# WOOD CHIP/PELLETS HEATING SYSTEMS EKO-CKS Multi Plus 170 - 580 kW



07/2018



## SHORT DESCRIPTION:

Hotwater steel boilers **EKO CKS Multi Plus** are designed for burning wood chips P16A/B-P45A,M35 (G30/W35, G50/W35) or wood pellets with diameter 6 and 8 mm class A1 and A2.

- Class 5 boilers
- Manufactured with nominal heat powers from 170, 250, 340, 450 and 580 kW
- The boiler must be connected with an accumulation tank (min. 12 lit/kW)
- Max. operation temperature 95 ° C
- They can be installed in open and closed heating systems

#### The basic scope of delivery consists of:

- Boiler with thermal insulation
- Staired combustion chamber with moving elements to insure lower sensitivity due to the change of fuel quality
- Electrical cabinet with digital boiler regulation with touch screen
- Automatic ash removal from the combustion chamber
- Cyclone with ash container for the separation of flying ashes out of the flue gases, centrifugal fan with rpm controller
- Conveyor-1 with motor for the fuel supply into the combustion chamber
- Connection box with built in backfire flap (RSE) and backfilling sensor
- Thermal protection of the boiler is made with 2 tube heat exchangers with thermal safety valves
- Lambda probe

#### Basic control unit includes:

- Regulation by a lambda probe of the primary and secondary air, rpm change of the underpressure fan at the flue gas exit (from the boiler) and the correction of the feeding conveyor-2
- Pressure control in the combustion chamber
- Boiler return flow protection (steering the actuator responsible for the return temperature increase and pump control between the boiler and buffer tank)
- Steering/controlling of: feeding conveyor-2 for wood chip or wood pellets, conveyor-3 for wood chip or wood pellets, conveyor-3 for supply of wood chips or wood pellets from the fuel container, fuel mixer in the fuel container, conveyor for ash removal from the flue gas chamber and with other additional equipment listed below.
- Control of the buffer tank heating, DHW tank and DHW recirculation
- 1 boiler temperature sensor, 1 return flow sensor, 2 buffer tank sensors, 1 outdoor temperature sensor, 1 DHW sensor, 1 DHW recirculation sensor

#### **Obligatory equipment:**

- Feeding conveyor-2 for wood chips/pellets
- Feeding conveyor-2 extension for wood chips/pellets
- Return flow protection with 3 way mixing valve and actuator and boiler pump
- Wood chip/pellets mixer separately and auger/conveyor-3 for the supply of wood chip/pellets from the fuel tank or mixer of wood chip/pellets with auger/conveyor-3 or wood chip tank with mixwer and auger/conveyor-3
- Wood chip/pellets mixer conveyor extension (if needed)
- Buffer (accumulation) tank

### Additional equipment:

- Automatic pneumatic air clenaing of boiler flue heat exchanger passages
- Compressor with compressor kit
- Automatic ash removal system out of the flue gas chamber (by help of a screw)
- Security/safety elements set min/max boiler water pressure
- CM2K-B module for 2 heating circuits (max. 4 x CM2K-B module)
- CSK room corrector (possible installation only together with the CM2K module)
- CAL alarm module
- CM-GSM communication module
- CM WiFi-box boiler operation monitoring by PC, tablet computer or smartphone
- CMNET cascade manager
- Hot water tank

#### The boiler is manufactured according the EU norms EN 303 - 5:2012, ISO 9001 and ISO 14001



Article	Code
EKO-CKS Multi Plus 170 (set)	34282
EKO-CKS Multi Plus 250 (set)	34284
EKO-CKS Multi Plus 340 (set)	34285
EKO-CKS Multi Plus 450 (set)	34286
EKO-CKS Multi Plus 580 (set)	34287



# **OBLIGATORY EQUIPMENT:**

#### Feeding conveyor-2 for wood chips/pellets:

Boiler feeding unit for wood chips/pellet supply, mounted on the boiler conveyor-1.

It consists of a conveyor with minimum required length with an electric actuator and fuel level sensor which is controlled by the basic boiler control unit.



Article	Code
Feeding conveyor-2 for wood chips/pellets 170–250 kW	42297
Feeding conveyor-2 for wood chips/pellets 340 kW	42210
Feeding conveyor-2 for wood chips/pellets 450–580 kW	42595

#### Feeding conveyor-2 extension for wood chips/pellets:

It consists of a closed channel with spiral and axle.

To be ordered only if a longer conveyor-2 length is needed. Max. additional length is 4m (greater length on request).



Article	Code
Feeding conveyor-2 extension for wood chips/pellets 170-250 kW, L=1 m	42620
Feeding conveyor-2 extension for wood chips/pellets 340 kW, L=1 m	42621
Feeding conveyor-2 extension for wood chips/pellets 450-580 kW, L=1 m	42622

#### **Boiler return flow protection:**

Maintaining the boiler return flow temperature at min. 60°C, protect boiler against condensation.

Offered pump comply the distance between the boiler and accumulation tank (piping length flow + return) max. 40 meters. Inner diameter of pipes, valves, fittings and connections of accumulation tank must match inner diameter of boiler connections. Only allowed narrowing of the inner diameter of pipes is by pump connections.

Shut off bodies must not be shut-off valves, because off to big pressure drop, but allowed are gate valves, ball valves and butterfly valves.

#### **Boiler return flow protection 170 kW:**

It consists of:

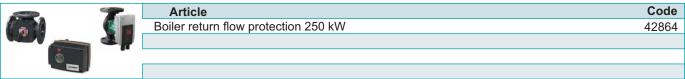
- 3-way mixing valve DN 50 (11498)
- actuator with 60 seconds opening/closing time (39660)
- pump **Wilo Yonos MAXO 40/0,5-12** (45918)



## Boiler return flow protection 250 kW:

It consists of:

- 3-way mixing valve DN 80 (11516)
- actuator with 60 seconds opening/closing time (39660)
- pump **Wilo Yonos MAXO 50/0,5-9** (45919)



#### Boiler return flow protection 340 kW:

It consists of:

- 3-way mixing valve DN 80 (11516)
- actuator with 60 seconds opening/closing time (39660)
- pump **Wilo Yonos MAXO 65/0,5-12** (49521)

	7	Article	Code
Ta Y		Boiler return flow protection 340 kW	42865
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Code

42863



# Boiler return flow protection 450 kW:

It consists of:

- 3-way mixing valve DN 100 (11517)
- actuator with 60 seconds opening/closing time (39660)
- pump Wilo Yonos MAXO 80/0,5-6 (45922)/in cascade Wilo Yonos MAXO 65/0,5-16 (43119)



Article	Code
Boiler return flow protection 450 kW	42866
Boiler return flow protection 450 kW cascade 2 boiler	46375

#### Boiler return flow protection 580 kW:

It consists of:

- 3-way mixing valve DN 100 (11517)
- actuator with 60 seconds opening/closing time (39660)
- pump Wilo Yonos MAXO 80/0,5-12 (45923)



Article	Code
Boiler return flow protection 580 kW	42867

#### Wood chips/pellets mixer with conveyor-3 for storage room:

For wood chips supply or wood pellets feeding.

Basic version consists of spring arms and conveyor with partially open channel, which is located within the storage room and 2 m long conveyor with closed channel outside the storage room and an own electric actuator. After connection of the fuel mixer with the conveyor-3 and its connection to the boiler, it is necessary to make a wooden floor construction, which will follow the angle of inclination of the feeding conveyor.



Article	Code
Wood chips/pellet mixer with conveyor-3 for storage room 2x2 m	25225
Wood chips/pellet mixer with conveyor-3 for storage room 2,5x2,5 m	25226
Wood chips/pellet mixer with conveyor-3 for storage room 3x3 m	25227
Wood chips/pellet mixer with conveyor-3 for storage room 3,5x3,5 m	25228
Wood chips/pellet mixer with conveyor-3 for storage room 4x4 m	25229
Wood chips/pellet mixer with conveyor-3 for storage room 4,5x4,5 m	34002
Wood chips/pellet mixer with conveyor-3 for storage room 5x5 m	30169

#### Wood chips/pellets mixer without conveyor-3 for storage room with el. control set:



Article	Code
Wood chips/pellet mixer without conveyor-3 for storage room 2x2 m	51939
Wood chips/pellet mixer without conveyor-3 for storage room 2,5x2,5 m	51940
Wood chips/pellet mixer without conveyor-3 for storage room 3x3 m	51941
Wood chips/pellet mixer without conveyor-3 for storage room 3,5x3,5 m	51942
Wood chips/pellet mixer without conveyor-3 for storage room 4x4 m	51944
Wood chips/pellet mixer without conveyor-3 for storage room 4,5x4,5 m	51943
Wood chips/pellet mixer without conveyor-3 for storage room 5x5 m	51946

## Wood chips container with mixer, conveyor-3 and electric actuator:



Article	Code
Wood chips container 2,8 m³ with mixer and conveyor-3	34991
Wood chips container 5,5 m³ with mixer and conveyor-3	28339
Wood chips container 9,0 m <sup>3</sup> with mixer and conveyor-3	32441

#### Extension of the wood chips/pellet mixer conveyor-3:

It consists of a closed channel with spiral and axle. Need to be ordered only if you need more then 2 m length of the conveyor-3. Max. additional length is 4 m (greater length on request).



Article	Code
Extension of the wood chips/pellet mixer conveyor-3 L=1 m	25230



# Wood chips/pellet feeding conveyor-3 with gearmotor placed in the seasonal tank:



Article	Code
Wood chips/pellet feeding conveyor-3 with gearmotor placed in the seasonal tank:	
- with I=3 m length and a channel (170-580 kW) - feeding conveyor 3	54155
- with I=4 m length and a channel (170-580 kW) - feeding conveyor 3	54156
- with I=5 m length and a channel (170-580 kW) - feeding conveyor 3	54157
- with I=6 m length and a channel (170-580 kW) - feeding conveyor 3	54158
- with I=7 m length and a channel (170-580 kW) - feeding conveyor 3	54159
- with I=8 m length and a channel (170-580 kW) - feeding conveyor 3	54160
- with I=9 m length and a channel (170-580 kW) - feeding conveyor 3	54161
- with I=10 m length and a channel (170-580 kW) - feeding conveyor 3	54162

## Accumulation (buffer) tank:

It increases the amount of heating water, which is used to store of excess heat produced, for which there is no current demand. This ensures better quality combustion and less intervals ignition/shutdown of the boiler, which directly affects the efficiency of the system as well as its lifetime. It includes all the necessary connections to connect primary and secondary heating circuit. It consists of the body of buffer tank, thermal insulation thickness of 100 mm and one coating that is supplied separately, 4 thermometers, 4 sleeves for temperature sensors. Obligatory minimum volume of accumulation tank is 12 lit/kW.



Product	Code
Accumulation tank CAS 1001 (3 bar)	16716
Accumulation tank CAS 1501 (3 bar)	16717
Accumulation tank CAS 2001 (3 bar)	16718
Accumulation tank CAS 3001 (3 bar)	20533
Accumulation tank CAS 4001 (3 bar)	20534
Accumulation tank CAS 5002 (3 bar)	35778



Product	Code
Accumulation tank CAS 1006 (6 bar)	42868
Accumulation tank CAS 1506 (6 bar)	42869
Accumulation tank CAS 2006 (6 bar)	42870
Accumulation tank CAS 3006 (6 bar)	42871
Accumulation tank CAS 4006 (6 bar)	42872
Accumulation tank CAS 5006 (6 bar)	42873

#### Additional connection for accumulation tank:



Product	Code
Additional connection for accumulation tank DN 50 PN6, 1 piece	42601
Additional connection for accumulation tank DN 65 PN6, 1 piece	42602
Additional connection for accumulation tank DN 80 PN6, 1 piece	
Additional connection for accumulation tank DN 100 PN6, 1 piece	42604
Additional connection for accumulation tank DN 125 PN6, 1 piece	42605

## ADDITIONAL EQUIPMENT:

## Automatic pneumatic air clenaing of boiler flue heat exchanger passages:

It consists of built-in valves on upper front door of the boiler, in front of the boiler heat exchanger flue passage tubes, pressure tank with a valve for the automatic condensate drain and addition to the basic control unit for installation in el. cabinet. Remark:

It is obligatory to provide compressed air (separate compressor or connect to an existing pneumatic system), operational 24h.



Article	Code
Automatic pneumatic air clenaing EKO-CKS Multi Plus 170 kW (A)	54224
Automatic pneumatic air clenaing EKO-CKS Multi Plus 250 kW (A)	54110
Automatic pneumatic air clenaing EKO-CKS Multi Plus 340 kW (A)	54321
Automatic pneumatic air clenaing EKO-CKS Multi Plus 450 kW (A)	54318
Automatic pneumatic air clenaing EKO-CKS Multi Plus 580 kW (A)	54320

## Compressor Kaeser with compressor kit:

It consits of:

- compressor, automatic condensate drainage, pressure switch and addition el. board



Code
46430



# Compressor kit for instalation without compressor from this list:

It consits of:

- pressure regulator compressed air 5 bar with pressure gauge, automatic condensate drainage, pressure switch and addition el. board



Article	Code	
Compressor kit for instalation without compressor from this price list:		
- EKO-CKS Multi Plus 140 - 340 kW	46531	
- EKO-CKS Multi Plus 450 - 580 kW	46532	

## System for automatic ash extraction from the flue gas chamber (using the spiral):



Article	Code
System for aut. ash extraction from the flue gas chamber Multi Plus 170 kW	42907
System for aut. ash extraction from the flue gas chamber Multi Plus 250 kW	42908
System for aut. ash extraction from the flue gas chamber Multi Plus 340 kW	42909
System for aut. ash extraction from the flue gas chamber Multi Plus 450 kW	42910
System for aut. ash extraction from the flue gas chamber Multi Plus 580 kW	42911

## Safety elements set of the minimum and maximum pressure:

- obligatory for all boilers larger than 300 kW in accordance with EN 12828
- it is composed of maximum pressure limiter, minimum pressure limiter and manometer, drain valve and the valve for insurance against accidental closing
- it is mounted on the main flow of the boiler with welding near the boiler as much as possible
- basic control unit of the boiler is designed for el. connection with this safety elements, and in the case of achieving the maximum or minimum pressure, the boiler goes into safe extinguishing process.

This set does not include a safety valve which is obligatory for boilers installed in the closed heating system.



Article	Code
Safety elements set of boiler water pressure	39351

#### Module for two heating circuits CM2K-B:

- enables the control up to two heating circuits according to the outer temperature and the heating curve (guidance up to two mixing valves with actuators and up to two heating pumps)
- possible connection with up to two room correctors CSK (additional equipment)
- possible connection up to 4 modules CM2K-B (up to 8 heating circuits)

The delivery includes: 1x modul + 2 pieces x OPV (main flow sensor) + 1 piece UTP cable.



Article	Code
Module for two heating circuits CM2K-B	33583

#### Room corrector - CSK:

- enables the correction of the set temperature in the room (according to the set temperature on the boiler control unit) and enables the shut down of its heating circuit
- installation only with the CM2K module

The delivery includes: 1 piece x room corrector.



Article	Code
Room corrector - CSK	32680

#### Alarm module - CAL:

- module with alarm sound or light signal to inform about an error or warning from the boiler The delivery includes: 1 piece x module with built-in light and speaker.



Article	Code
Alarm module - CAL	30821



#### Communication module - CM-GSM:

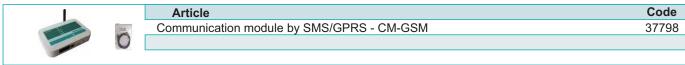
- \* SMS communication:
- information of the boiler status/warning/error through mobile (GSM) network by a SMS message
- information of the boiler warnings/error with SMS message on the choosen language
- information of the boiler warnings/error by a call on the mobile with a siren sound
- info of the boiler status operation phase, boiler temperature/temperature of the connected sensors
- switching on/off of the boiler by a SMS message

#### \* GPRS communication:

- display of current status/warning/error and history of the boiler via GPRS through a web portal on a computer/tablet/smartphone

The delivery includes: 1 x modul, 1 x UTP cable

Proper operation requires a SIM card with included calls (SMS) / data traffic (GPRS).



#### Communication module - CM WiFi box:

- preview of current status/warnings/errors and boiler's history using Wi-Fi via web-portal on a computer/tablet/smartphone
- pali/gasi kotao, podešavanje temperature

The delivery includes: 1 x modul, 1 x UTP cable

Proper operation requires a wireless Internet access.

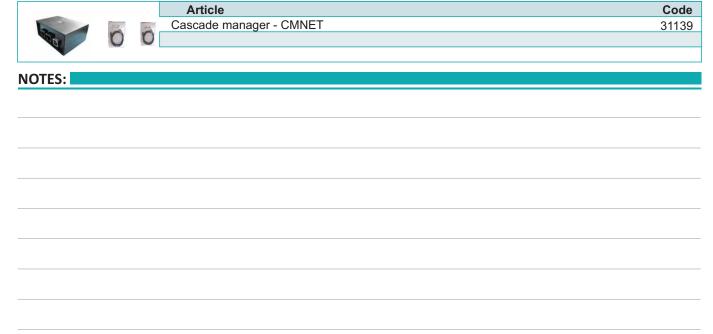


Article	Code
Wi-Fi modul for monitoring the boiler operating by the WEB site - CM WiFi-box	48819

# **Cascade manager - CMNET:**

- enables the cascade management between 2 and 8 boilers
- for the cascade of 2 boilers = 1x CMNET, for the cascade from 3 to 8 boilers = each boiler needs one piece of CMNET.
- connection with the boiler with UTP cable

The delivery includes: 1x module, 2 x UTP cable.



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