

AKRON

Solid biofuel solutions







Clean heat with locally produced fuel

Solid biofuels are the individually most important component in the conversion to a sustainable energy mix. Heat production from wood based fuels makes both economic and environmental sense for farmers and industries of all sizes. Locally available fuels increase the level of self-support and decrease dependencies on oil companies and other external suppliers.

The European Union target for 2020 states that 20% of the energy mix is to come from renewable sources. The use of wood based fuels is one of the main components to make this happen. For smaller heat providers the use of wood chips and wood pellets are among the most widely used and also the most economically sound.

Wood chips are processed but largely unrefined wood, often taken straight from the forest. Wood chips are normally made of logging residue, branches, twigs or smaller trees, but can also be a by-product from sawmills or other wood processing plants.

Wood chips contain approximately a third of the heat value of oil, measured by weight, meaning a larger amount of wood chips is needed for the same energy production. The availability and price differences count in favour of the wood chips, and for farmers and industries with access to own forests or other source of wood chips, the economical benefits are even higher.



Why Akron?

Akrone has been delivering solutions for heat production for drying and other processes since the 1950s. We developed our first solid biofuel heaters in 1980. Today, Akron offers a wide array of solutions for handling, storage and drying of biofuel. In-house research, development and manufacturing enables us to optimise to the real needs of the customer. We have a strong environmental profile and are totally self-supporting regarding both heat and electricity.

Akron Bio400 solid biofuel air heater

The Akron Bio400 solid biofuel heater is a cost effective and environmentally sound alternative to traditional oil- or gas-fired heaters. The heater is primarily developed for grain drying processes, but the compact design and flexible construction allows use in all types of heated air processes. Bio400 has a nominal output of 400 - 750 kW, produces minimal amounts of ash and is equipped with a powerful control system for optimal functionality and availability.

The conversion from oil to solid biofuel is easily accomplished with the Akron Bio400, with decreased dependency on oil companies and increased environmental profile as immediate results. Operational costs for fuel are drastically lowered, as is the sensitivity during years with high moisture content in the grain. With access to own wood chip sources, or locally produced wood chips, the savings may be even greater.

AKRON BIO400	
Nominal output	400 - 750 kW
Air temperature	70 - 80 °C
Fuel consumption	500 - 600 litres/hour ¹
Moisture content, fuel	15 - 30 %
Dimensions L x W x H	4420 x 3220 ² x 2390 mm
Weight (empty)	4800 kg

1) Depending on actual output and fuel quality.
2) Including fan.

Powerful fan

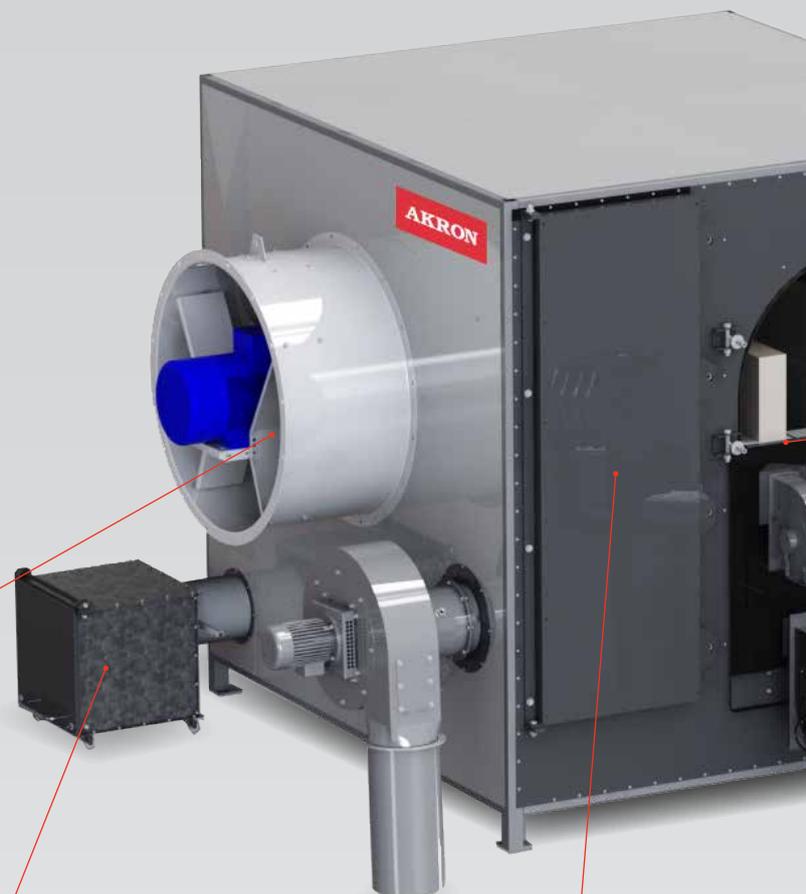
The heat from the furnace is led through the flue gas tubes where the heat is transferred to fresh air from the fan. Fans are available in several sizes and configurations for optimal functionality.

Flexible and effective ash collection

Having reached the final grate step, the fully combusted ash falls down into an auger tray. A hydraulic ash scraper beneath the grate moves the small amount of ash that falls through the grate itself during combustion to the same tray. The ash is then moved by the auger to an external ash container. Several sizes of container are available.

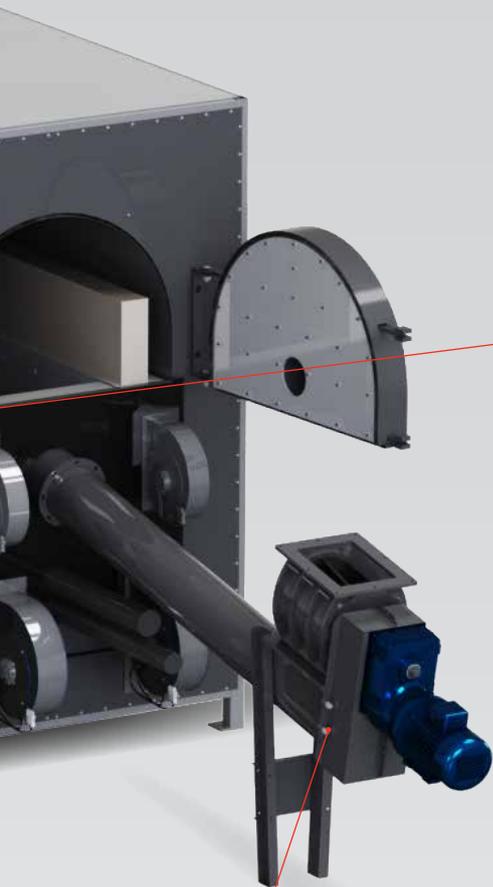
Simple cleaning

The heater is fitted with 75 horizontally placed flue gas tubes. The tubes are easily accessible behind large inspection hatches to simplify cleaning and service.





Akron Bio400 installed at Rangeltorp. Wood chip storage to the left.

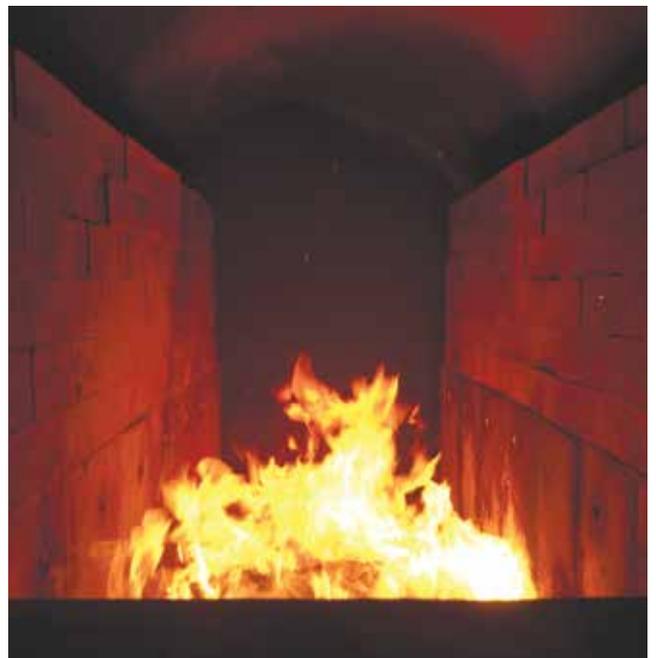


Efficient fuel transport

The wood chips are transported from the storage to the stoker auger via a vertical drop shaft and a robust rotary valve. The powerful, centre-less auger spiral allows troublefree transport of all types of wood chips.

Industrial grade combustion technology

The Akron Bio400 combustion process is based on a five-step moving grate of industrial grade. The combustion chamber is lined with ceramic blocks with integrated secondary air channels. The air is injected into the combustion process through holes in the ceramic blocks.



The wood chips are dried, gasified and ignited on the upper steps of the moving grate, and subsequently moved across the grate surface during final combustion. The second and fourth step of the grate are actuated by a hydraulic cylinder controlled by the PLC.

Wood chip dryer Akron CD16 / CD32

Akron's highly appraised wood chip dryer is available in two sizes; with holding capacities of 16 and 32 m³ respectively. The drying process is based on heated or ambient air being blown through an airsweep floor, after which it passes through an up to 1 200 mm thick layer of wood chips or other material. The wood chips are moved towards the aft of the dryer by an integrated chain conveyor. The holes in the airsweep floor directs the air flow in the same direction, minimizing risks of chips or splinters being stuck in the holes.

The larger dryer model is fitted with wheels and trailer coupling for simple placement and moving. The CD16 can be fitted with wheels and coupling as options.

Why dry wood chips?

Moist biomass is continuously being broken down by microorganisms during storage, with risks of mold growth and loss of dry substance as a result. Consequently, chipped biomass should be dried prior to storage. The storage itself should preferably be in relative cover from wind and rain.

Wood chips are also the primary raw material for producing wood pellets. Pellet production requires a low moisture content in order to produce a compact and robust end product. Akron have delivered numerous wood chip dryers to pellet factories.

Batch and continuous drying modes possible

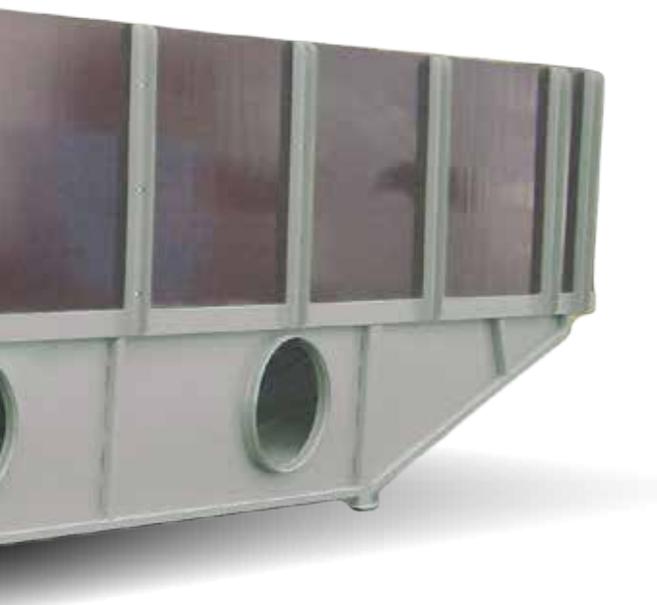
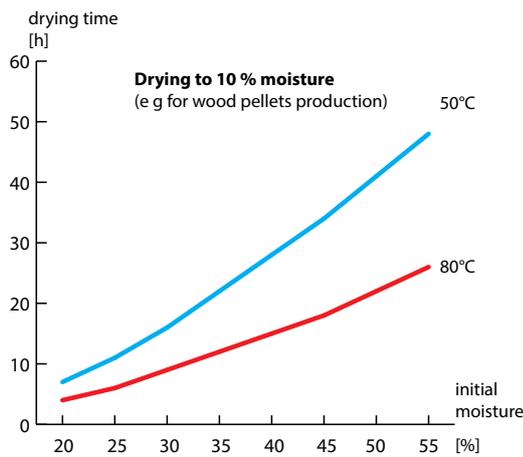
Akron wood chip dryers can be run either in batch mode or continuously. In batch mode, the dryer is normally filled with a teleloader or belt conveyor. The drying process is regulated with load cells. In continuous mode, the dryer requires a constant feed in the fore end. The drying process is regulated with the discharge speed.





Efficient drying with heated or ambient air

The wood chip dryer can be used with drying air of any temperature. The hotter the air, the shorter the drying time. The actual required time to dry a batch is dependent on several factors. The diagram below shows typical times for drying to 10% moisture content for pellet production with air of 50°C and 80°C respectively. Approximate heat requirement is 100W / m³ wood chips / °C temperature increase from ambient.



Auxiliary equipment

Akron offers a wide scope of fans and dryer control systems optimised for each individual installation as well as complete heating systems or hot water radiator solutions.

AKRON WOOD CHIP DRYER	CD16	CD32
Holding capacity	16 m ³	32 m ³
Length	6380 mm	10280 mm
Width	2510 mm	3370 mm
Height	2280 mm	2280 mm
Weight (empty dryer)	2450 kg	4500 kg
Conveyor speed	1.8 m/min	1.8 m/min
Max drying capacity	200 kg H ₂ O/h	400 kg H ₂ O/h



Wood chip storage bins Type M

The Akron wood chip storage bin solution is designed for use as daily storage for the Bio400 wood chip fired heater, but can also be used with other heating solutions. The storage bin is based on Akron's classic Type M storage solution for grain which is uniquely simple and flexible, with painted corner posts and galvanised, corrugated wall elements that are bolted together on site. Thanks to a wide array of components, Type M storage solutions can be built in several different heights and is also robust enough to provide structural integrity for a roof construction.

Integrated feed system

The wood chip storage is fitted with a powerful rotary agitator on top of the sloping floor. The agitator secures a continuous feed into the auger tray as well as preventing clogging. A robust, centre-less auger transports the wood chips to the consumer. The agitator and the feed auger are individually controlled for optimal functionality.

Sloping or horizontal floor

The floor of the wood chip storage bin can either be horizontal or sloped at a 15 degree angle. The latter version is designed for feeding wood chips to a drop shaft, for instance to the Akron Bio400 wood chip fired heater. Both types of floor can be fitted with air sweep floor for aeration in order to preserve wood chip quality and prevent mold growth.



AKRON WOOD CHIP STORAGE BIN TYPE M	Horizontal floor			Sloping floor 15°
No of sections	2	3	4	2
Holding capacity	16 m ³	24 m ³	32 m ³	20 m ³
Height	2483 mm	3323 mm	4163 mm	3000 mm
Base area ¹ L x B	3180 x 3180 mm			3180 x 3180 mm
Feed auger diameter	170 mm			170 mm
Auger tray	210 x 210 mm			230 x 230 mm

1) Excl auger.



Welded bins for wood pellets

Akron offers robust and secure wood pellet bins with holding capacities between 21 and 80 m³. The construction is based on welded, corrugated wall elements. Bins are delivered on a turn-key bases, complete with integrated hopper, integrated filling arrangement and aeration fitted with dust filter.

All Akron welded wood pellet bins are fitted with explosion relief hatches. Access hatch and safety line connections are fitted on the roof of the bin. Bins can optionally be delivered with pre-fitted ladders and other fall protection equipment.

Pellet level monitoring

The wood pellet level in the bin is easily monitored through sight glasses in the side. Additionally, capacitive level sensors can be fitted for later connection to a monitoring system.

Blending into the environment

The wood pellet bins are painted in the colour of choice after assembly for best possible final result. Bins can also be fitted with brackets for external cladding or wood panel in order to blend into sensitive environments.



Dual 40 m³ pellet bins fitted with external wood panel.

AKRON WOOD PELLET BINS							
Holding capacity	21 m ³	30 m ³	40 m ³	50 m ³	60 m ³	70 m ³	80 m ³
Height ¹	5630 mm	6630 mm	8330 mm	9180 mm	10030 mm	11730 mm	12580 mm
Base area L x B	3090 x 3090 mm						
Outlet	250 x 250 mm						
Free height under outlet	950 mm						
Filling pipe	Quick coupling of type 42 DN 100						

¹) Excl protruding filling pipe bend (+ 510 mm).

Transport equipment for biomass

Akron offers a wide array of solutions for transport of biomass in the form of wood chips and pellets. Common for all components is that they are all developed inhouse and optimised for their respective functions. Own development and manufacturing allows special designs for individual installations.

Augers for wood pellets and chips

Akron has developed, manufactured and delivered augers for grain and other bulk material since the 1950s. The scope of products of today is fully modular, which allows unique possibilities for optimising to the needs of each individual customer.

Wood pellet auger D-100P

Akron's wood pellet auger D-100P is a specially designed version of the classic Akron D100 auger with 100 mm diameter, configured for the transportation of wood pellets. The outer diameter of the auger is wider at the inlet end to prevent the pellets from getting stuck between auger and casing. Several lengthening modules are available, as well as different inlet and outlet options. D-100P is powered by an electric motor with gearbox and can be mounted either in pulling or pushing position.

Wood chip auger D-150F

Akron's wood chip auger D-150F is designed for transportation of wood chips and similar material. The casing diameter is 150 mm, fitted with a auger spiral with 125 mm diameter. The large space between auger and casing is designed to minimise the risk of material getting stuck. D-150F can be mounted in pushing or pulling position and is as standard powered by electric motor via chain drive.



Wood chip conveyors FT4 - FT8

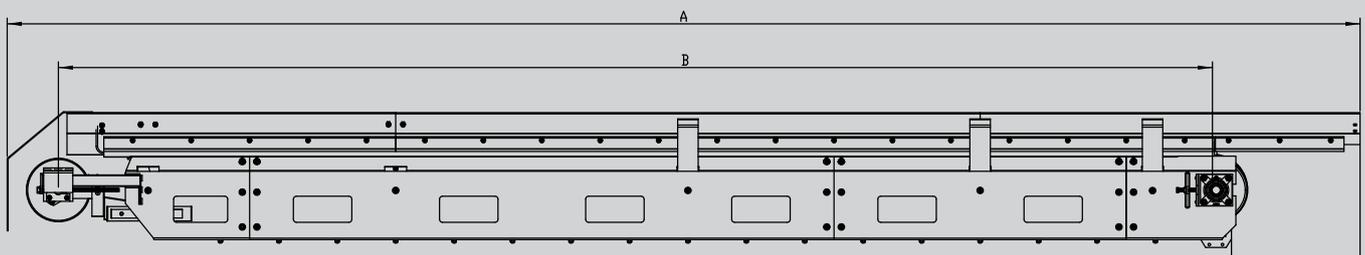
Akron's wood chip conveyors are efficient and flexible belt conveyors with high availability. The conveyors are designed for fast and secure transportation of dried or raw wood chips as well as other wet or troublesome materials. The conveyor can be placed horizontally or at an angle up to 40°.

Customer-based configuration

The conveyor belt is a 500 mm wide rubber belt running on a smooth metal bed. The belt can be delivered with or without carriers and is powered by electric motor and gearbox. Conveyors can as standard be delivered with belt speeds of 1 or 2 m/s, which amounts to an approximate transport capacity of 70 or 140 m³ wood chips / hour respectively.

Horizontal or sloping position

Akron's belt conveyors for wood chips are available in lengths between 4 and 8 meters and can be delivered with raised supports for angled position. The supports can as option be fitted with wheels.



AKRON WOOD CHIP BELT CONVEYOR	FT4	FT5	FT6	FT7	FT8
Total length [A]	4 550 mm	5 550 mm	6 550 mm	7 550 mm	8 550 mm
Conveying distance [B]	4 000 mm	5 000 mm	6 000 mm	7 000 mm	8 000 mm
Total width ¹	650 mm				
Available belt width	428 mm				
Height	440 mm				
Weight (complete)	360 kg	405 kg	450 kg	495 kg	540 kg

1) Excl electric motor and gearbox.

AKRON is Sweden's leading biomass and grain handling solutions provider, serving agricultural and industrial customers globally since 1935. Our trademarks Akron and Svegma guarantee the highest quality, availability and functionality. Our product range is internally developed and covers all agricultural and industrial grain handling needs, from transportation and loading solutions to drying, storage and state-of-the-art operational control. Our head office and manufacturing plant is located in Järpås, Sweden. Our products are used all over the world.

www.akron.se

