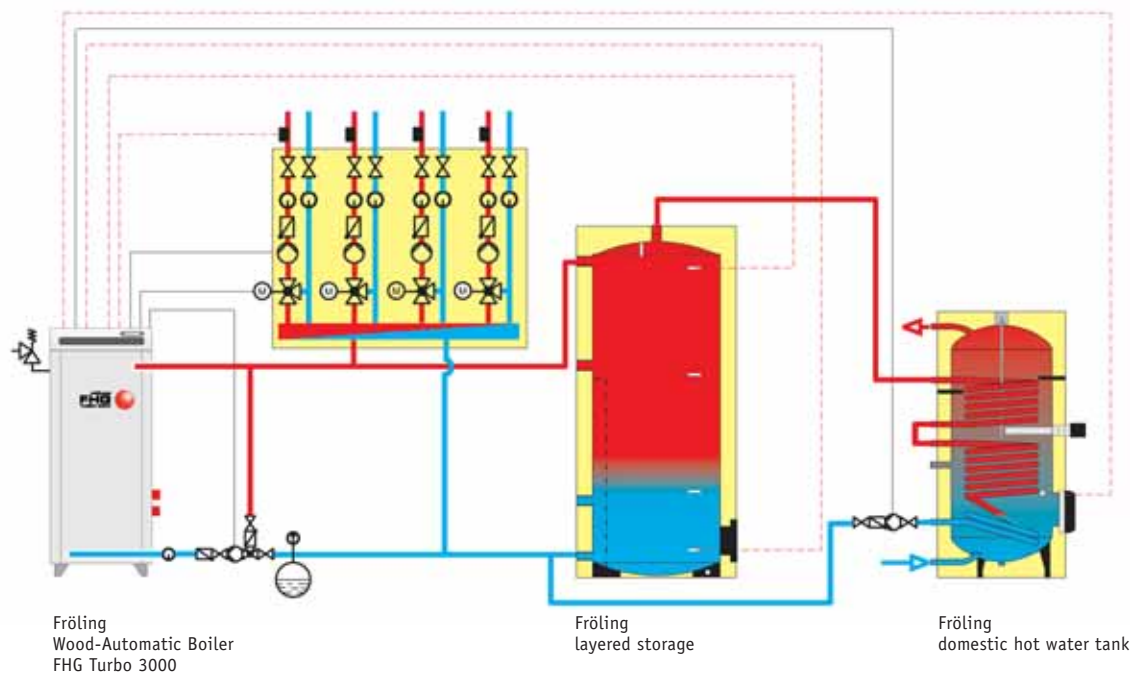
### **COMFORT, LEAVING NOTHING TO BE DESIRED**

The menu-driven user control interface is also a unique feature; it can be used at any time to obtain information on start-up, exhaust gas, external and boiler temperatures, residual oxygen content and much more. The ease of operation of the input device enables the various parameters to be easily modified, thus providing the user with full control of the equipment.

*A modular control concept - enables solutions to be tailored for every eventuality*

## THE FRÖLING SYSTEM TECHNOLOGY - OPTIMUM ENERGY MANAGEMENT FOR WOOD, SOLAR ENERGY, ETC.

The combination of the FHG Turbo 3000 with other Fröling components provides an ideal system extension. Fröling offers complete solutions for almost every requirement, on the basis of optimum co-ordination.



With a clear conscience

Wood, as the oldest source of energy, is currently increasing again in importance. A comparison of the energy and pollutant balance between wood and coal on the one hand and oil or gas on the other, must not be restricted to measurements of the exhaust gases in the flue.

In a total environmental balance of a fuel, the environmental impacts caused by extraction, processing, transportation and disposal must also be taken into account. If these criteria are included in the equation, then wood, as a fuel, is superior to every other source of energy.





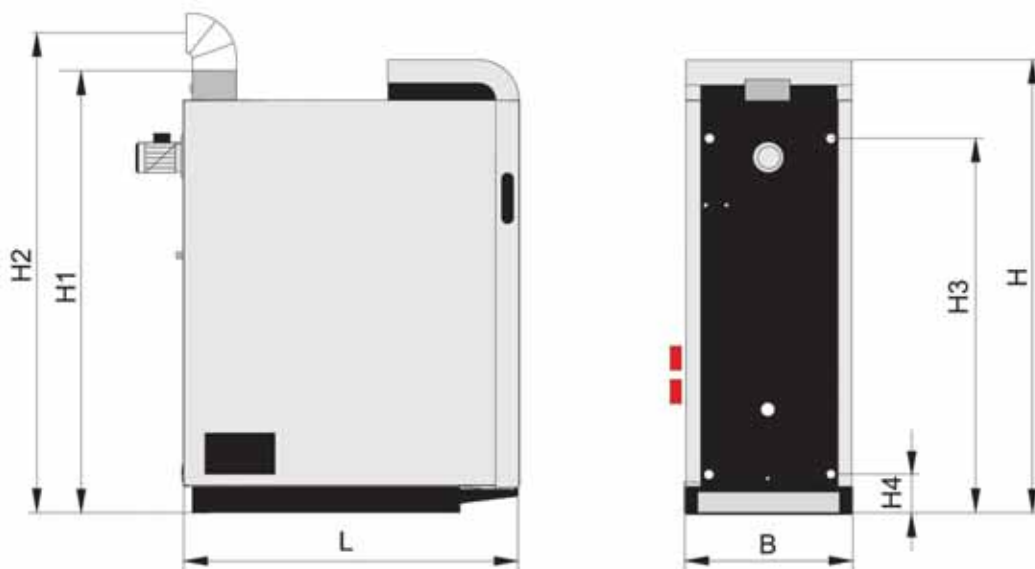
# FHGTurbo 3000

## Promoting wood-fired heating

Wood-fired heating is environment friendly and cost-effective.

No surprise then that many government authorities have programs for promoting its use. You will find the latest information about promotional initiatives and other activities promoting wood-fired heating at

[www.froeling.com](http://www.froeling.com). Your local Fröling installer will also be glad to help with any questions you might have.



### TECHNICAL DATA, DIMENSIONS

FHG-Turbo 3000	20	30	40	50	70
L*	1160	1160	1260	1260	1260
B*	570	570	680	680	760
H*	1600	1600	1700	1700	1830
H1*	1560	1560	1660	1660	1780
H2*	1750	1750	1850	1850	2010
H3*	1275	1275	1375	1375	1535
H4*	130	130	130	130	140
Volume (l)	140	140	210	210	280
Exhaust pipe*	150	150	150	150	150
Output (kW)	20	30	40	50	70
Weight of boiler (kg)	520	525	606	608	740

\* Dimensions in mm  
Subject to technical alterations!

Edition February 2005

*Additional technical details and advice can be obtained through our array of planning layouts.*

**FRÖLING**   
WARMTH FROM WOOD

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