

# Unical

## XC-K oil (oil/gas)



### VERY LOW TEMPERATURE, CONDENSING, PRESSURIZED BOILER

OUTPUT RANGE

From 69 kW Output (67 kW Input) to 1550 kW Output (1520 kW Input)

OPERATION TEMPERATURE

no limit on the return temperature

SUPPLY

Pressure jet oil burner, in version two stage, two stage progressive and modulating, biodiesel or dual fuel (gas / oil)

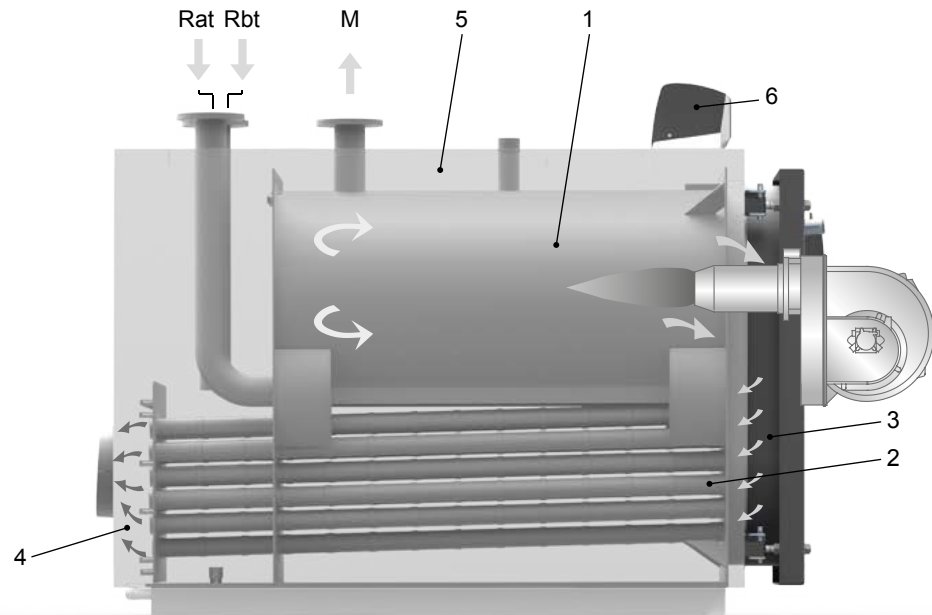
MODELS

|     |     |           |           |      |      |     |
|-----|-----|-----------|-----------|------|------|-----|
| 69  | 100 | (115) 150 | (200) 230 | 300  | 350  | 400 |
| 500 | 650 | 850       | 1000      | 1300 | 1550 | -   |

Large water content  
special smoke pipes in AISI 316L, with inserts and turbulators in AISI 304

## MAIN COMPONENTS

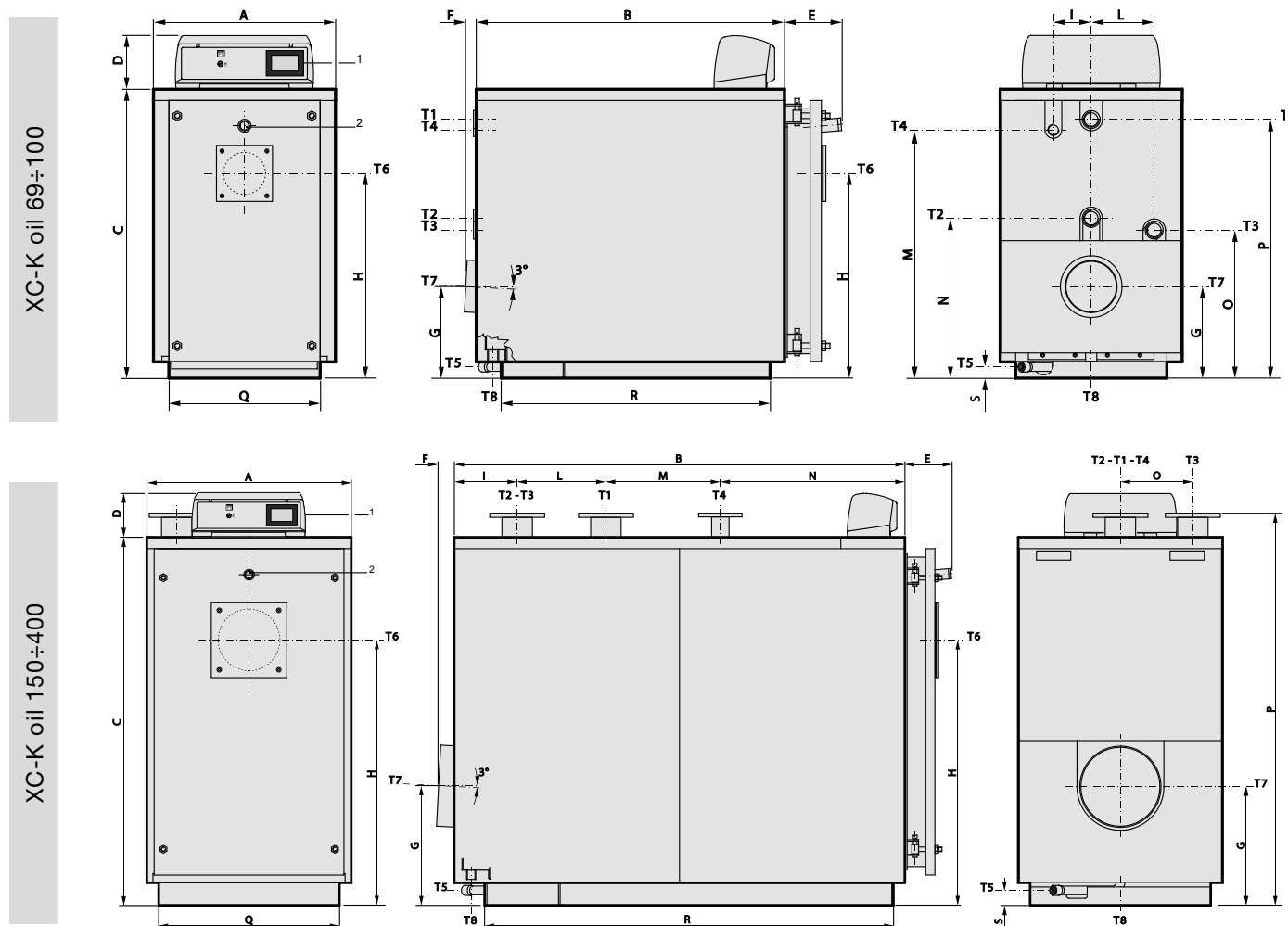
1. Furnace
  2. Smoke pipes with smoke diverters
  3. Door with flame sight glass
  4. Smoke chamber
  5. Body insulation
  6. Panel board
- M Flow  
Rbt Low temperature return  
Rat High temperature return  
(Burner isn't supplied with)



## PRODUCT PLUS VALUES

- **EFFICIENCY**  
102% at full load  
104% at part load in condensation mode
- **COMBUSTION CHAMBER** in stainless steel AISI 316L, entirely water cooled, above the tube bundle, so that the assembly could form a structure apt to favour the thermal exchange and the evacuation of the condensate.
- **WATER RUN**  
guided and braked inside the body
- **Special “progressive” and PATENTED SMOKE PIPES**  
in stainless steel AISI 316L with, inside, 6 special sectorial pipes and turbulators in AISI 304, that guarantee a very high heat exchange and resistance to the condensate.  
Tube bundle slightly inclined towards the smoke chamber in order:
  - to let the condensate to be collected over there
  - to avoid the acidic wet deposits remain in the pipes
  - to clean, thanks to the gravity, the exchange surfaces
- **OPTIMUM QUIETNESS** of operation thanks to the low counter-pressure in the smoke side
- **FRONT DOOR IN STEEL** with insulation in special superlight refractory cement (able to reduce more than 30% the heat losses by radiation)
- C.H. Flow connection placed on the rear upper part and two return connections, for low and high temperature, in the lower part. For models 69 and 100 the Flow and Return connections are towards the back side; for models 250 to 1550 Flow and Return connections are towards the upper side (as shown in the picture)
- The high temperature return connection is placed so that it doesn't interfere with the low temperature return connection
- The low temperature return connection is placed on the extension of the lower outer shell to that it can exploit at the maximum the heat recover
- **ADJUSTABLE DOOR**  
with reversible opening (from RH side or from LH side: standard execution with the hinges on the LH side)
- **COMMAND AND CONTROL PANEL (optional)**  
electronic type with Ufly P thermoregulation, which allows the management of the one-stage, two-stage or modulating burners.
- **PRESETTING FOR CASCADE OPERATION** up to 8 boilers, with master and slave panels
- Easy installation of the burner through burner supporting plate, pre-drilled on request
- Two bulb holders ½”, with internal dia. 15 mm for temperature sensors and thermostat bulbs (3 bulbs each)
- **REAR SMOKE CHAMBER** in stainless steel AISI 304, with connection for condensate drain.
- **DOUBLE INSULATION** of the boiler body
  - 1- Insulating mattress of the body (front)
  - 2- Insulating mattress of the body (rear)
  - 3- Insulating mattress of the body (upper)
- **VERY STRONG INSULATION** of the boiler body in fabric-finish mineral wool, 100 mm thick
- **CONSTRUCTION** according to EN 303-1
- **CLEANING AND SERVICING** made easy by the self-drain of the condensate in the smoke pipes, inclined towards the smoke chamber
- **LIFTING HOOKS** for transport and handling
- Option: Acidic condensate inhibitor, specific for oil

## DIMENSIONS XC-K oil 69÷400



- 1 Panel board  
 2 Flame sight glass  
 T1 C.H. flow  
 T2 Low temperature C.H. return

- T3 High temperature C.H. return  
 T4 Expansion vessel connection  
 T5 Boiler drain  
 T6 Burner connection

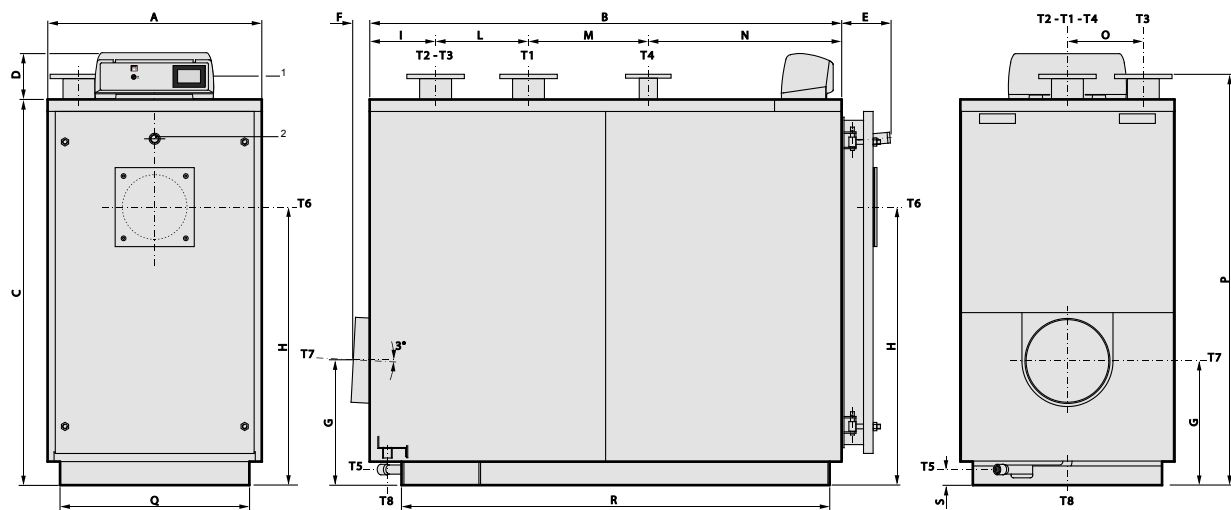
- T7 Chimney connection  
 T8 Condensation drain

| XC-K oil  | CONNECTIONS            |                        |         |         |     |     |    | Weight |
|-----------|------------------------|------------------------|---------|---------|-----|-----|----|--------|
|           | T1 - T2                | T3                     | T4      | T5      | T6  | T7  | T8 |        |
|           | ISO 7/1<br>UNI2276 PN6 | ISO 7/1<br>UNI2276 PN6 | ISO 7/1 | ISO 7/1 | Ø   | Øi  | Øe |        |
| 69        | Rp 2                   | Rp 2                   | Rp ¼    | Rp ¼    | 150 | 182 | 40 | 365    |
| 100       | Rp 2                   | Rp 2                   | Rp ¼    | Rp ¾    | 150 | 182 | 40 | 365    |
| (115) 150 | DN 65                  | DN 65                  | Rp 1 ½  | Rp ¾    | 180 | 202 | 40 | 525    |
| (200) 230 | DN 80                  | DN 80                  | Rp 2    | Rp 1    | 180 | 252 | 40 | 660    |
| 300       | DN 80                  | DN 80                  | Rp 2    | Rp 1    | 180 | 252 | 40 | 800    |
| 350       | DN 100                 | DN 100                 | Rp 2    | Rp 1    | 220 | 302 | 40 | 1007   |
| 400       | DN 100                 | DN 100                 | Rp 2    | Rp 1    | 220 | 302 | 40 | 1137   |

| XC-K oil  | A   | B    | C    | D   | E   | F  | G   | H    | I   | L   | M   | N   | O   | P     | Q*  | R*   | S  |
|-----------|-----|------|------|-----|-----|----|-----|------|-----|-----|-----|-----|-----|-------|-----|------|----|
|           | mm  | mm   | mm   | mm  | mm  | mm | mm  | mm   | mm  | mm  | mm  | mm  | mm  | mm    | mm  | mm   | mm |
| 69        | 650 | 1100 | 1032 | 190 | 205 | 37 | 329 | 730  | 135 | 225 | 885 | 570 | 528 | 922   | 540 | 961  | 40 |
| 100       | 650 | 1100 | 1032 | 190 | 205 | 37 | 329 | 730  | 135 | 225 | 885 | 570 | 528 | 922   | 540 | 961  | 40 |
| (115) 150 | 720 | 1450 | 1132 | 190 | 205 | 48 | 374 | 790  | 255 | 320 | 250 | 625 | 255 | 1248* | 610 | 1311 | 45 |
| (200) 230 | 790 | 1465 | 1282 | 190 | 235 | 55 | 402 | 900  | 231 | 359 | 250 | 625 | 275 | 1385* | 680 | 1314 | 60 |
| 300       | 790 | 1755 | 1282 | 190 | 235 | 65 | 402 | 900  | 271 | 379 | 450 | 655 | 275 | 1385* | 680 | 1614 | 60 |
| 350       | 854 | 1770 | 1472 | 190 | 270 | 67 | 494 | 1062 | 306 | 358 | 500 | 606 | 306 | 1585* | 750 | 1606 | 65 |
| 400       | 854 | 1940 | 1472 | 190 | 270 | 67 | 494 | 1062 | 306 | 358 | 500 | 776 | 306 | 1585* | 750 | 1776 | 65 |

(\*) Minimum dimensions for boiler room access.

## DIMENSIONS XC-K oil 500÷1550



- 1 Panel board  
 2 Flame sight glass  
 T1 C.H. flow  
 T2 Low temperature C.H. return

- T3 High temperature C.H. return  
 T4 Expansion vessel connection  
 T5 Boiler drain  
 T6 Burner connection

- T7 Chimney connection  
 T8 Condensation drain

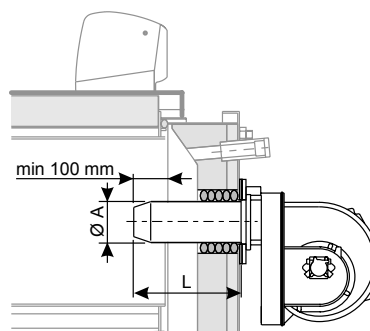
| XC-K oil | CONNECTIONS |            |            |         |         |          |          | Weight |
|----------|-------------|------------|------------|---------|---------|----------|----------|--------|
|          | T1 - T2     | T3         | T4         | T5      | T6<br>Ø | T7<br>Øi | T8<br>Øe |        |
|          | UNI2276PN6  | UNI2276PN6 | UNI2276PN6 | ISO 7/1 | mm      | mm       | mm       |        |
| 500      | DN 125      | DN 125     | DN 65      | Rp 1    | 270     | 352      | 40       | 1376   |
| 650      | DN 125      | DN 125     | DN 65      | Rp 1    | 270     | 352      | 40       | 1613   |
| 850      | DN 150      | DN 150     | DN 80      | Rp 1 ½  | 320     | 402      | 40       | 2158   |
| 1000     | DN 150      | DN 150     | DN 80      | Rp 1 ½  | 320     | 402      | 40       | 2443   |
| 1300     | DN 200      | DN 200     | DN 100     | Rp 1 ½  | 320     | 452      | 40       | 3458   |
| 1550     | DN 200      | DN 200     | DN 100     | Rp 1 ½  | 320     | 452      | 40       | 3765   |

| XC-K oil | A    | B    | C    | D   | E   | F  | G   | H    | I   | L   | M    | N    | O   | P*   | Q*   | R*   | S  |
|----------|------|------|------|-----|-----|----|-----|------|-----|-----|------|------|-----|------|------|------|----|
|          | mm   | mm   | mm   | mm  | mm  | mm | mm  | mm   | mm  | mm  | mm   | mm   | mm  | mm   | mm   | mm   | mm |
| 500      | 894  | 1970 | 1612 | 190 | 292 | 65 | 523 | 1161 | 275 | 388 | 500  | 807  | 316 | 1715 | 790  | 1787 | 65 |
| 650      | 894  | 2340 | 1612 | 190 | 292 | 65 | 523 | 1161 | 405 | 388 | 500  | 1047 | 316 | 1715 | 790  | 2157 | 65 |
| 850      | 1064 | 2360 | 1802 | 190 | 317 | 57 | 551 | 1287 | 289 | 624 | 900  | 547  | 390 | 1911 | 960  | 2157 | 55 |
| 1000     | 1064 | 2740 | 1802 | 190 | 317 | 57 | 552 | 1287 | 459 | 624 | 900  | 757  | 390 | 1911 | 960  | 2537 | 55 |
| 1300     | 1204 | 2980 | 2052 | 190 | 387 | 53 | 681 | 1493 | 372 | 563 | 785  | 1260 | 432 | 2165 | 1100 | 2752 | 95 |
| 1550     | 1204 | 3204 | 2052 | 190 | 387 | 54 | 681 | 1493 | 371 | 563 | 1010 | 1260 | 432 | 2165 | 1100 | 2977 | 95 |

(\*) Minimum dimensions for boiler room access.

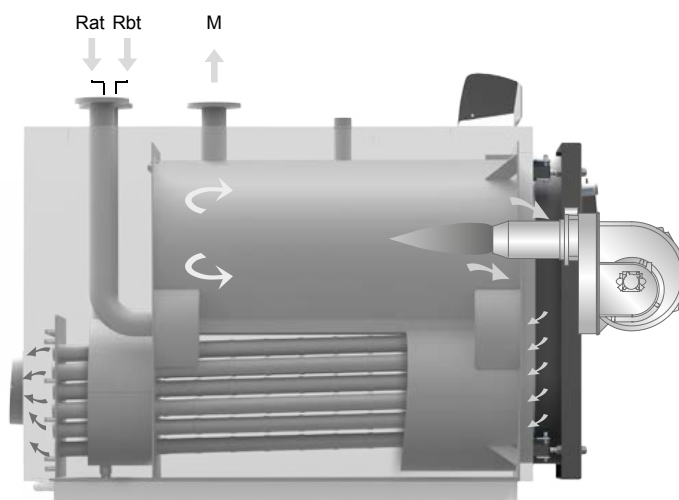
## BURNER BLAST TUBE DIMENSIONS

| BOILER TYPE            | ØA<br>mm | L<br>mm |
|------------------------|----------|---------|
| XC-K oil 69÷100        | 150      | 310     |
| XC-K oil (115) 150     | 180      | 310     |
| XC-K oil (200) 230÷300 | 180      | 340     |
| XC-K oil 350÷400       | 220      | 380     |
| XC-K oil 500÷650       | 270      | 400     |
| XC-K oil 850÷1000      | 320      | 410     |
| XC-K oil 1300÷1550     | 320      | 420     |



## TYPE AND SHAPE OF FURNACE

XC-K oil boilers are equipped with a blind cylindrical furnace, in which the central flame of the burner is reversed peripherally towards the front. When the combustion gases have reached the front part, they are sent through the door into the tubes of the third pass to reach the rear flue gas chamber and then the chimney.



**M** Flow  
**Rbt** Low temperature return  
**Rat** High temperature return

The combustion chamber is always pressurised while the burner is operating, within the power range of the boiler. The chimney must be calculated so that no positive pressure is detected at its base.

## SPECIAL SMOKE PIPES (patented)

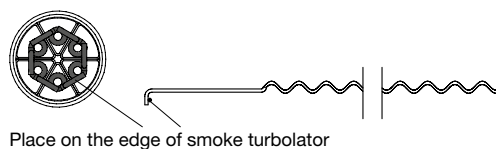
Special "progressive" and PATENTED SMOKE PIPES in stainless steel AISI 316L with, inside, 6 special sectorial pipes and turbulators in AISI 304, that guarantee a very high heat exchange and resistance to the condensate.

- Tube bundle slightly inclined towards the smoke chamber in order:
  - to let the condensate to be collected over there
  - to avoid the acidic wet deposits remain in the pipes
  - to clean, thanks to the gravity, the exchange surfaces

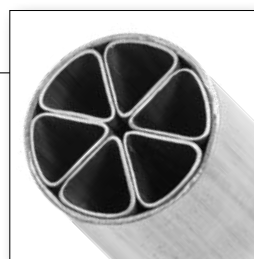
BREVETTO  
**Unical**  
 PATENT



Smoking section tubes with placed turbulators



Note: Smoke turbulator are long as flue pipe.



## TECHNICAL DATA

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site [www.unical.eu](http://www.unical.eu) at the page of the product

| XC-K oil (oil Fired)                            |         | 69    | 100  | 115   | 150  | 200  | 230  | 300  | 350  | 400  | 500  | 650  | 850  | 1000 | 1300 | 1550 |
|-------------------------------------------------|---------|-------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Nominal heat output (80°-60°C)                  | kW      | 66    | 86   | 112.5 | 134  | 196  | 202  | 278  | 327  | 385  | 482  | 626  | 789  | 963  | 1252 | 1492 |
| Nominal heat output (50°-30°C)                  | kW      | 69    | 90   | 117.3 | 140  | 204  | 210  | 290  | 340  | 400  | 500  | 650  | 820  | 1000 | 1300 | 1550 |
| Nominal Heat input                              | kW      | 67    | 88   | 115   | 137  | 200  | 206  | 284  | 333  | 392  | 491  | 637  | 804  | 980  | 1275 | 1520 |
| Heat efficiency full load (80°-60°C)            | %       | 97.8  | 97.8 | 97.8  | 97.8 | 97.9 | 97.9 | 97.9 | 98.0 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 | 98.2 |
| Heat efficiency full load (50°-30°C)            | %       | 102.5 | 102  | 102   | 102  | 102  | 102  | 102  | 102  | 102  | 102  | 102  | 102  | 102  | 102  | 102  |
| Heat efficiency partial load 30% (retourn 30°C) | %       | 104   | 104  | 104   | 104  | 104  | 104  | 104  | 104  | 104  | 104  | 104  | 104  | 104  | 104  | 104  |
| Boiler capacity                                 | l       | 140   | 140  | 260   | 260  | 305  | 305  | 332  | 544  | 515  | 625  | 664  | 1107 | 1157 | 1936 | 1904 |
| Flue gas temperature 80°C - 60°C (Tf - Ta)      | °C      | 36    | 36   | 36    | 36   | 36   | 35   | 35   | 35   | 33   | 33   | 33   | 33   | 33   | 33   | 33   |
| Flue gas temperature 50°C-30°C (Tf - Ta)        | °C      | 22    | 22   | 22    | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   |
| Max temperature allowable                       | °C      | 100   | 100  | 100   | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  |
| CO <sub>2</sub> content                         | %       | 13.1  | 13.1 | 13.1  | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 | 13.1 |
| Flue gas mass                                   | kg/h    | 97    | 132  | 172.2 | 206  | 299  | 308  | 426  | 499  | 587  | 735  | 954  | 1204 | 1468 | 1908 | 2275 |
| Combustion Efficiency 80°C-60°C                 | %       | 98.4  | 98.4 | 98.4  | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5 |
| Combustion Efficiency 50°C-30°C                 | %       | 99.0  | 99.0 | 99.0  | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 |
| Heat loss at shell 80-60°C                      | %       | 0.6   | 0.6  | 0.6   | 0.6  | 0.6  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  | 0.3  |
| Heat loss at shell 50-30°C                      | %       | 0.5   | 0.5  | 0.5   | 0.5  | 0.5  | 0.4  | 0.4  | 0.3  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  | 0.2  |
| Heat loss at chimney with burner ON 80-60°C     | %       | 1.6   | 1.6  | 1.6   | 1.6  | 1.6  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.5  | 1.5  | 1.5  | 1.5  |
| Heat loss at chimney with burner ON 50-30°C     | %       | 1.0   | 1.0  | 1.0   | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  |
| Heat loss at chimney with burner OFF            | %       | 0.05  | 0.05 | 0.05  | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Maximum operating pressure boiler               | bar     | 6     | 6    | 6     | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    |
| Maximum condensation production                 | l/h     | 5.5   | 5.5  | 7.2   | 8.6  | 12.5 | 12.8 | 17.7 | 20.8 | 24.4 | 30.6 | 39.7 | 50.1 | 61.1 | 79.5 | 94.7 |
| Maximum boiler pressure from standard           | mm c.a. | 8.4   | 8.4  | 11.8  | 16.0 | 25.0 | 25.7 | 33.4 | 37.2 | 41.1 | 47.9 | 56.2 | 63.5 | 69.9 | 78.1 | 83.7 |
| Boiler pressure                                 | mm c.a. | 5.8   | 5.8  | 8.2   | 11.2 | 17.5 | 13.0 | 25.0 | 29.7 | 37.0 | 43.1 | 50.6 | 52.7 | 62.8 | 70.3 | 75.3 |
| Head losses H <sub>2</sub> O Δt 15              | kPa     | 1.3   | 1.5  | 3.0   | 3.8  | 2.0  | 2.5  | 3.2  | 2.0  | 2.9  | 3.0  | 3.7  | 3.5  | 4.0  | 3.9  | 5.5  |
| CO (0% O <sub>2</sub> )                         | mg/kWh  | 3.1   | 3.2  | 6.4   | 4.7  | 6.4  | 3.1  | 4.7  | 4.7  | 4.7  | 3.1  | 4.7  | 4.7  | 4.7  | 4.7  | 4.7  |

| XC-K oil (gas Fired)                            |         | 69   | 100  | 115  | 150  | 200  | 230  | 300  | 350  | 400  | 500  | 650   | 850   | 1000  | 1300  | 1550  |
|-------------------------------------------------|---------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
| Nominal heat output (80°-60°C)                  | kW      | 66   | 86   | 112  | 134  | 196  | 202  | 279  | 327  | 385  | 482  | 626   | 790   | 963   | 1252  | 1493  |
| Nominal heat output (50°-30°C)                  | kW      | 72   | 94   | 123  | 147  | 204  | 220  | 304  | 357  | 420  | 525  | 682   | 860   | 1049  | 1364  | 1626  |
| Nominal Heat input                              | kW      | 67   | 88   | 115  | 137  | 200  | 206  | 284  | 333  | 392  | 491  | 637   | 804   | 980   | 1275  | 1520  |
| Heat efficiency full load (80°-60°C)            | %       | 97.8 | 97.8 | 97.8 | 97.8 | 97.9 | 97.9 | 98.0 | 98.1 | 98.2 | 98.2 | 98.2  | 98.2  | 98.2  | 98.2  | 98.2  |
| Heat efficiency full load (50°-30°C)            | %       | 107  | 107  | 107  | 107  | 102  | 107  | 107  | 107  | 107  | 107  | 107   | 107   | 107   | 107   | 107   |
| Heat efficiency partial load 30% (retourn 30°C) | %       | 109  | 109  | 109  | 109  | 104  | 109  | 109  | 109  | 109  | 109  | 109   | 109   | 109   | 109   | 109   |
| Boiler capacity                                 | l       | 140  | 140  | 260  | 260  | 305  | 305  | 332  | 544  | 515  | 625  | 664   | 1107  | 1157  | 1936  | 1904  |
| Flue gas temperature 80°C - 60°C (Tf - Ta)      | °C      | 34   | 34   | 34   | 34   | 36   | 34   | 32   | 31   | 31   | 31   | 31    | 31    | 31    | 31    | 31    |
| Flue gas temperature 50°C-30°C (Tf - Ta)        | °C      | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22   | 22    | 22    | 22    | 22    | 22    |
| Max temperature allowable                       | °C      | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100  | 100   | 100   | 100   | 100   | 100   |
| CO <sub>2</sub> content                         | %       | 10.3 | 10.3 | 10.3 | 10.3 | 13.1 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3  | 10.3  | 10.3  | 10.3  | 10.3  |
| Flue gas mass                                   | kg/h    | 97   | 127  | 166  | 198  | 299  | 296  | 409  | 480  | 565  | 707  | 918   | 1158  | 1412  | 1835  | 2188  |
| Combustion Efficiency 80°C-60°C                 | %       | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.4 | 98.5 | 98.5 | 98.5 | 98.5 | 98.5  | 98.5  | 98.5  | 98.5  | 98.5  |
| Combustion Efficiency 50°C-30°C                 | %       | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0 | 99.0  | 99.0  | 99.0  | 99.0  | 99.0  |
| Heat loss at shell 80-60°C                      | %       | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | 0.5  | 0.4  | 0.3  | 0.3  | 0.3   | 0.3   | 0.3   | 0.3   | 0.3   |
| Heat loss at shell 50-30°C                      | %       | 0.5  | 0.5  | 0.5  | 0.5  | 0.5  | 0.4  | 0.4  | 0.3  | 0.2  | 0.2  | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   |
| Heat loss at chimney with burner ON 80-60°C     | %       | 1.6  | 1.6  | 1.6  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.5  | 1.5   | 1.5   | 1.5   | 1.5   | 1.5   |
| Heat loss at chimney with burner ON 50-30°C     | %       | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0  | 1.0   | 1.0   | 1.0   | 1.0   | 1.0   |
| Heat loss at chimney with burner OFF            | %       | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05  | 0.05  | 0.05  | 0.05  | 0.05  |
| Maximum operating pressure boiler               | bar     | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6     | 6     | 6     | 6     | 6     |
| Maximum condensation production                 | l/h     | 11.4 | 14.9 | 19.5 | 23.2 | 12.5 | 34.8 | 48.1 | 56.4 | 66.3 | 83.0 | 107.8 | 136.0 | 165.9 | 215.6 | 257.1 |
| Maximum boiler pressure from standard           | mm c.a. | 8.4  | 8.4  | 11.4 | 15.0 | 25.0 | 23.4 | 30.0 | 33.3 | 36.7 | 41.2 | 51.4  | 61.1  | 69.4  | 80.4  | 87.8  |
| Boiler pressure                                 | mm c.a. | 5.8  | 5.8  | 8.0  | 11.0 | 17.5 | 13.0 | 24.8 | 29.5 | 36.7 | 42.7 | 50.1  | 56.7  | 62.4  | 69.9  | 74.9  |
| Head losses H <sub>2</sub> O Δt 15              | kPa     | 1.3  | 1.5  | 3.0  | 3.8  | 2.0  | 2.5  | 3.2  | 2.0  | 2.9  | 3.0  | 3.7   | 3.5   | 4.0   | 3.9   | 5.5   |
| CO (0% O <sub>2</sub> )                         | mg/kWh  | 3.1  | 3.2  | 2.0  | 4.7  | 6.4  | 3.1  | 4.7  | 4.7  | 4.7  | 3.1  | 4.7   | 4.7   | 4.7   | 4.7   | 4.7   |

## TECHNICAL DATA ACCORDING TO ErP DIRECTIVE

ELECTRICAL, HYDRAULIC, INSTALLATION DIAGRAMS AND CONTROLLERS can be unloaded from the web site [www.unical.eu](http://www.unical.eu) at the page of the product

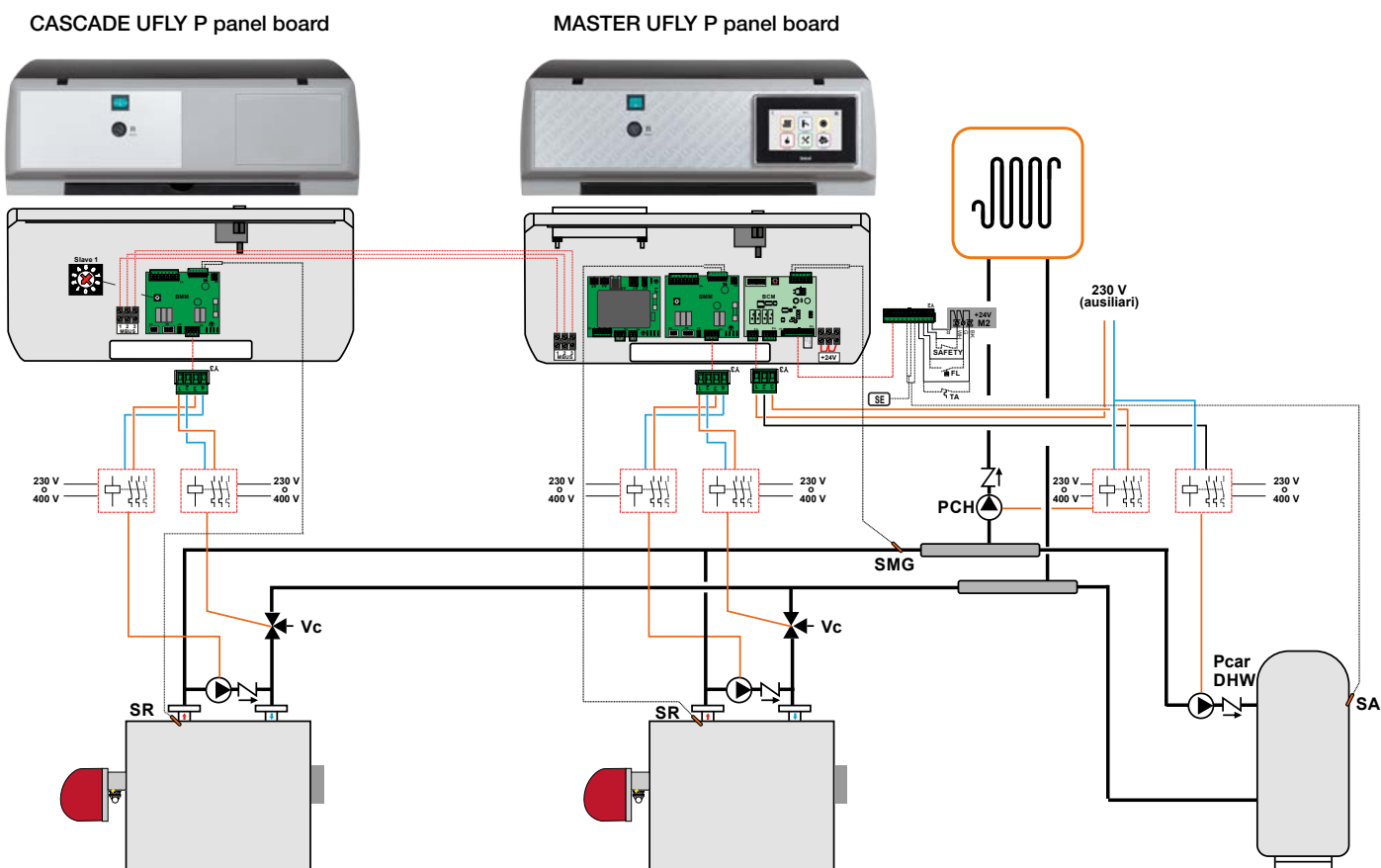
| XC-K oil (oil fired)                                                                  |            |        | 69                                                                                | 100    | 115   | 150    | 200    | 230    | 300    | 350    | 400    |
|---------------------------------------------------------------------------------------|------------|--------|-----------------------------------------------------------------------------------|--------|-------|--------|--------|--------|--------|--------|--------|
| EFFECTIVE NOMINAL OUTPUT                                                              | $P_n$      | kW     | 66                                                                                | 86     | 113   | 134    | 196    | 202    | 278    | 326    | 385    |
| SEASONAL ENERGY EFFICIENCY TO HEAT THE ROOM                                           | $\eta_s$   | %      | 93                                                                                | 93     | 93    | 93     | 93     | 93     | 93     | 93     | 93     |
| SEASON EFFICIENCY CLASS TO DISCHARGE                                                  |            |        |  | A      | A     | A      | A      | A      | A      | A      | A      |
| FOR BOILERS TO HEAT THE ROOM AND MIXED BOILERS: USEFUL HEAT OUTPUT                    |            |        |                                                                                   |        |       |        |        |        |        |        |        |
| USEFUL HEAT OUTPUT with high temperature capacity (Tr 60 °C / Tm 80 °C)               | $P_4$      | kW     | 65.5                                                                              | 86     | 112.5 | 134    | 195.8  | 202    | 278    | 326.3  | 385    |
| RATED HEAT OUTPUT EFFICIENCY with high temperature capacity (Tr 60 °C / Tm 80 °C)     | $\eta_4$   | %      | 91.9                                                                              | 91.9   | 91.9  | 91.9   | 91.9   | 92.0   | 92.2   | 92.2   | 92.3   |
| USEFUL POWER AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C) | $P_1$      | kW     | 20.9                                                                              | 27.5   | 35.5  | 42.7   | 62.4   | 64.3   | 88.6   | 104    | 122.3  |
| PERFORMANCE AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C)  | $\eta_1$   | %      | 97.7                                                                              | 97.7   | 97.7  | 97.7   | 97.7   | 97.7   | 97.7   | 97.7   | 97.7   |
| BOILER WITH OUTPUT RANGE ADJUSTMENT: YES / NO                                         |            |        | NO                                                                                | NO     | NO    | NO     | NO     | NO     | NO     | NO     | NO     |
| AUXILIARY ELECTRICITY CONSUMPTION                                                     |            |        |                                                                                   |        |       |        |        |        |        |        |        |
| WITH A FULL LOAD                                                                      | $el_{max}$ | kW     | 0.390                                                                             | 0.390  | 0.550 | 0.470  | 0.550  | 0.600  | 0.600  | 0.600  | 1.400  |
| WITH A PARTIAL LOAD                                                                   | $el_{min}$ | kW     | 0                                                                                 | 0      | 0     | 0      | 0      | 0      | 0      | 0      | 0      |
| STANDBY MODE                                                                          | $P_{sb}$   | kW     | 0.050                                                                             | 0.050  | 0.050 | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  |
| OTHER ELEMENTS                                                                        |            |        |                                                                                   |        |       |        |        |        |        |        |        |
| HEAT DISPERSION ON STANDBY                                                            | $P_{stby}$ | kW     | 0.0335                                                                            | 0.0440 | 0.069 | 0.0690 | 0.1030 | 0.1030 | 0.1420 | 0.1670 | 0.1960 |
| NITROGEN OXIDES EMISSIONS referred to GCV                                             | $NO_x$     | mg/kWh | 106                                                                               | 106    | 72    | 106    | 72     | 106    | 106    | 106    | 106    |

The models with an Output higher than 400 kW are not covered by the Directive 2009/125/CE

| XC-K oil (gas fired)                                                                  |            |        | 69                                                                                  | 100    | 115    | 150    | 200    | 230    | 300    | 350    | 400    |
|---------------------------------------------------------------------------------------|------------|--------|-------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| EFFECTIVE NOMINAL OUTPUT                                                              | $P_n$      | kW     | 66                                                                                  | 86     | 112    | 134    | 196    | 202    | 278    | 326    | 385    |
| SEASONAL ENERGY EFFICIENCY TO HEAT THE ROOM                                           | $\eta_s$   | %      | 93                                                                                  | 93     | 93     | 93     | 93     | 93     | 93     | 93     | 93     |
| SEASON EFFICIENCY CLASS TO DISCHARGE                                                  |            |        |  | A      | A      | A      | A      | A      | A      | A      | A      |
| FOR BOILERS TO HEAT THE ROOM AND MIXED BOILERS: USEFUL HEAT OUTPUT                    |            |        |                                                                                     |        |        |        |        |        |        |        |        |
| USEFUL HEAT OUTPUT with high temperature capacity (Tr 60 °C / Tm 80 °C)               | $P_4$      | kW     | 65.5                                                                                | 86     | 112    | 134    | 195.8  | 202    | 278.3  | 326.7  | 385    |
| RATED HEAT OUTPUT EFFICIENCY with high temperature capacity (Tr 60 °C / Tm 80 °C)     | $\eta_4$   | %      | 88.1                                                                                | 88.1   | 88.1   | 88.1   | 88.2   | 88.2   | 88.3   | 88.4   | 88.5   |
| USEFUL POWER AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C) | $P_1$      | kW     | 21.9                                                                                | 28.9   | 37.6   | 44.9   | 65.4   | 67.3   | 93.0   | 109.0  | 128.2  |
| PERFORMANCE AT 30% OF THE RATED HEAT OUTPUT with low temperature capacity (Tr 30 °C)  | $\eta_1$   | %      | 98.2                                                                                | 98.2   | 98.2   | 98.2   | 98.2   | 98.2   | 98.2   | 98.2   | 98.2   |
| BOILER WITH OUTPUT RANGE ADJUSTMENT: YES / NO                                         |            |        | NO                                                                                  | NO     | NO     | NO     | NO     | NO     | NO     | NO     | NO     |
| AUXILIARY ELECTRICITY CONSUMPTION                                                     |            |        |                                                                                     |        |        |        |        |        |        |        |        |
| WITH A FULL LOAD                                                                      | $el_{max}$ | kW     | 0.350                                                                               | 0.350  | 0.350  | 0.350  | 0.350  | 0.530  | 0.600  | 0.600  | 0.700  |
| WITH A PARTIAL LOAD                                                                   | $el_{min}$ | kW     | 0                                                                                   | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| STANDBY MODE                                                                          | $P_{sb}$   | kW     | 0.050                                                                               | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  | 0.050  |
| OTHER ELEMENTS                                                                        |            |        |                                                                                     |        |        |        |        |        |        |        |        |
| HEAT DISPERSION ON STANDBY                                                            | $P_{stby}$ | kW     | 0.0335                                                                              | 0.0440 | 0.0690 | 0.0690 | 0.1030 | 0.1030 | 0.1420 | 0.1670 | 0.1960 |
| NITROGEN OXIDES EMISSIONS referred to GCV                                             | $NO_x$     | mg/kWh | 55                                                                                  | 55     | 53     | 55     | 52     | 55     | 55     | 55     | 55     |

The models with an Output higher than 400 kW are not covered by the Directive 2009/125/CE

## BASIC SCHEME OF SYSTEM OPERATION



|                 |                                            |
|-----------------|--------------------------------------------|
| <b>SMG</b>      | Global Flow sensor                         |
| <b>SR</b>       | Heating sensor                             |
| <b>PRC</b>      | Boiler recirculation pump (connect to BMM) |
| <b>SA</b>       | DHW storage temperature sensor             |
| <b>Pcar DHW</b> | Cylinder charging pump (connect on BCM)    |
| <b>P. CH</b>    | Heating circuit pump (connect to BCM)      |
| <b>PCL</b>      | 2-way valve Boiler                         |

For condensing boilers, no boiler recirculation pump (PRC) is required.