## WOOD CHIP BOILER



7 to 100 kW / 24 to 341 kBTU/hr cascade up to 400 kW / 1,365 kBTU/hr

## 



REVOLUTION
IN WOOD CHIP
HEATING



## THEATING SINCE 1921

For almost 100 years Windhager have been renowned for innovative technical solutions, making heating convenient, safe and cost-effective. Strong demand for our products has allowed us to grow constantly and develop numerous innovations in the heating market. We are now one of Europe's leading manufacturers of boilers for renewable energies.

## Award-winning "made in Austria" quality

The secret to our success? First-class products which satisfy the most demanding requirements and deliver durability and reliability. We produce our boilers to a strict criteria and use only high-quality materials. Our products are only manufactured in Austria, at our company headquarters in Seekirchen, near Salzburg. Independent test institutes regularly recognise our premium quality.

We always focus on the needs of our customers. We don't deliver run-ofthe-mill solutions, but instead a heating system tailored to your needs.













## THE WOOD CHIP HEATING REVOLUTION

With the PuroWIN, we have revolutionised heating with wood chip. Never before has this fuel been used so cleanly, safely and flexibly to supply heat. The zero-emission gasification boiler offers impressively smart and safe technology and is also the first boiler to utilise suction to transport wood chip.

The PuroWIN covers heating requirements up to 100 kW / 341 kBTU/hr. The boilers can also be connected to create cascades covering heating requirements up to 400 kW / 1,365 kBTU/hr, making them suitable for use in larger-scale agricultural holdings, commercial and municipal buildings, or even hotels.





## TZERO-EMISSION TECHNOLOGY

Our patented updraft gasification combustion process makes the PuroWIN the cleanest wood chip boiler in the world. The principle takes advantage of the filtering effect of the fuel: First the combustion chamber is filled with wood chip. Once ignited, an ember bed forms in the bottom section. The heat produced carbonises the wood chip above it. This layer acts like an active carbon filter. The wood gas rises from the ember bed, and passes through the carbon and unburned wood chip. The fine dust is filtered. The wood gas is only burnt in the area above the wood chip. This system, developed in cooperation with the research institute BIOS Bioenergysysteme, produces emissions so low they can hardly be measured. Emissions from the PuroWIN are several times lower than the strictest statutory limits (see O1 and O2).

## **Embers retained automatically**

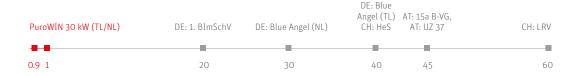
The boiler is totally sealed so the embers are retained for up to four days – without any fuel or air being added. This means that the boiler doesn't have to be completely re-ignited each time it is started so the PuroWIN consumes up to 90 percent less ignition energy than other wood chip boilers, resulting in electrical consumption being minimised.

### Twin ash removal plate

Thanks to the patented ash removal system, the PuroWIN is rarely subject to damage or failures caused by potential foreign bodies contained in the fuel. Unlike solutions with a grate mechanism, it uses sealed plates so the ember bed is always retained when the ash is removed. Uninterrupted operation is even possible when running at full capacity.

## 01. LIMITS FOR DUST EMISSIONS

Stated in mg/m³, TL=part load, NL=nominal load





Fully automatic heating surface cleaning function

Zero-emission gasification guarantees cleanest possible combustion

> Automatic retention of embers cuts ignition energy by up to 90 percent

The ash removal plates ensure uninterrupted, smooth operation



## 02. LIMITS FOR CO EMISSIONS

Stated in mg/m³, TL=part load, NL=nominal load

PuroWIN 30 kW (	(NL/TL) DE: Blue Ar	ngel (NL/TL) CH: HeS l	AT: JZ 37 (NL)	AT: 15a B-VG	DE: 1. BImSchV CH: LRV	AT: UZ 37 (TL)
			_		_	
5 11	80	180 200	228	380	400	456



The motor in the PuroWIN's fuel store extraction system is very economical. On average, it needs just 120 W compared with conventional motors using up to 500 W. Over a whole year, assuming that the feed runs for 3000 hours, this represents the following saving:

Conventional motors 1500 kWh/a

PuroWIN 360 kWh/a

Saving of up to 1140 kWh/a

## THE FIRST BOILER WITH ABS

Only a safe boiler is a good boiler. That's why we use smart technology that ensures your heating is especially reliable. It starts with the process of feeding the wood chip to the boiler.

The PuroWIN's unique Anti-Blocking System (ABS) ensures a reliable wood chip transport from the auger to the rotary feeder. At the end of the auger channel is a reversed spiral running in the opposite direction, which always pushes oversized pieces of wood downwards, preventing possible auger blockages.

## Smart rotary feeder for high safety levels

The rotary feeder has an important role to play in the safety of a wood chip boiler. But the smart two-chamber rotary feeder in the PuroWIN has other functions. It has sensors which ensure that only those pieces of wood chip which are oversized to be transported into the boiler are cut, thereby protecting the blades from unnecessary wear at all times. What's more, the sensors always ensure accurate fuel metering and optimum adaptation to variations in fuel qualities.

## Power consumption reduced by 75%

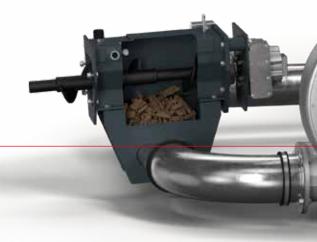
All of the PuroWIN's motors and drives have smart and infinitely variable control for smooth and quiet operation with low levels of power consumption never seen before. For example, the PuroWIN uses just 120 W on average to transport all the fuel out of the storage room. This is 75 % less power than comparable wood chip boilers. Another benefit is that unlike other boilers, the PuroWIN can be operated with standard 115 V or 230 V single phase domestic electrical supply.

# DER HEIZKESSEL, DER HACKGUT AUCH SAUGT

Der PuroWIN ist der erste Hackgutvergaser, der den Brennstoff serienreif auch saugt. Das hat viele Vorteile für Sie: Mit unserem verschleiß- und wartungsarmen Saugsystem sind Sie absolut flexibel. Sie können mit ihm Strecken von bis zu 25 Metern Länge oder bis zu 7 Metern Höhe überwinden. Der Hackgut-Lagerraum muss nicht – wie bei allen anderen Hackgutheizungen – in unmittelbarer Nähe des Heizraums sein. Das ist die Lösung für alle, die bisher aus baulichen Gründen auf eine Hackgutheizung verzichten mussten.

## **Unerreicht flexibler Transport**

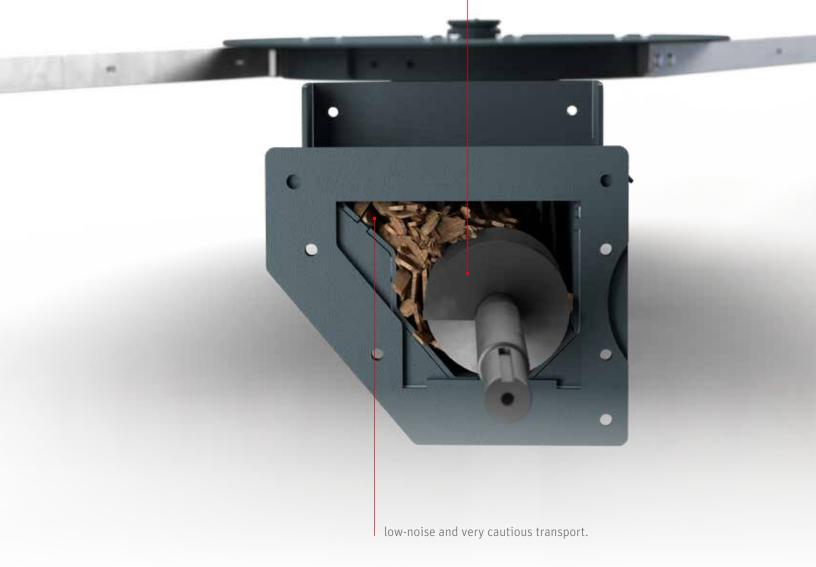
Die Raumaustragung im Hackgutlager erfolgt auch bei der Sauglösung mit Rührwerk und Schnecke. Außerhalb des Lagers befindet sich ein Gebläse, dass das Hackgut über ein flexibel anpassbares Rohrsystem zum PuroWIN transportiert. Der Brennstoff wird in einen Vorratsbehälter beim Kessel gesaugt. Das Gebläse ist dafür nur rund 15 Minuten am Tag in Betrieb – abhängig von Kesselleistung, Wärmebedarf und Brennstoffqualität. Die restliche Zeit über arbeitet der Vergaser ganz besonders leise. Auch wenn sich der PuroWIN und der Lagerraum in Ihrem Haus befinden, stört er Sie nicht.



Leiser Betrieb, da das Gebläse nur rund 15 Minuten am Tag läuft Das Saugsystem bewältigt Längen bis zu 25 Metern oder bis zu 7 Metern Höhe



The 6 mm / 0.24" thick auger spiral is extremely resilient

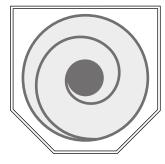


## THE AUGER FOR ALL SCENARIOS

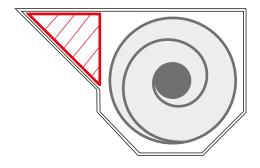
The PuroWIN delivers maximum operating reliability, not just for the boiler itself, but also for the fuel extraction system. For the PuroWIN, we have developed an unique safety auger channel with Side Slide Technology (SST). The auger channel is asymmetrically shaped so that foreign bodies or larger pieces of wood can also be transported. Depending on fuel, up to 60 percent of the wood chip can be transported to the side of the auger rather than directly into it. Foreign bodies and large pieces of wood can cause virtually no harm. The system is also very quiet and smooth-running. Minimal wear and low power consumption are further benefits of the SST auger channel.

### Auger as hard as steel

Six millimetres thick, the PuroWIN's auger spiral is more robust than other products on the market. The spiral is the most important part of the auger for transport out of the storage room and we make ours from the highest quality steel.



O1. Cross-section of conventional auger channel



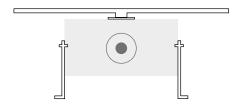
O2. Cross-section of auger channel from Windhager

## ROBUST AGITATOR PROTECTION

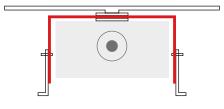
We have further developed the extraction method for the wood chip storage room and improved key components to prevent blockages: The spur gear unit of the agitiator is protected and requires no maintenance. It is reliable and combines high efficiency with great ease of movement. It uses up to 75% less energy than conventional solutions.

## A surround protects the gear unit

The gear unit drives the mixer, compound springs and the entire auger. Unlike the usual setup, this is not attached directly to the floor but is supported by a protective surround. This protects the gear unit from the weight of the wood chip. It is highly resilient and withstands extreme loads for short periods – for example, when filling your storage room. We've fitted bend protection to the mixer's compound springs. At 60 mm / 2.36", they are also wider than the compound springs of other manufacturers and therefore much more robust.



O1. Conventional means of gear unit attachment



O2. Attachment using gear unit protective surround from Windhager

Sturdy compound springs with bend protection



The protective surround protects the gear unit from the weight of the wood chip

# TA SOLUTION FOR EVERY STORAGE ROOM

The PuroWIN has a wood chip transport solution for virtually any store room configuration. It can also be used in conventional setups where the boiler room and wood chip store are adjacent to one another. In this case, the wood chip is transported to the boiler via the auger channel. The modular design of the auger transport system allows the length of the augers to be individually adapted up to a distance of 6 m / 19.6". The agitator in the storage room is available from 2 to 5 m / 6.5' to 16.5' in steps of 0.5 m / 20". We have the ideal solution for your needs.

## **O1.** Boiler and storage on ground level



Direct filling of storage room, transport to boiler via auger

## O2. Boiler in the basement and storage on ground level O3. Boiler in the basement, storage in mezzanine



Direct filling of storage room, link to boiler via down pipe



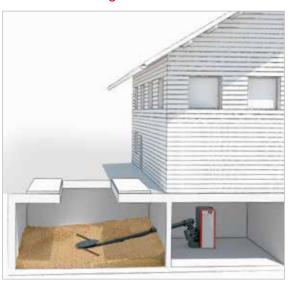
Horizontal room clearing to the boiler

## 04. Boiler and storage in the basement – variant 1



Filling of storage room via ceiling-mounted filling auger, transport to boiler via auger

## 05. Boiler and storage in the basement – variant 2



Filling of storage room via ceiling opening, transport to boiler via auger

## OPERATING OUR PRODUCTS

The InfoWIN Touch from Windhager makes light work of controlling your heating system. The high-quality glass touch screen on the PuroWIN allows the display to be touched and swiped making the interaction with the boiler simple and easy. The InfoWIN Touch is also available as a control unit for living rooms and includes the web server for remote access via the myComfort app.

## The PuroWIN is available in nine outputs up to 100 kW / 341 kBTU/hr.

If this is not enough for your needs, up to four PuroWIN's can be connected in a cascade t format up to 400 kW / 1,365 kBTU/hr with direct auger – to cover larger properties, commercial buildings and district heating systems.

Possible power outputs up to 400 kW / 1,365 kBTU/hr

Smart Cascade control

Ideal for large properties and commercial buildings



## THE FUEL WITH A FUTURE

There are plenty of good reasons to heat your building with wood chip: This wood fuel is CO2-neutral, is produced locally and is independent of oil and gas price fluctuations. Compared with other raw materials, it is cheaper because wood chip can be produced from residual wood from woodlands. The wood is left to dry outdoors for up to one year, and then processed and used for heating purposes.

There is also no need to compromise on comfort when heating with wood chip. The boiler automatically provides just the amount of heat desired all the time.



Sustainable fuel
Locally sourced fuel supply
Independence from fossil fuels



# + DER BRENNSTOFF MIT ZUKUNFT

Es gibt viele gute Gründe, mit Hackgut zu heizen: Denn dieser Holzbrennstoff verbrennt CO<sub>2</sub>-neutral, ist heimisch, krisensicher und macht unabhängig von Öl und Gas. Im Vergleich zu anderen Rohstoffen ist er überdies der mit Abstand günstigste Brennstoff. Denn Hackgut wird in der Regel aus Restholz hergestellt, das aus heimischen Wäldern stammt. Das Holz wird bis zu einem Jahr lang an der frischen Luft getrocknet, dann zerkleinert und kann schließlich zum Heizen genutzt werden.

Gleichzeitig müssen Sie mit einer Hackgutheizung keine Kompromisse in puncto Komfort eingehen. Denn der Kessel stellt vollautomatisch zu jedem Zeitpunkt exakt die gewünschte Menge an Wärme zur Verfügung.

Günstigster Brennstoff

Regionale Wertschöpfung

Unabhängigkeit von fossilen Brennstoffen

## + VARIOUS SHAPES AND SIZES

Variability of wood and different processing techniques means wood chip can be supplied in many forms. The PuroWIN is approved with wood chip of classes P16S, P31S and A1, A2 (see O1). If you use these grades, you can be sure of compliance with the specified emission limits without any additional measures such as filter technology or prior cleaning. For ideal operation of the PuroWIN it is recommended to use wood chips with a water content of 20% to 30%.

## Not all timber is the same

The heating value varies depending on how coarse or fine the wood chip is, its a water content and whether it is made from hardwood or softwood. This means that different amounts of wood chip are needed to provide the required level of heat from different qualities. Diagram O2 shows approximately how much wood chip is required for your system.



Bitte neue Tabelle auf English angeben, kann ich schlecht von DE so übernehmen

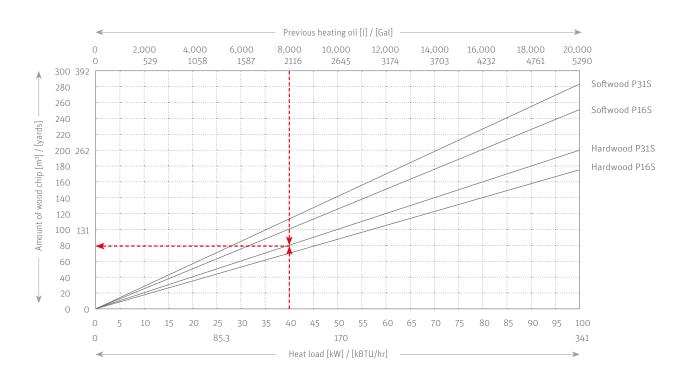
## 01. PARTICLE SIZE PARAMETERS

Particle Size Class	Chip "Width" <sup>4</sup> main fraction >1/8 in (minimum 60% by weight)	Fines Fraction: ≤ 1/8 in (% by weight)	Chip Lenght (% by weight)	Maximum Chip Length in the Coarse Section (in)	
P9.5S	P ≤ 3/8 in		≤ 6% greater than ³/4 in	≤ 1-¹/₄ in	
P16S	P ≤ 5/8 in	≤ 15%	. 60/ grantor than 1 1/ in	. 1 2/ in	
P25S	P≤1in		≤ 6% greater than 1-1/4 in	≤ 1- <sup>3</sup> / <sub>4</sub> in	
P38S	P ≤ 1-1/2 in	. 100/	≤ 6% greater than 1-3/4 in	≤ 6.0 in	
P50S	P ≤ 2 in	≤ 10%	≤ 6% greater than 2-1/2 in	≤ 8.0 in	



## 02. ROUGH CALCULATION OF AMOUNT OF WOOD CHIP NEEDED ANNUALLY

Water content approx. 25 %



# + KOMBINIEREN UND BEDIENEN LEICHT GEMACHT

Warum kompliziert, wenn es auch einfach geht? Bei uns erhalten Sie alles aus einer Hand: innovative Heizlösungen und die perfekt passenden Heizungskomponenten. Dank der Windhager Systemtechnik können Sie alle unsere Produkte problemlos kombinieren. Die Energie wird dabei effizient genutzt, da MES INFINITY dafür sorgt, dass alle Komponenten optimal zusammenspielen.



Mit dem InfoWIN Touch von Windhager ist das Steuern Ihrer Heizanlage ein Kinderspiel. Das hochwertige Glas-Display am PuroWIN ermöglicht eine vertraute Touch- und Wischbedienung und macht die Einstellung Ihres Heizkessels so einfach wie noch nie. Zudem ist das InfoWIN Touch als Bediengerät für den Wohnraum erhältlich. Auch der Webserver für den Fernzugriff per App myComfort ist enthalten.

Hochauflösende Grafik und brillante Farbgebung Widerstandsfähiges, kratzfähiges Glas-Display Intuitive Touch- und Wischbedienung



## HIGH PERFORMANCE

The PuroWIN boiler series is available in 24 kW / 82 kBTU/hr, 30 kW / 102 kBTU/hr, 40 kW / 136 kBTU/hr, 49 kW / 167 kBTU/hr, 60 kW / 205 kBTU/hr, 72 kW / 246 kBTU/hr, 83 kW / 283 kBTU/hr, 99 kW / 338 kBTU/hr and 103 kW / 351 kBTU/hr models. All PuroWIN models will run on wood chips (size P16S and P31S) and can be connected to create extremely efficient Cascades comprising up to four boilers.

## **PuroWIN Cascade**

The PuroWIN can be combined to create cascades comprising two, three or four boilers. Specially developed by Windhager, the Cascade regulation system constantly checks how many boilers as well as which ones need to be in operation to provide the required amount of heat. Balanced utilisation of the system is also ensured by creating cascades.

In comparison to a large boiler system, a cascade system is extremely reliable: if one unit fails to heat, you can continue heating normally with the second unit. Service and maintenance work can be carried out without having to switch off the heating.



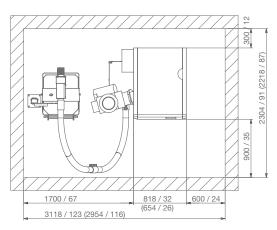
With our 240 litre / 63 Gallon ash box we are able to achieve emptying intervals of up to an entire heating season (depending on fuel and boiler output).

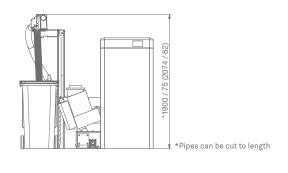
The galvanised steel container is on wheels to make it easier to take out. A flexible auger is used to further compress the ash and transport it automatically to the ash box.

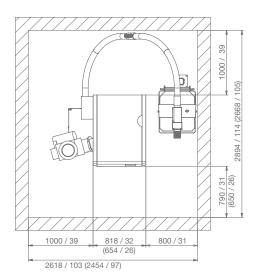
For even greater convenience: Ash box with 240 litre / 63 Gallon capacity

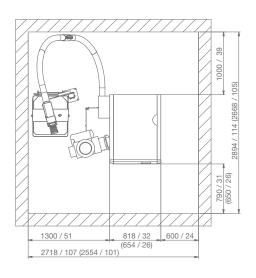
## Installation options with the ash box on the left/right for PuroWIN direct

All measurements in mm (measurements in brackets for PuroWIN 24 kW / 82 kBTU/hr - 60 kW / 208 kBTU/hr









## TECHNICAL DATA PW 24-60

Bitte bei der neuen Zeichnung alle Maße auch in Inch angeben - dann kann ich diese richtig einpflegen KV...... Boiler flow (1 1/4" internal thread)

KR...... Boiler return (1 1/4" internal thread)

E ..... Drain

A....... Fuel supply (Ø 140 mm / 5.5" pipe)

B....... Return fuel supply (Ø 140 mm / 5.5" pipe)

AO ...... Top flue connection (Ø 130 mm / 5.1")

AH ...... Rear flue connection (Ø 130 mm / 5.1")

EA...... Electric connection

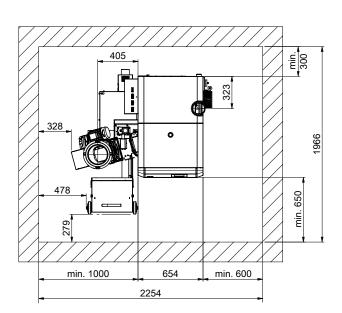
SB...... Thermal process safeguard (1/2" pipe)

L..... Delivered / transport dimensions

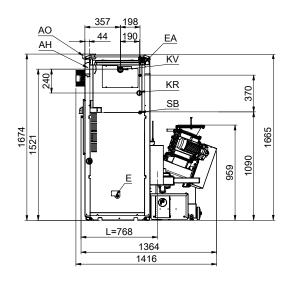
## PuroWIN with direct auger, 7,2 kW / 25 kBTU/hr - 50 kW / 205 kBTU/hr

All measurements in mm. Minimum room height: 1950 mm / 77"

View from above:



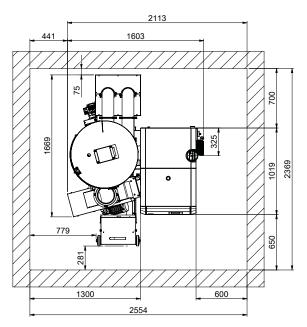




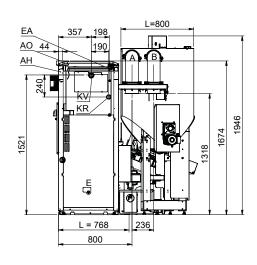
PuroWIN	Unit	PW 24	PW 30	PW 40	PW 49	PW 60
Rated output range	kW kBTU/hr	7.2 - 24 25 - 82	9-30 31-102	12-40 41-136	14.7 - 49 50 - 167	18-60 61-205
Total boiler weight	kg / lbs	528 / 1,164	528 / 1,164	562 / 1,239	562 / 1,239	593 / 1,307
Weight of boiler body	kg / lbs	497 / 1,096	497 / 1,096	531 / 1,171	531 / 1,171	562 / 1,239
Flue gas connection diameter	mm / in	130 / 5				
Power consumption of boiler during part load / nominal load	W	53 / 81	54 / 92	60 / 105	66 / 120	72 / 133
Dimensions of boiler body on pallet, W x D x H	mm / in	in 780 x 975 x 1,795 / 31 x 38 x 71				
Minimum installation dimensions of boiler body, W x D x H	mm / in	768 x 975 x 1,663 / 30 x 38 x 66				
Energy efficiency category	egory			A+		

## PuroWIN with direct auger, 7,2 kW / 25 kBTU/hr – 50 kW / 205 kBTU/hr All measurements in mm. Minimum room height: 2000 mm / XX"

View from above:



Rear view:



## TECHNICAL DATA PW 72-103

Bitte bei der neuen Zeichnung alle Maße auch in Inch angeben - dann kann ich diese richtig einpflegen KV...... Boiler flow (2" internal thread)

KR...... Boiler return (2" internal thread)

E ..... Drain

AO ...... Top flue connection (Ø 180 mm / 7")

AH ...... Rear flue connection (Ø 180 mm / 7")

EA...... Electric connection

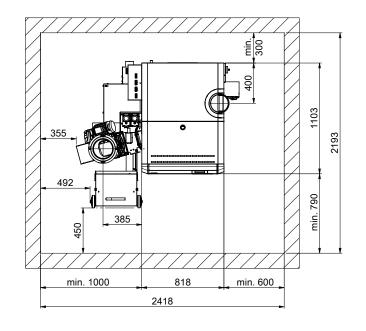
SB...... Thermal process safeguard (1/2" pipe)

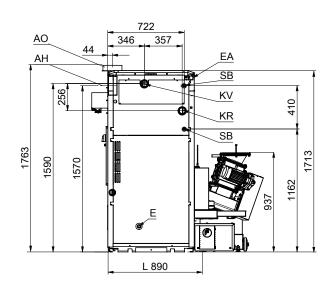
L..... Delivered / transport dimensions

## PuroWIN with direct auger 21,6 kW / 74 kBTU/hr - 103 kW / 351 kBTU/hr

All measurements in mm. Minimum room height: 2100 mm / 83"

View from above: Rear view:





## Bitte prüfen

PuroWIN	Unit	PW 72	PW 83	PW 99	PW 103	
Rated output range	kW kBTU/hr	21.6-72 74-246	24.9 - 83 85 - 283	29.7-99 101-338	30.9-103 105-351	
Total boiler weight	kg / lbs	1,007 / 2,220				
Weight of boiler body	kg / lbs	881 / 1,941				
Flue gas connection diameter	mm / in	180 / 7				
Power consumption of boiler during part load / nominal load (wood chip)	W	93/174	116/220	141/294	141/294	
Dimensions of boiler body on pallet, W x D x H	mm / in	/ in 920 x 1,065 x 1,850 / 36 x 42 x 73				
Minimum installation dimensions of boiler body, W x D x H	mm / in	890 x 1,050 x 1,710 / 35 x 41 x 67				
Energy efficiency category		A+				

## + THE WINDHAGER PRINCIPLE

### Accurate advice from our expert PARTNERS

Our expert PARTNERS are on hand to answer any questions you may have about our products. These experienced heating specialists work closely with us to ensure you receive the best possible service.

## Quick and professional customer service

The heating professionals working in our extensive customer service network provide rapid, expert and solutions-based support day in, day out.

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Your expert PARTNER

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