

TWIN **HEAT**

Biofuel systems for quality-conscious customers



TWINHEAT COMBI SYSTEMS

Type M, ME & MCS

Three different models in sizes of 29, 48 and 80kW



The system for residential properties, farms and small-scale industrial plants

The professional biofuel burner automatically burns wood pellets, grains, wood chips, etc. and also provides the opportunity for manual firing with the Variant boiler. It has user-friendly oxygen control with all relevant functions, including pre-set programs for wood pellets, grains and wood chips.

We produce the TWIN HEAT Combi System to a very high specification. All surfaces are powder-lacquered and therefore very durable. The flue gas box in the boiler is produced from 6 mm boiler plate. The fuel storage is produced from 3 mm steel plate. The heavy-duty stoker auger has a diameter of 120 mm.

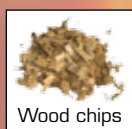
The systems are tested and have been granted technical approval by the Danish Technological Institute in accordance with DS/EN303-5 for the following fuel types: wood pellets, grains and wood chips.



Wood pellets



Grains



Wood chips



Saw dust



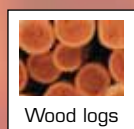
Wood chips



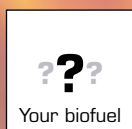
Olive kernels



Cocoa pellets



Wood logs



Your biofuel

Common for Combi systems type M, MCS & ME

SYSTEM CONSTRUCTION

The Twin Heat Combi system can be constructed following a diagram, making it possible for the customer to decide on which side of the boiler the fuel storage/stoker is to be positioned. Boiler doors and the feed door of the fuel storage can be hinged at each side. The fuel storage can be fitted with "extended auger duct +250 mm", if it is to be placed in an adjacent room.



WATER-COOLED BURNER TUBE

The water-cooled burner tube, which is fitted on the outside of the boiler, ensures clean and complete combustion with pre-heated combustion air, also at low outputs.



OXYGEN CONTROL

Pre-set for wood pellets, wood chips and grains



COMBI FIRING WITH THE VARIANT BOILER

Combined stoker and wood firing (combi firing)
See page 17



FLUE TEMPERATURE REGULATOR

The flue temperature regulator in the flue gas box of the boiler ensures a sensible flue temperature, even during the summer.

EXTRA ACCESSORIES:

- Ash ejector in boiler
- Automatic heat exchanger cleaning
- Safety quenching coil in boiler
- GSM phone modem



SPRINKLER SYSTEM

The sprinkler system effectively prevents back-burn in the fuel storage.

Technical data for types M, ME & MCS

		M20	M40	M80
Output with wood pellets (with c. 7% moisture)	kW	29	48	80
Output with wood chips (with c. 25% moisture)	kW	24	37	64
Output with grains (with c. 15% moisture)	kW	24	37	64
Minimum output in pause mode*	kW	1,5	2,5	3,5
Efficiency at nominal output	%	88,0	90,0	90,7
Efficiency at part load**	%	89,0	89,1	88,6
Chamber for log burning - volume (boiler)***	Litre	190	290	490
chamber for log burning - dimensions WxHxD	mm	440x580x700	440x580x1100	740x580x1100
Heat exchanger area in boiler	m ²	3,5	5,6	9,1
Water volume in boiler	Litre	170	300	350
Flue outlet spigot	mm	155	187	215
Pipe diameter - Flow	-	1"	1½"	2"
Pipe diameter - Return	-	1"	1½"	2"
Pipe diameter - Sprinkler connection	-	½"	½"	½"
Connection auger feeder (with automatic filling unit + ME + MCS)		OK160/180	OK160/180	OK160/180
Draft requirement	Pa	12	15	20
Electrical connection: 3x400V+0+earth - 10A	-	-	-	-
Electrical consumption approx.	W	110	110	150

* Indicative minimum output

** Part load is less than 30% of nominal load (output recorded by Danish Technological Institute)

*** Stated with burner tube fitted on the outside of boiler

TYPE MCS

The MCS system must be connected to an external silo via an auger conveyor. The boiler and burner are identical to type M, but the fuel storage is replaced by a stoker (automatic feeder unit) with a cell lock to which the auger conveyor from the external silo delivers the fuel.

In addition to the fuels for which it has technical approval, the MCS system is also designed for burning light fuels such as wood chips and sawdust and it can be combined with one of Twin Heat's fully automatic silo systems.



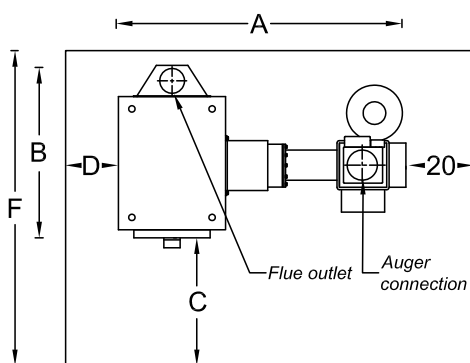
When burning homogeneous (uniform) fuels such as wood pellets and grains, users often have traditional feed silos erected indoors/outdoors or in a basement. More often than not, fuel is delivered by tanker and injected into the silo. The fuel is transported to the burner via a rigid or flexible auger.

When burning non-uniform fuels such as wood chips and wood chips, Twin Heat can provide auger conveyors, self-emptying silos and scraper systems for greater capacity.

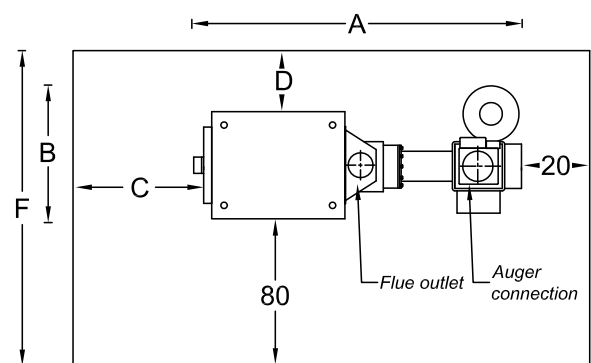
Delivery format

A Twin Heat MCS system is delivered complete and ready for installation. The system consists of three main component parts: boiler unit, water-cooled burner tube and stoker unit. As standard, all MCS systems are fitted with: cell lock, sprinkler system to prevent back-burn, user-friendly oxygen control, draught regulator for manual firing, flue temperature regulator in boiler (bypass), cleaning brush and poker.

Extra accessories for installation: shunt valve, draught stabiliser, damper and connection set for auger feeder.



Boiler room seen from above - Stoker inlet on side of boiler. Measurements in centimetres



Boiler room seen from above - Stoker inlet at the back of boiler. Measurements in centimetres

	Dimensions		Clearance		Recommended minimum size of boiler room	
	A	B	C	D	E	F
M20i	177	116	120	7	204	236
M40i	204	164	160	10	234	324
M80i	263	171	160	10	293	331

	Dimensions		Clearance		Recommended minimum size of boiler room	
	A	B	C	D	E	F
M20i	192	77	120	12	332	158
M40i	235	77	160	12	415	158
M80i	272	96	160	10	452	186

ACCESSORIES

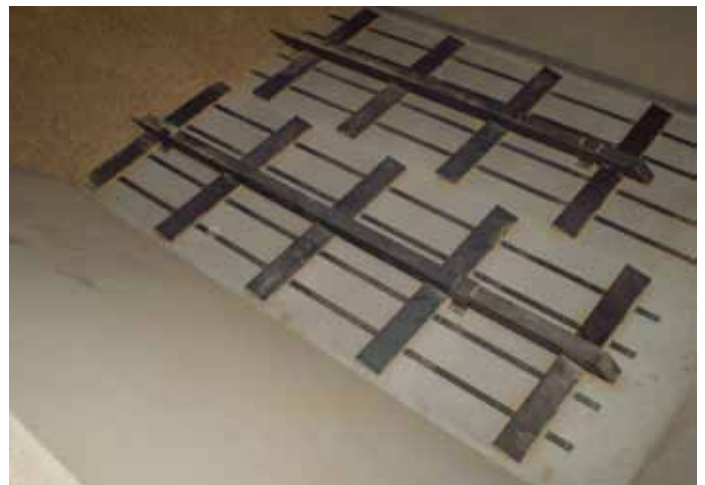
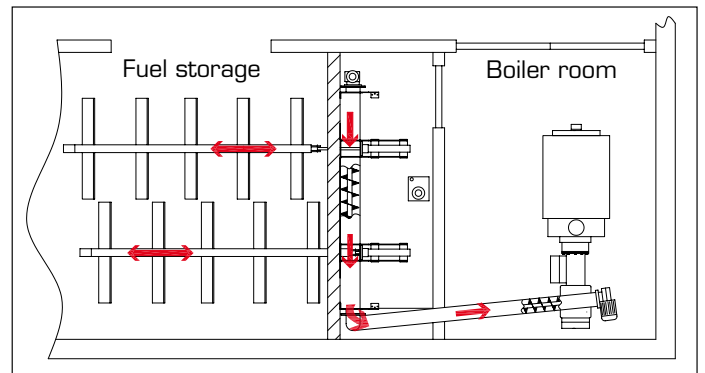
TWINHEAT SCRAPER SYSTEM

The Twin Heat scraper system is designed for fully automatic transport of fuels such as wood chips, wood chips and sawdust from fuel stock to burner. The scraper system is also well suited for the storage and transport of pellet fuel such as wood pellets etc.

The scraper system has two hydraulic scrapers drawing the fuel forward to a frequency-controlled auger which delivers the fuel to the auger conveyor feeding the burner.

The Twin Heat scraper system is a flexible silo system with extensive capacity for fuel storage.

The scraper system is connected to the burner with the Twin Heat auger conveyor ST05.



Technical data

Feed rate	1-2m ³ /hour depending on the fuel
Storage capacity	15-30m ³ depending on the fuel
Electrical connection	3x400V-0-earth, 16A

AUGER CONVEYOR ST05

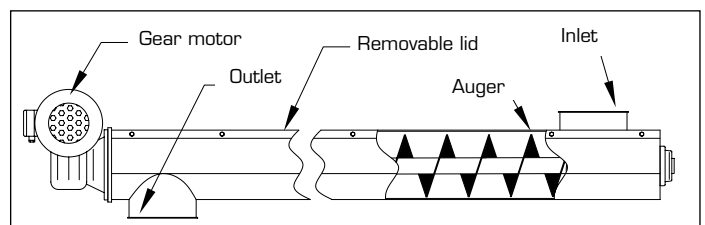
The ST05 auger conveyor is designed to transport difficult fuels that will clog up a conventional round auger. The auger groove is well suited to fuels such as wood chips, sawdust and wood chips.

The auger is also suitable for wood pellets, etc.

The ST05 is used together with the Twin Heat scraper system.

Technical data

Capacity	1-2m ³ /hour depending on the fuel
Diameter	Ø150mm auger and 180mm duct
Length	From 3-6 metres
Inlet/outlet	Ø180mm
Electrical connection	3x400V+0+earth, 10A



QUATRO SILO TYPES 1 & 2

The Twin Heat Quatro silo is particularly suitable when burning demanding fuels such as wood chips, wood chips and sawdust as well as other fuels that do not flow towards the auger by themselves. This silo is also well suited to pellet fuel such as wood pellets etc.

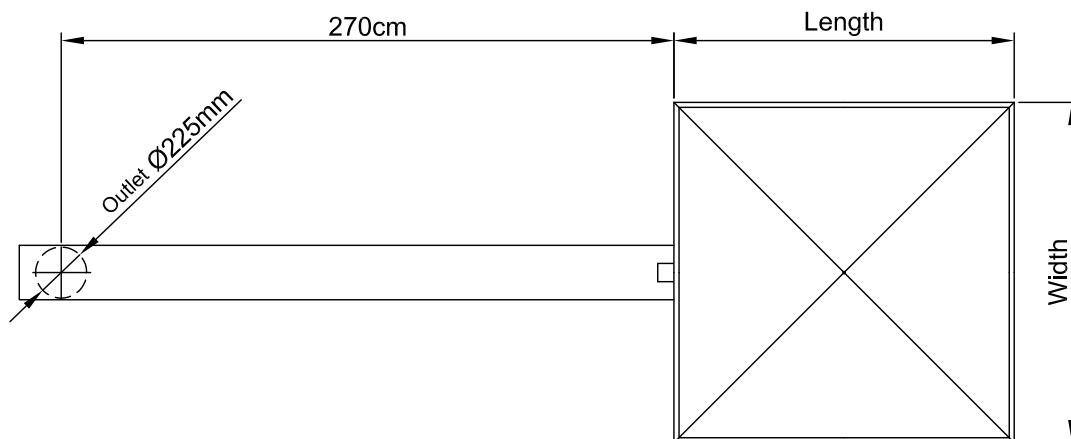


The Twin Heat Quatro silo is available in two sizes, type 1 with a volume of 2.5–4.7m³ and type 2 with a volume of 5.5–10.7m³.

The silo is constructed on a sturdy square base supported by four legs. In the centre of the base, there is a large rotor with strong leaf springs. The rotor, which is powered by a slow-speed gear motor, forces the fuel down to an auger conveyor placed underneath the base of the silo. The conveyor transports the fuel up to the cell lock of the burner or the storage. The auger conveyor has a diameter of 150mm and is powered by a separate gear motor.

If circumstances permit, the water-proof Quatro silo should be placed outdoors with the stock of wood chips under a pent roof nearby.

The sides and top of the silo are made from galvanised plate and consist of 0.5 metre modules. The capacity of the silo is increased by adding more modules to the height of the construction. The top of the silo where the fuel is loaded is fitted with a water-proof lid that is easily opened via a wire drive.



	Length	Width	Loading height	Height with open lid	Volume - m ³
Quatro I - with 2 sections			155	290	2,5
Quatro I - with 3 sections	150	150	205	340	3,6
Quatro I - with 4 sections			255	390	4,7
Quatro II - with 2 sections			155	290	5,5
Quatro II - with 3 sections	230	230	205	340	8,1
Quatro II - with 4 sections			255	390	10,7

Measures in centimeters

Wood store agitator type Rotag

Twin Heat Rotag agitator is available in 2 different sizes, Rotag 2500 with a diameter of 2.5 meters and Rotag 4500 with a diameter of 4.5 meters.

The Rotag agitator is supplied for use with the Combi type MCS and industrial plants CS, and works automatically with the boiler.

The fuel is loaded directly on top of the Rotag where a large plate with stirrer springs slowly rotates and draws fuel into the delivery auger which connects to the boiler.

Rotag 2500 and 4500 is suitable for fuels such as wood chips, shavings, sawdust and wood pellets



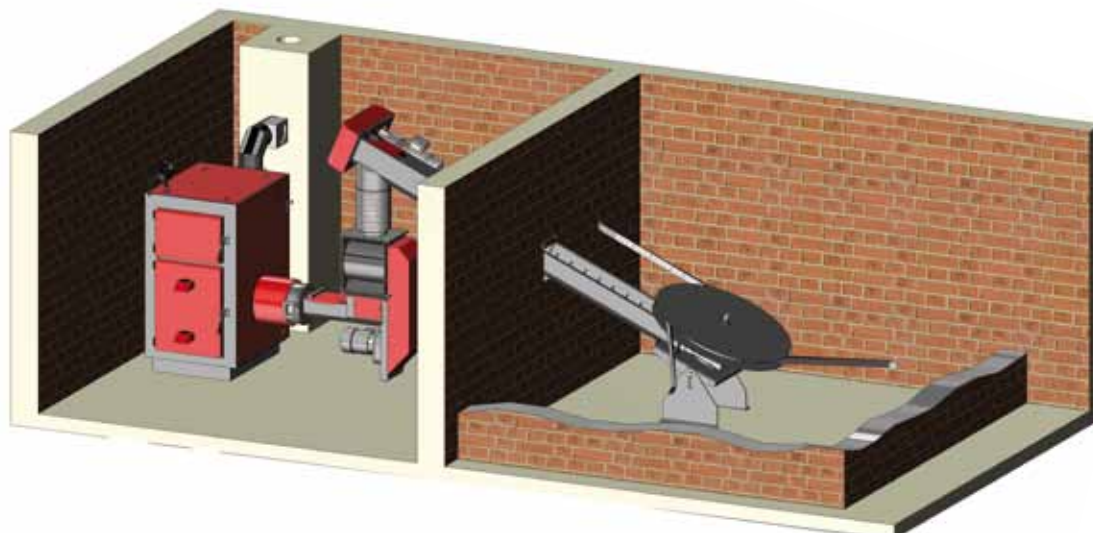
Heavy chain drive



Heavy-duty delivery auger



Spring loaded lid with an electrical switch, which stops the delivery auger in case of fuel piling up



Combi system type MCS
Installed with Rotag 2500



Lime doser for firing with grains and other fuels

Can be used with various silo systems and auger conveyors

can also be used as a traditional solid fuel boiler. If used in this way, it is particularly advantageous to have an accumulation tank (1000–2000 litres) which is heated up in one go.

OXYGEN CONTROL

The object of the oxygen control is to optimise the relationship between combustion air and fuel as well as to regulate the output of the burner steplessly after the heat consumption. This ensures that the burner operates at its optimum, irrespective of the quality of the fuel and the heat consumption. Many burners that are controlled traditionally often have to change between operation and pause mode, resulting in energy loss. With our design, the burner is in continuous operation with outputs from 20% of full load, whereby a better and more economic combustion is achieved, as the breaks are avoided (modulating operation).

The control unit has a large display showing temperature, boiler output, flue oxygen content and operating condition. In addition, it is pre-set for wood pellets, grains and wood chips.

Moreover, users have the option of setting up fixed programs where they can adjust all relevant parameters according to requirements. In the event of an alarm, the error is described in the display.

This control unit is one of the most user-friendly currently on the market.

SAFETY EQUIPMENT

As standard, all TWIN HEAT systems are fitted with a sprinkler system and “pressure tubes” preventing an accumulation of gas in the fuel storage. The sprinkler system can be activated in connection with, for instance, power failure. After activation, the water is quickly turned off again automatically so as to avoid “flooding”. All systems stop automatically if they run out of fuel.

BYPASS SYSTEM

Our Variant boiler is designed with a damper in the flue gas box of the boiler (bypass), making it possible to adjust the flue temperature to the season. In modern boiler systems, the flue is often cooled down to about 150–180 °C at full load and that means that the flue temperature is often too low at low outputs, usually during spring and autumn. TWIN HEAT has solved this issue by adding the bypass system to the Variant boiler. If the damper is opened completely – typically during the summer – the flue is forced directly out to the chimney, thereby avoiding the heat exchanger.

COMBUSTION PRINCIPLE

It takes more than perfect combustion to achieve a high rate of efficiency. The heat must be removed from the flue gasses. TWIN HEAT has solved this issue by designing a boiler with reversing flame in the boiler chamber and two flue passes in the heat exchanger. This produces excellent heat transfer to the water in the boiler and thereby a low flue temperature to the chimney. In addition, this design has very low environmental impact, as the residue from the combustion ends in the right place – that is, in the flue gas box and not in the air. This special combustion technology is divided into three phases: gasification, combustion and after-burning. The preheated current of air is injected into the entire circumference of the combustion tube at a right angle to the gas flow, resulting in excellent combustion, even at low boiler outputs.

MANUAL FIRING IN COMBI SYSTEMS

Manual firing with wood logs in the Variant boiler can be done in two ways.

Combi firing is an option, allowing you to supplement with wood logs while the stoker is running. A few wood logs (depending on the output) are placed in the boiler. The wood is automatically lit by the flame heat from the burner tube. The oxygen sensor will automatically register that logs has been loaded into the boiler, thereby saving on the stoker fuel in the storage.

Pure manual firing in the boiler, where the stoker has been stopped. The Variant boiler is fitted with a draught regulator and draught dampers in the boiler door so it

TWIN HEAT boilers are installed by professionals all over the UK





TWINHEAT also supplies complete mobile boiler stations



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Biomass Systems Supply
P.O. Box 1835 * Chico, CA 95927
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www.BiomassSystemsSupply.com

TWINHEAT®

Denmark

Tel: +45 9864 5222

twinheat@twinheat.dk • www.twinheat.com

United Kingdom

Tel: +44 (0) 1963 32604

sales@twinheatuk.com • www.twinheatuk.com