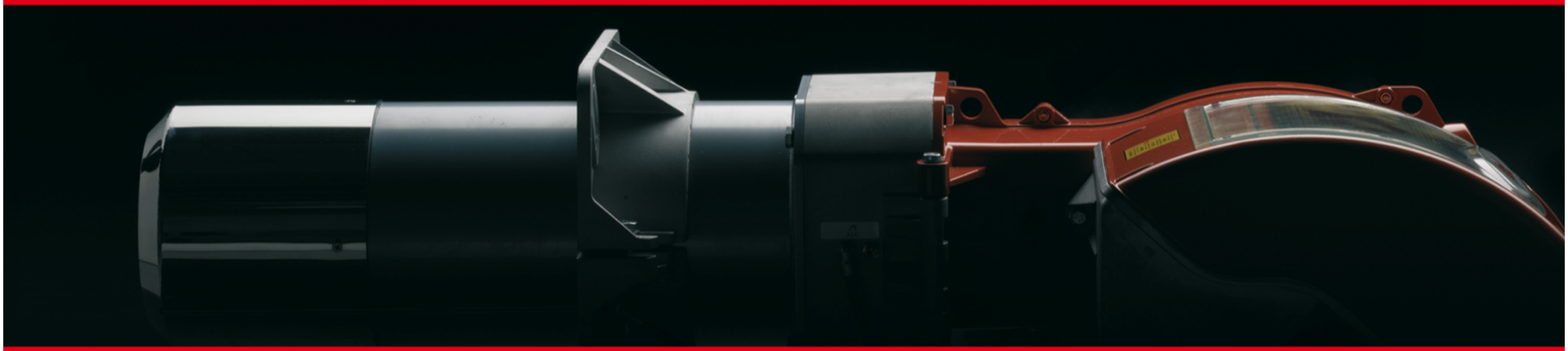


意大利百得
产品推广介绍

baltur

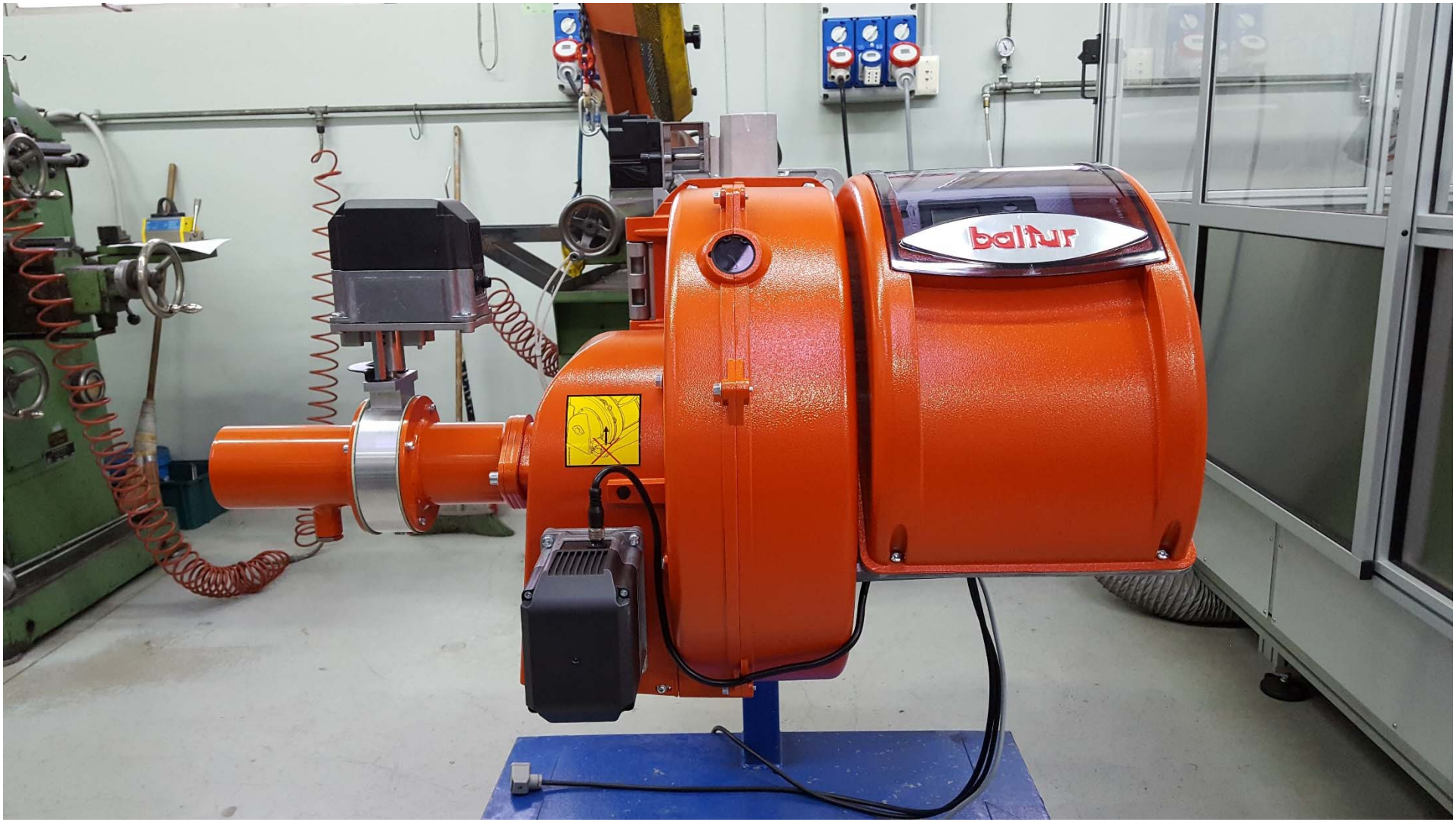
电话：137 8118 1615

2018Baltur新产品

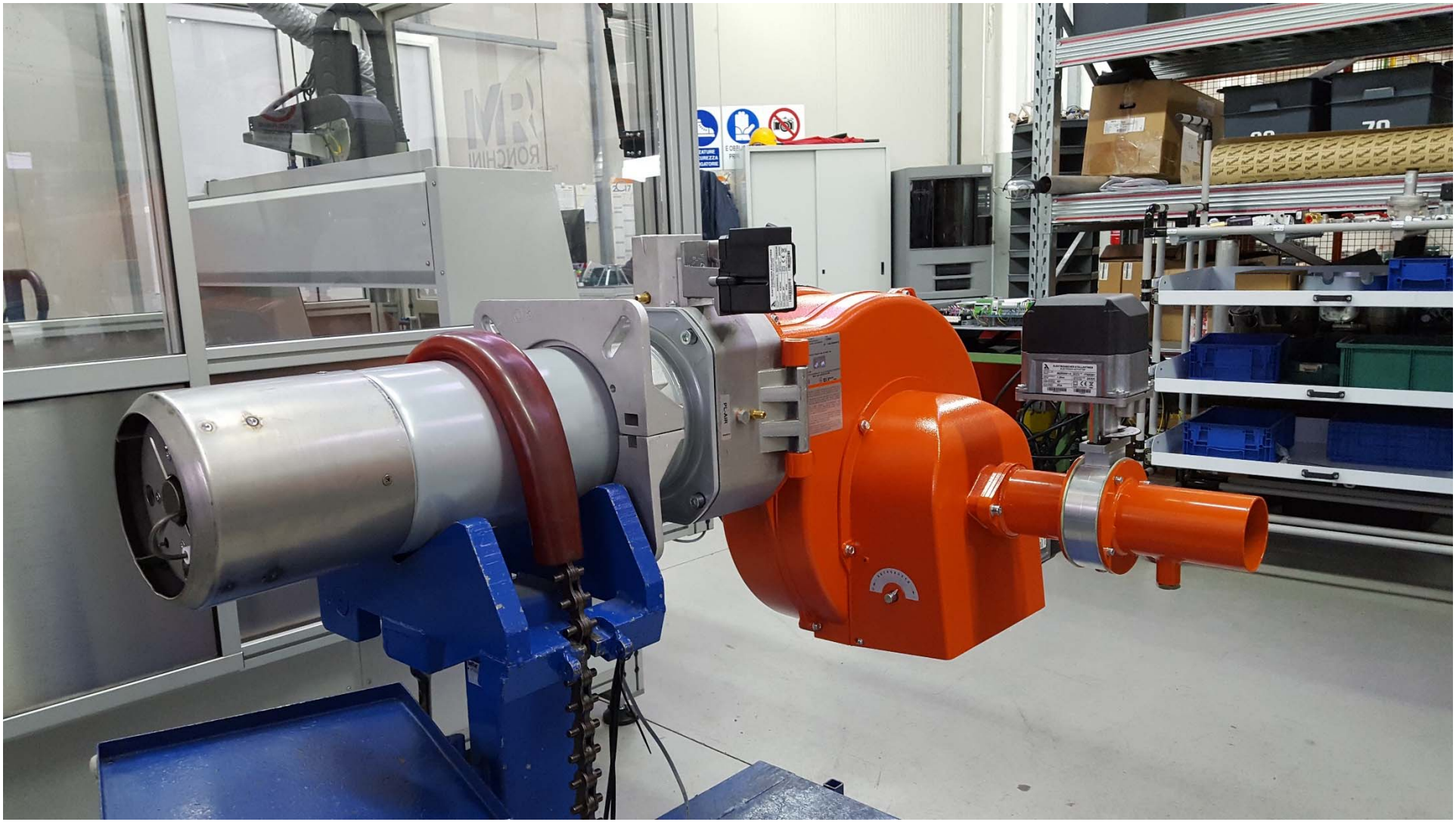
全系列一体式FGR燃烧器

TBG 80-200 LX ME FGR

TBG 80-200 LX ME FGR



TBG 80-200 LX ME FGR



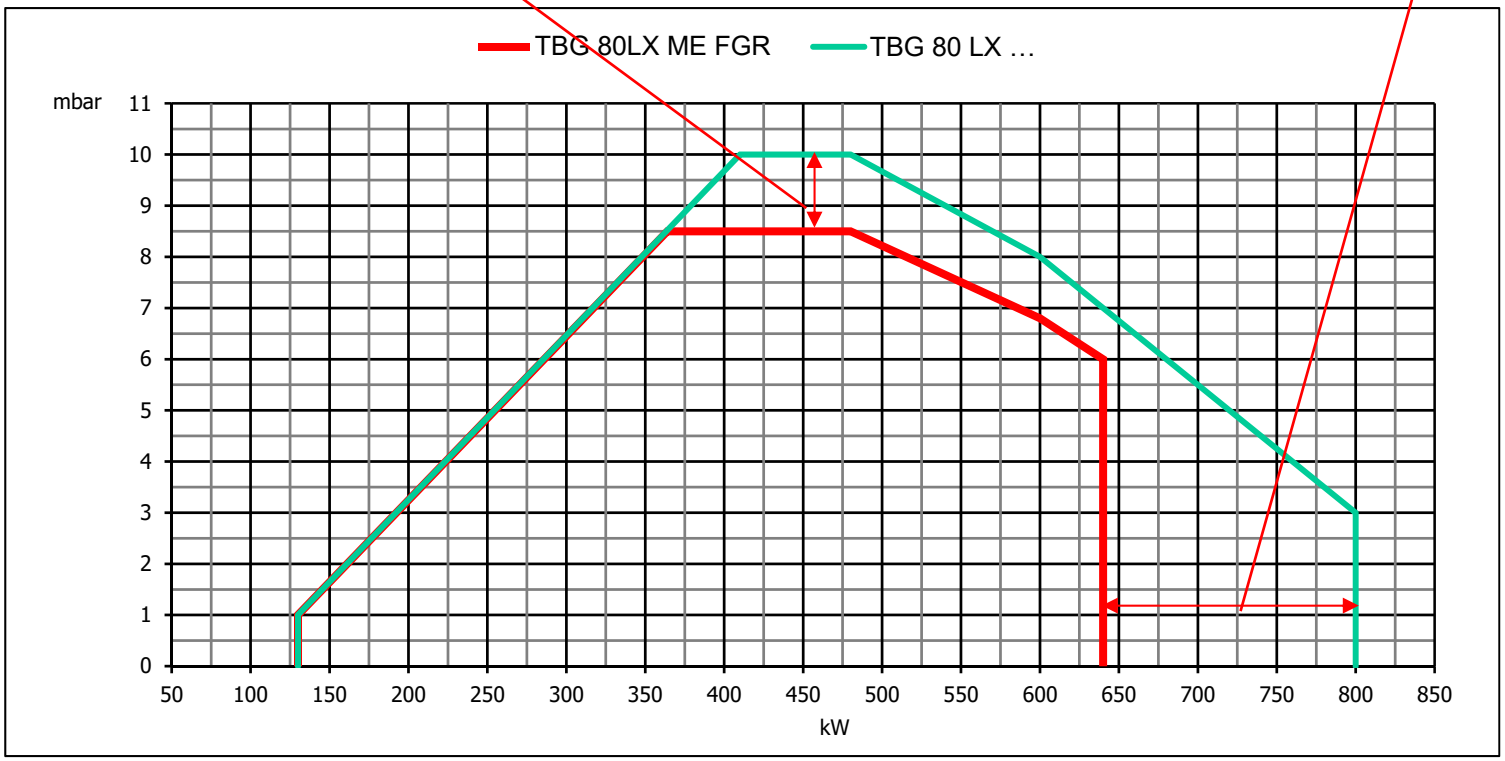
TBG 80-200 LX ME FGR

TBG 80 LX ME FGR

0.5 T 蒸汽锅炉用，出力范围130-640kW

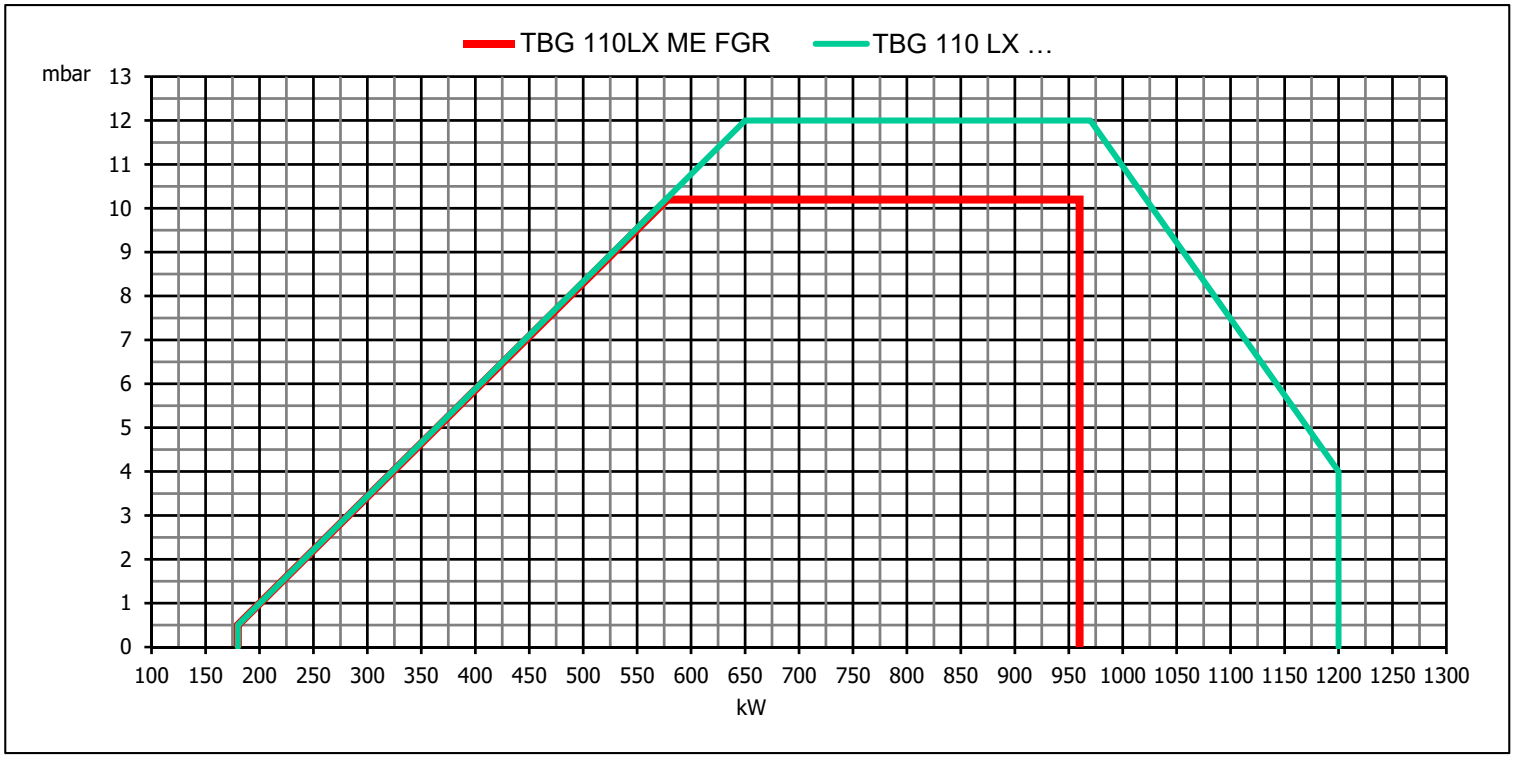
抗背压的降低：
燃烧空气密度的变化

出力的减少：
燃烧空气流量减少



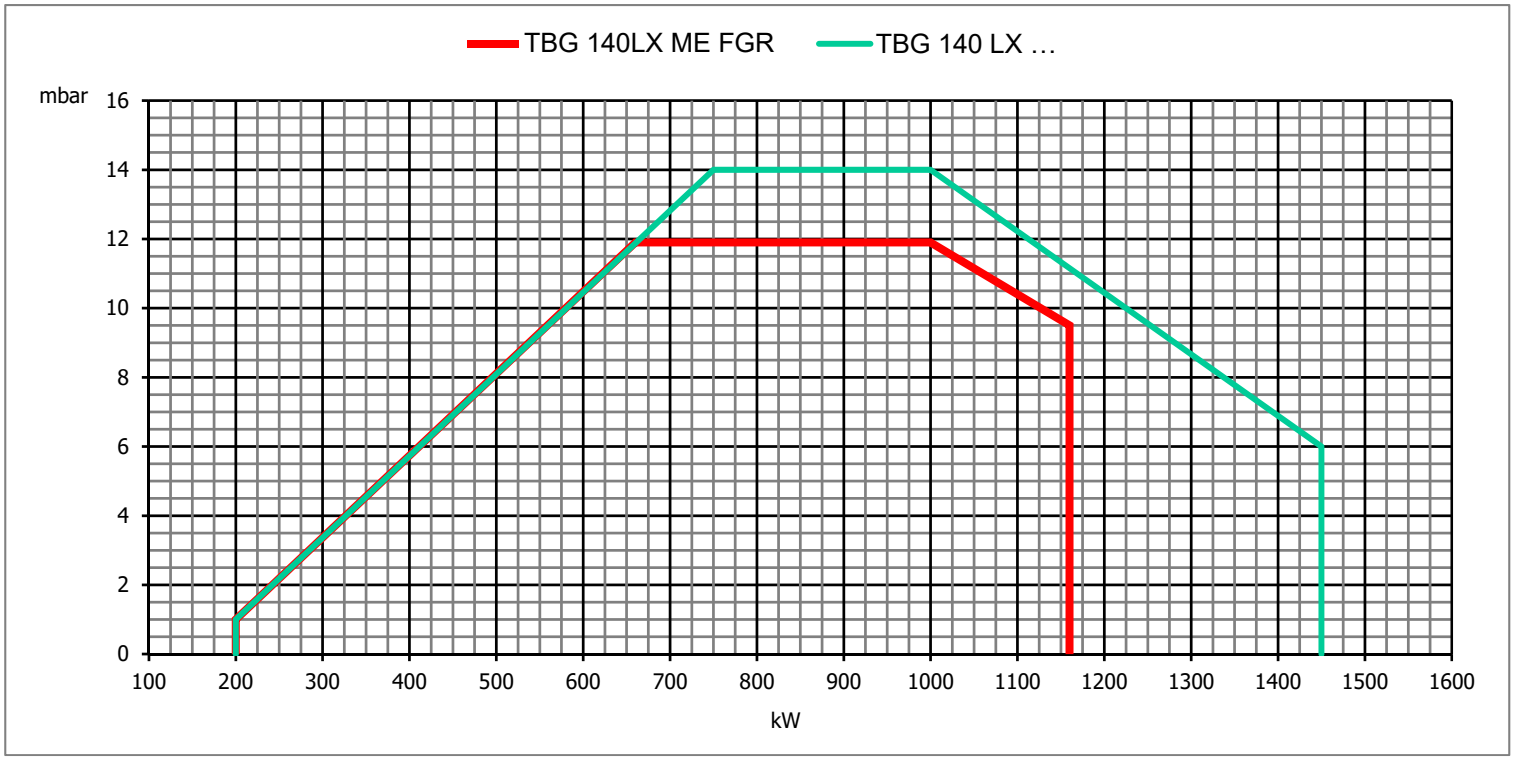
TBG 110 LX ME FGR

1T 蒸汽锅炉用，出力范围180-960kW



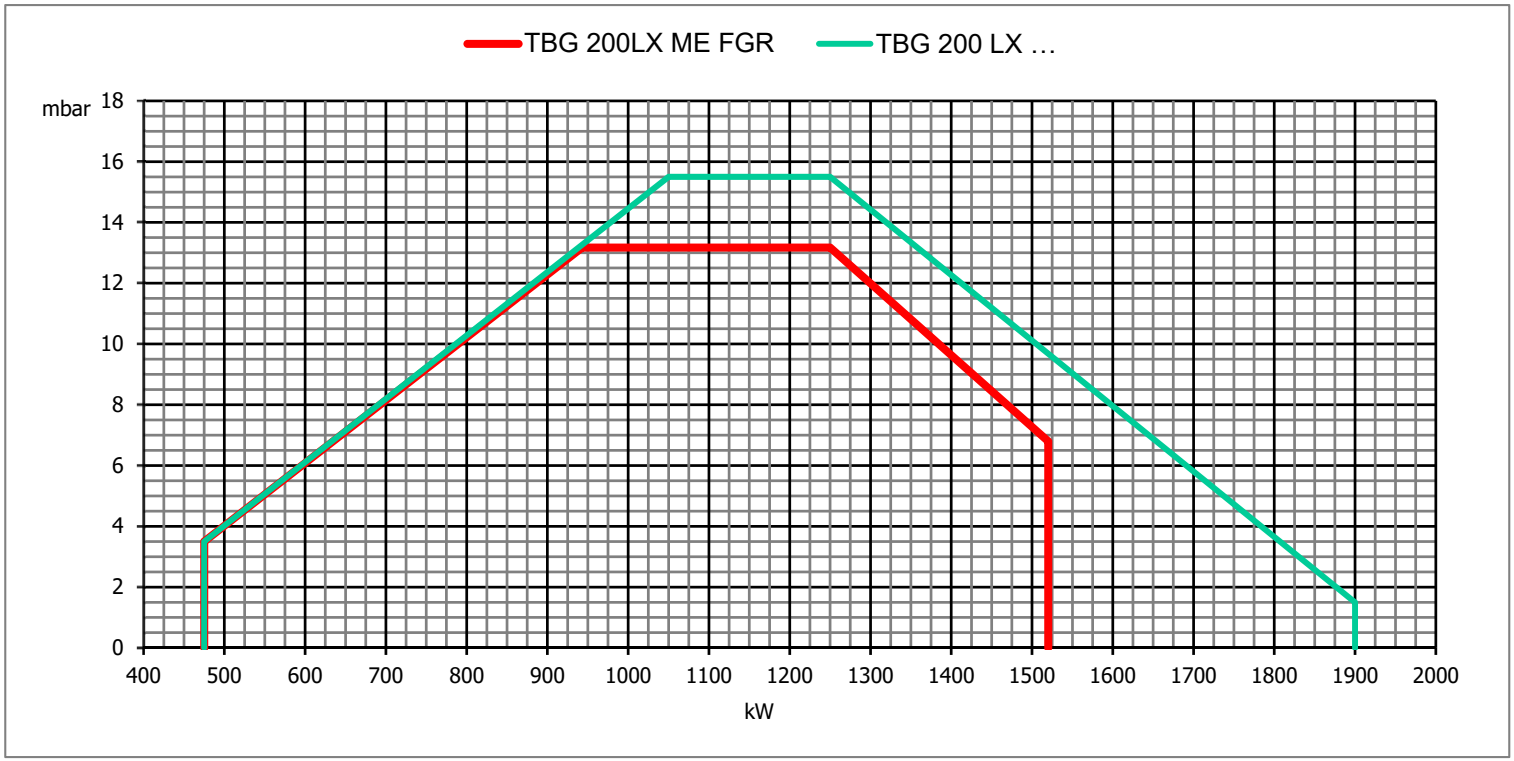
TBG 140 LX ME FGR

1.5T 蒸汽锅炉用，出力范围200-1200kW

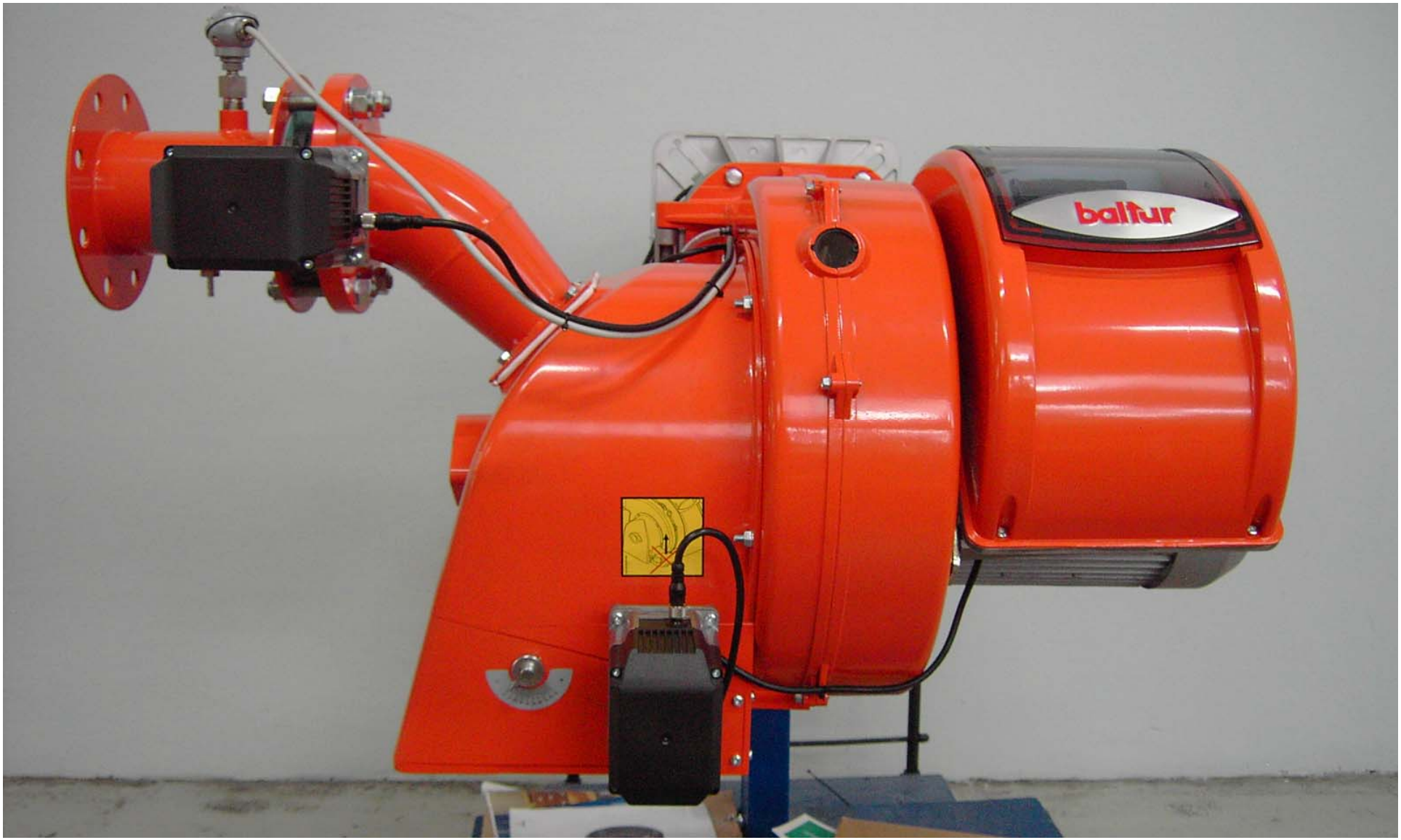


TBG 200 LX ME FGR

1.5T 蒸汽锅炉用，出力范围475-1520kW

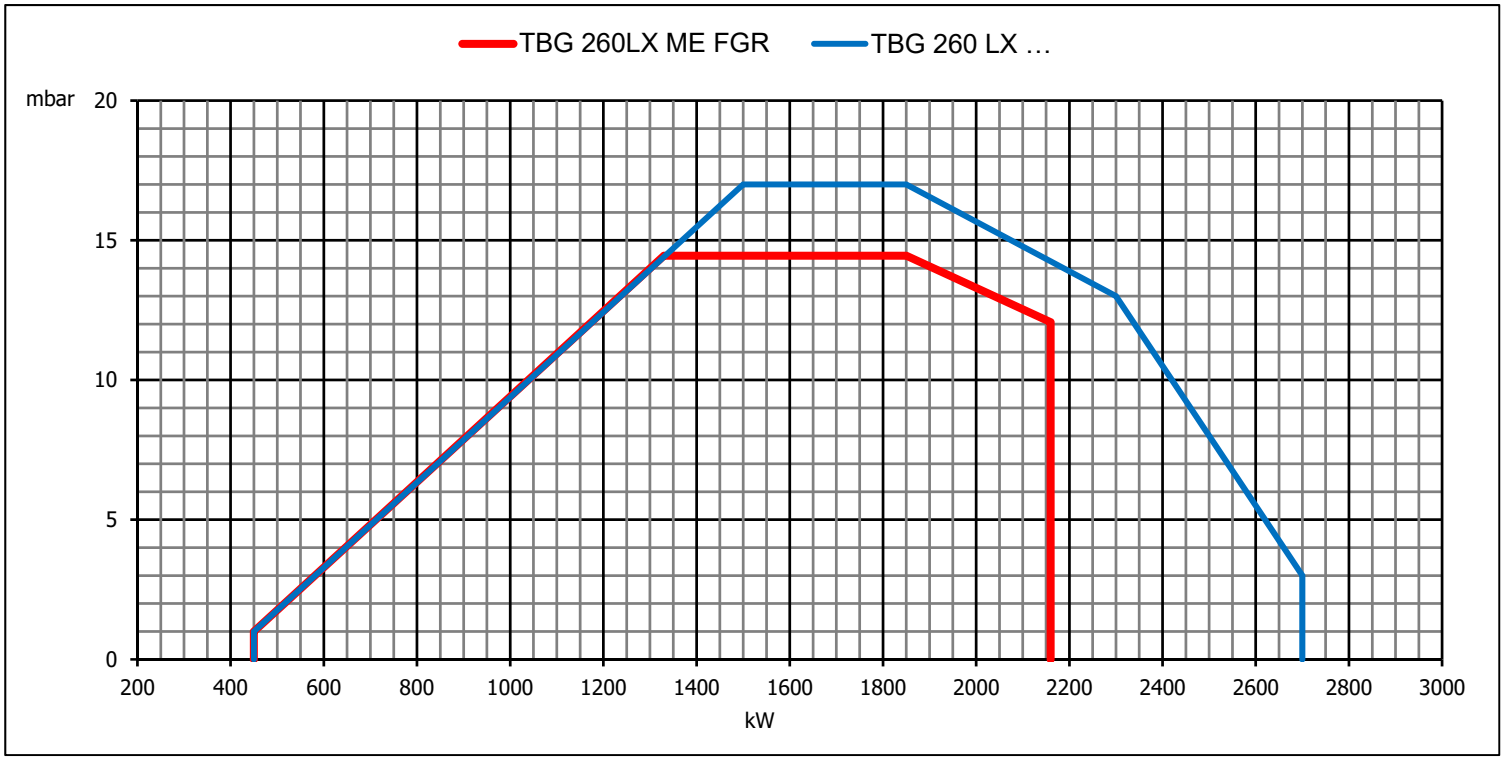


TBG 260-480 LX ME FGR



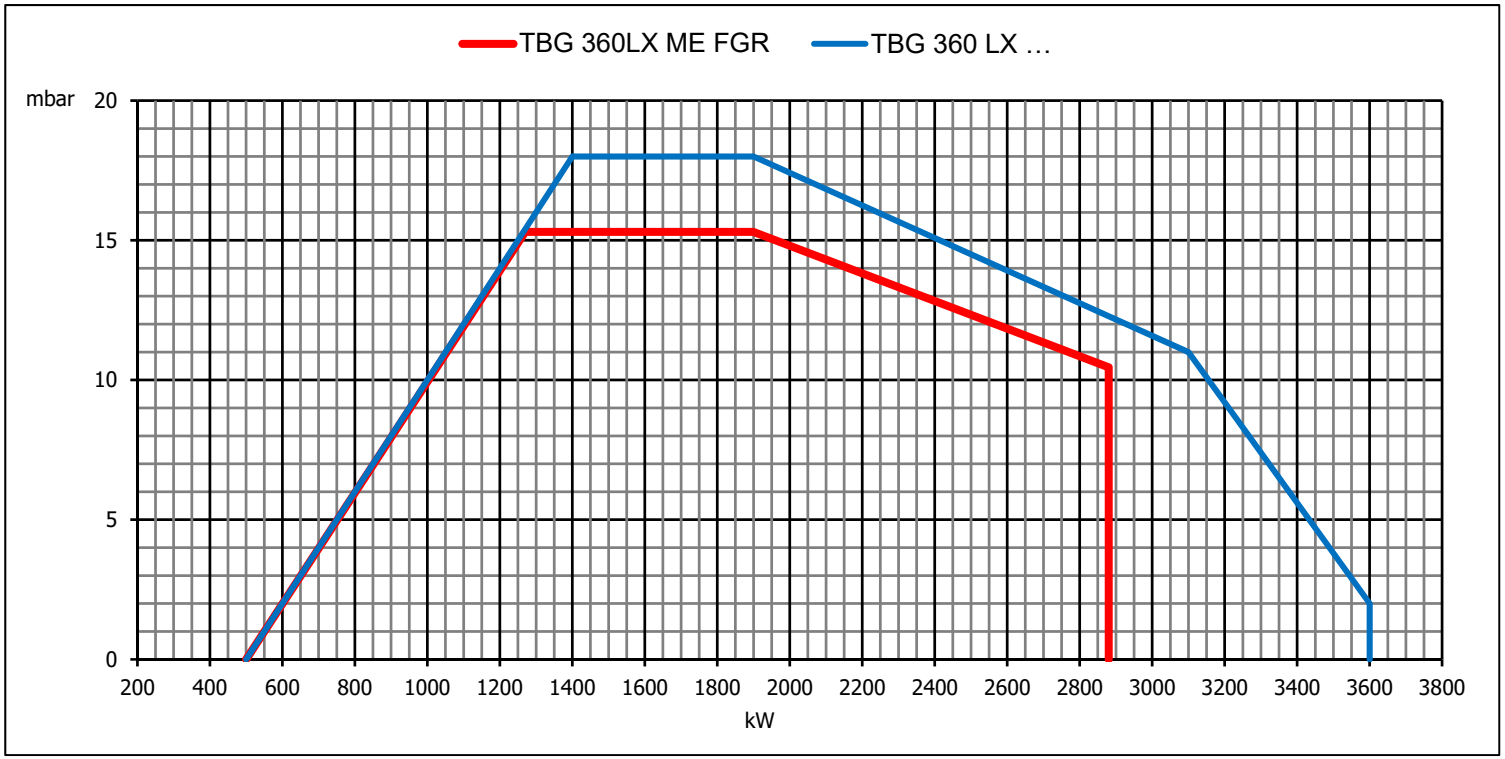
TBG 260 LX ME FGR

2T 蒸汽锅炉用，出力范围450-2160kW



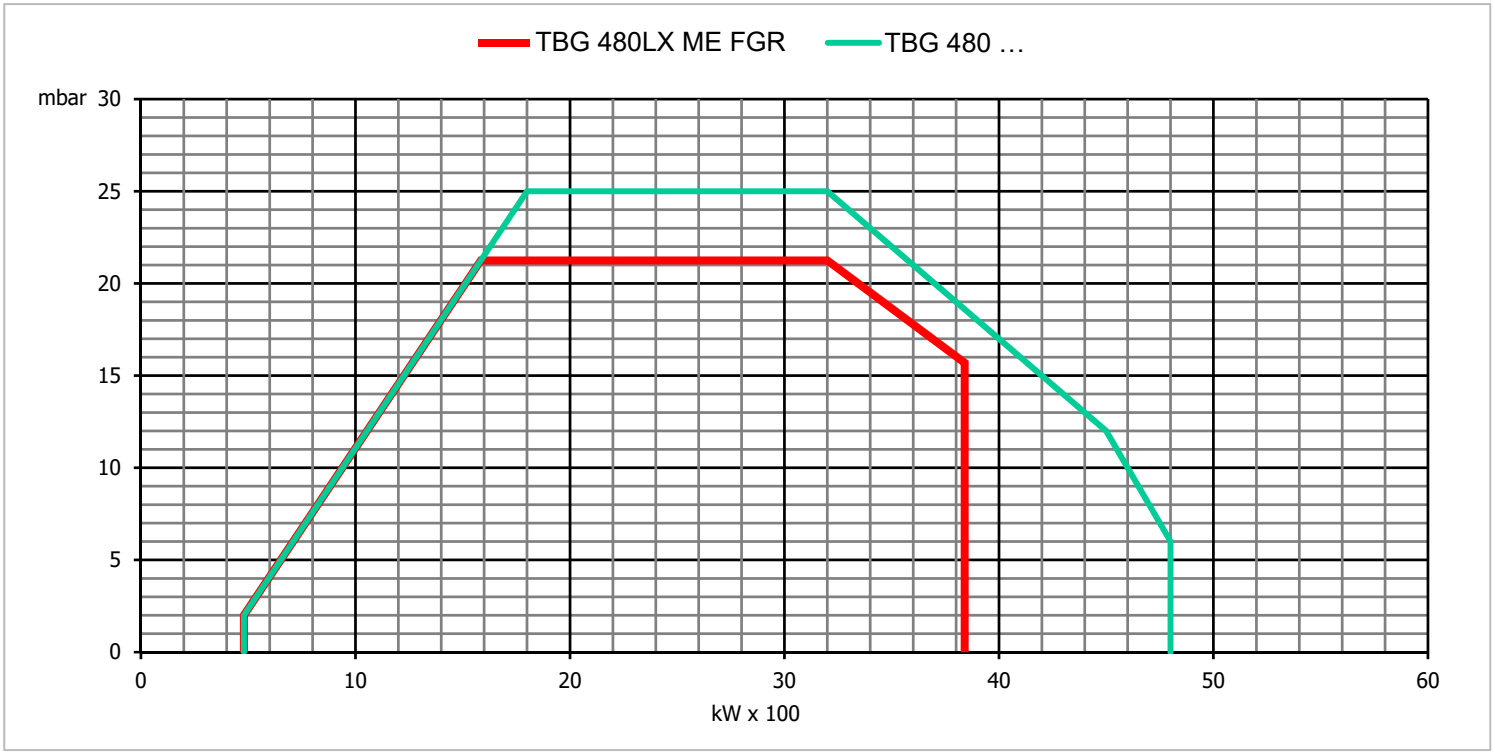
TBG 360 LX ME FGR

3T 蒸汽锅炉用，出力范围500-2880kW

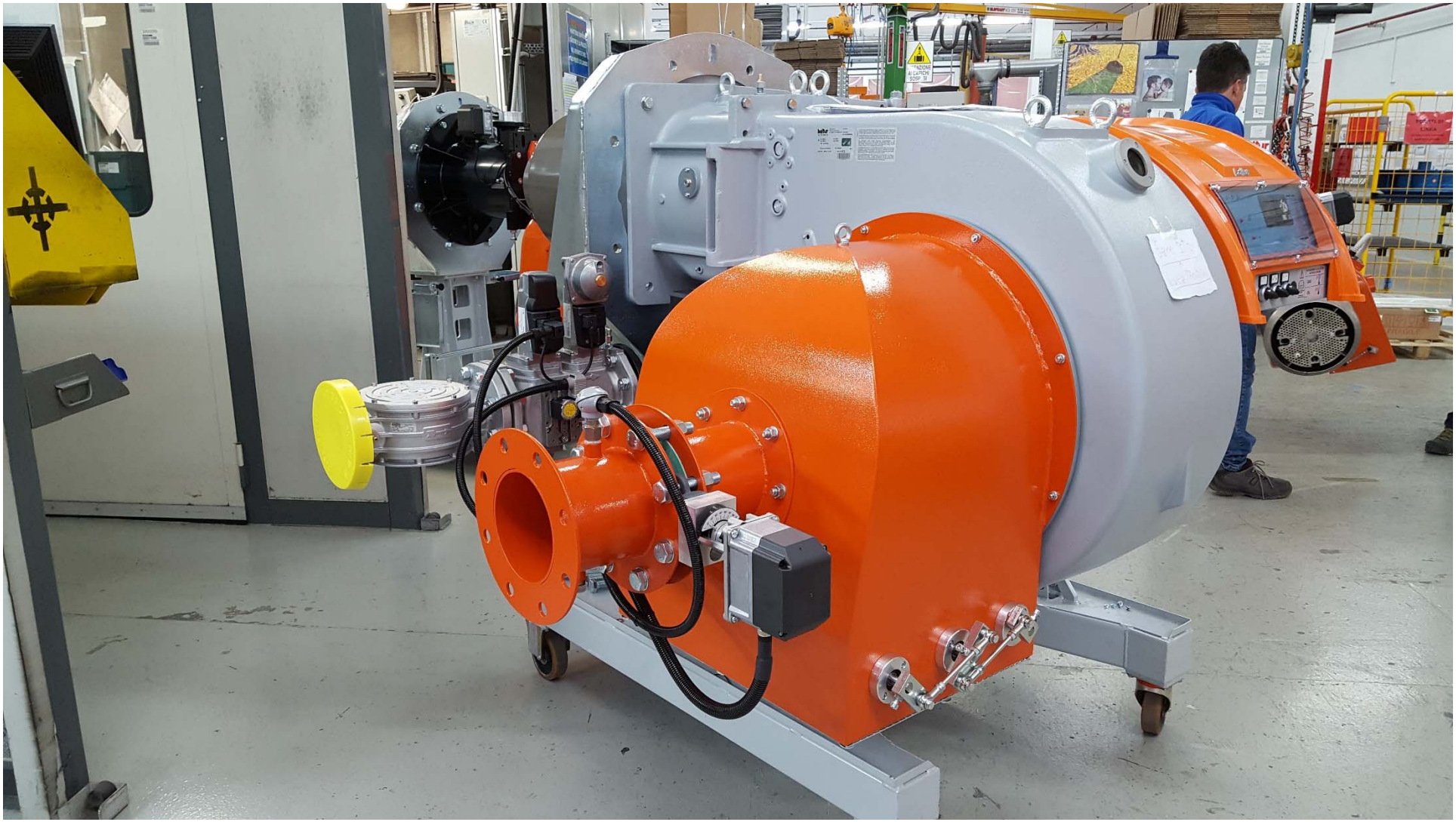


TBG 480 LX ME FGR

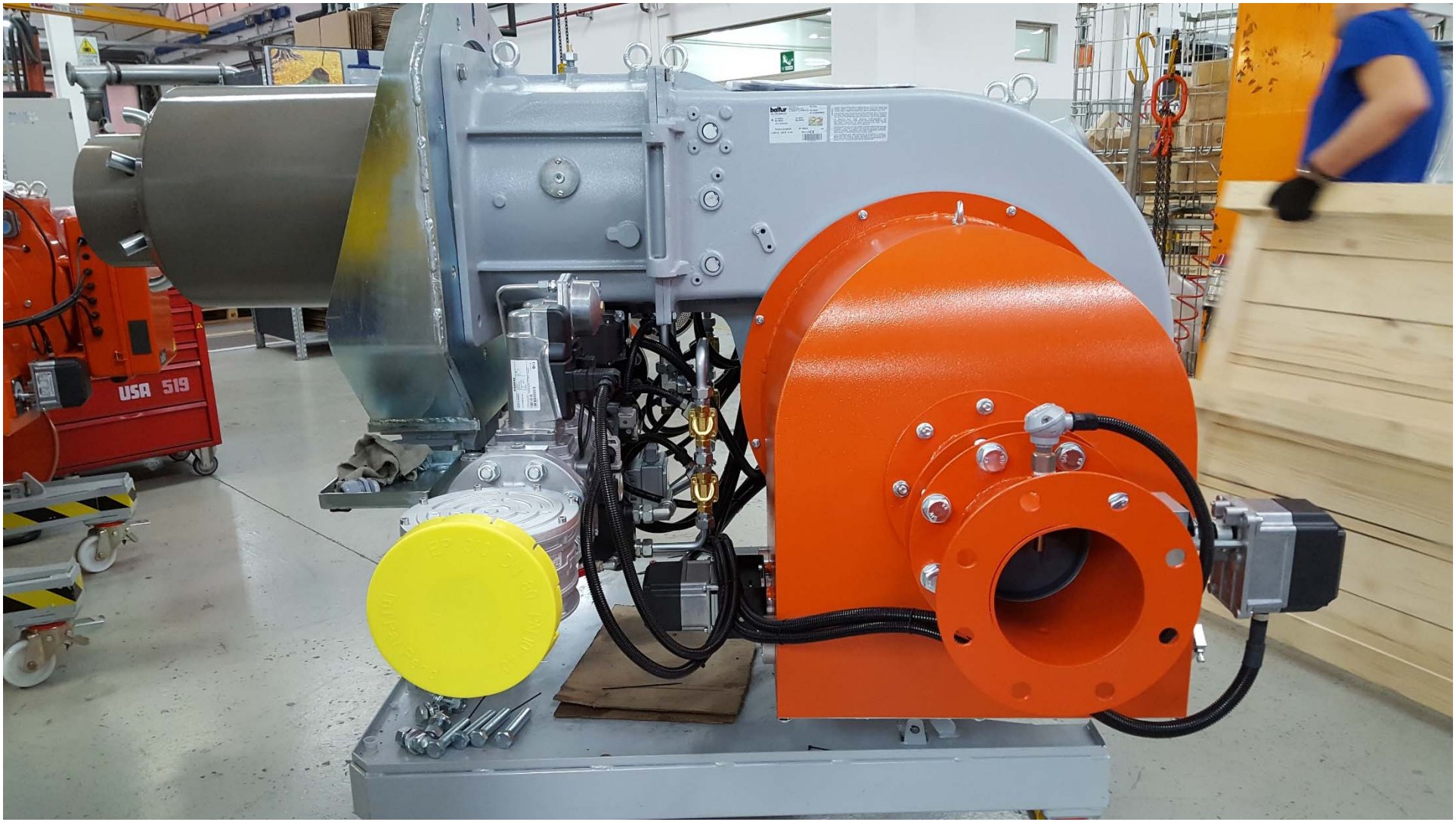
4T 蒸汽锅炉用，出力范围480-3840kW



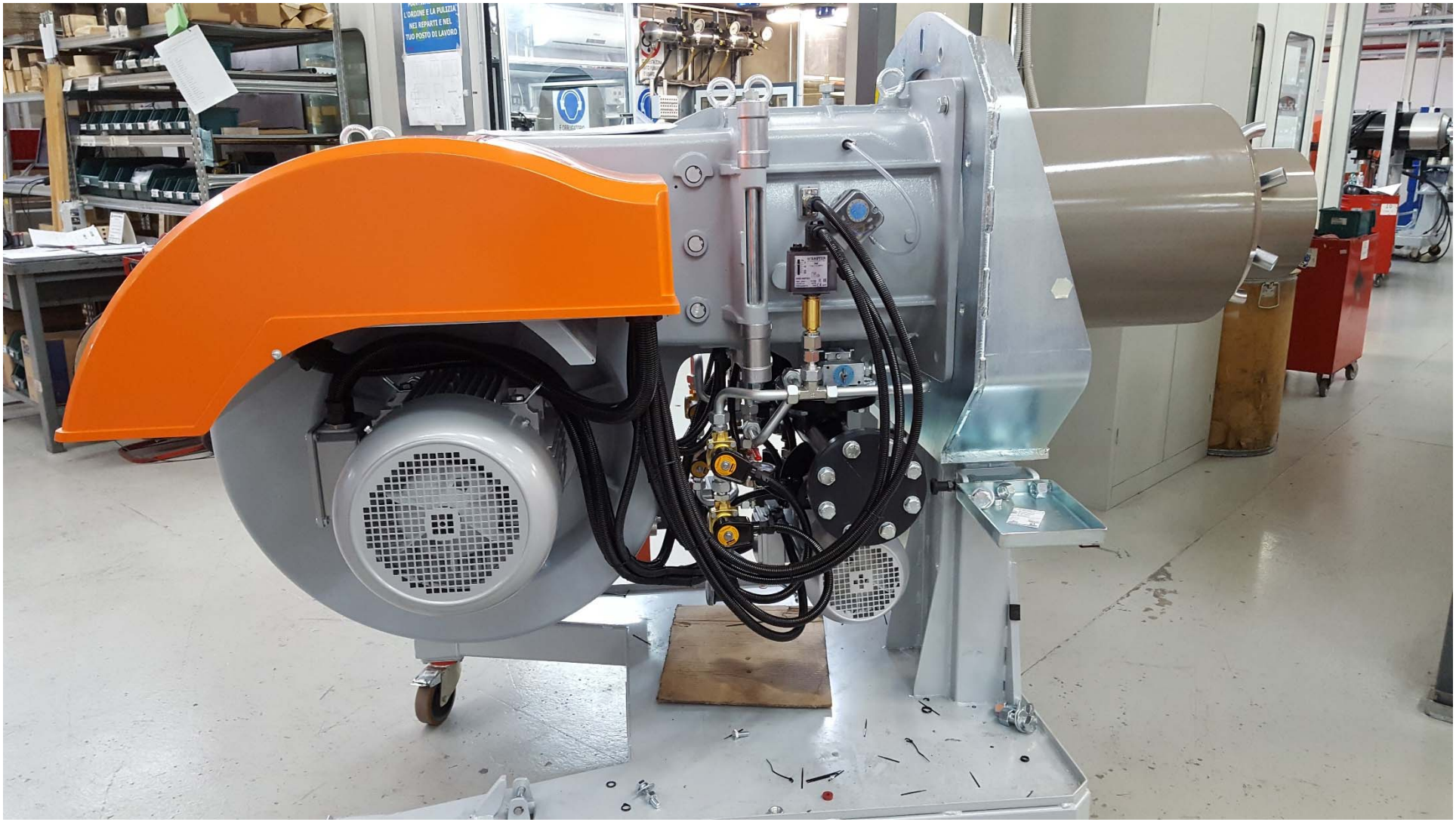
TBG 600-800 LX ME FGR



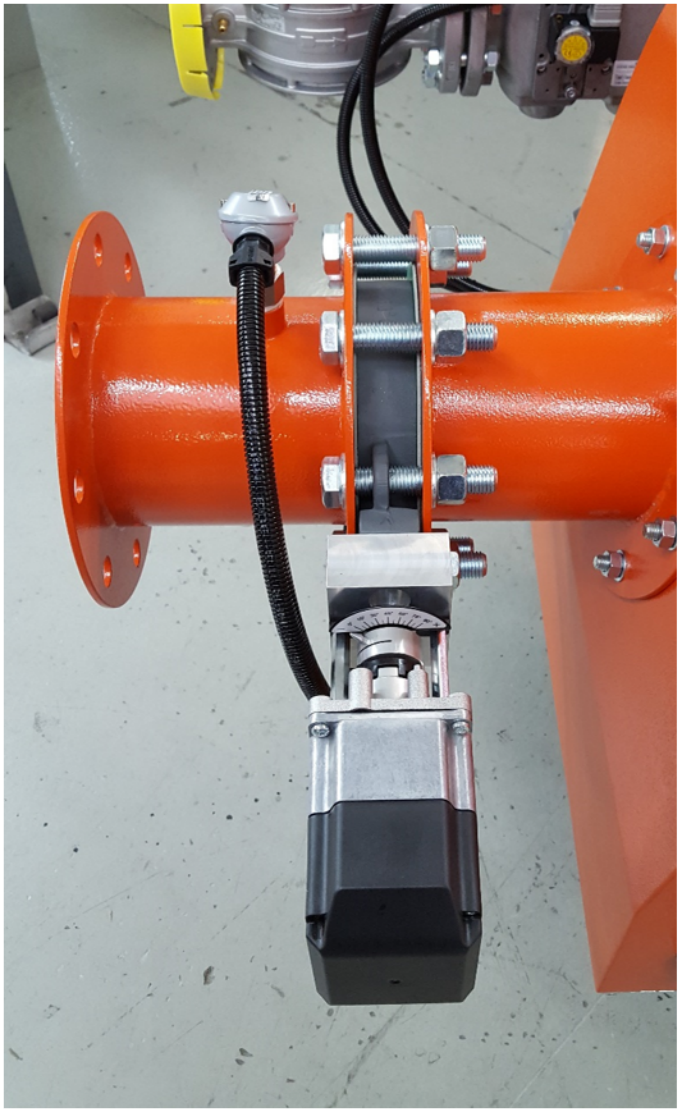
TBG 600-800 LX ME FGR

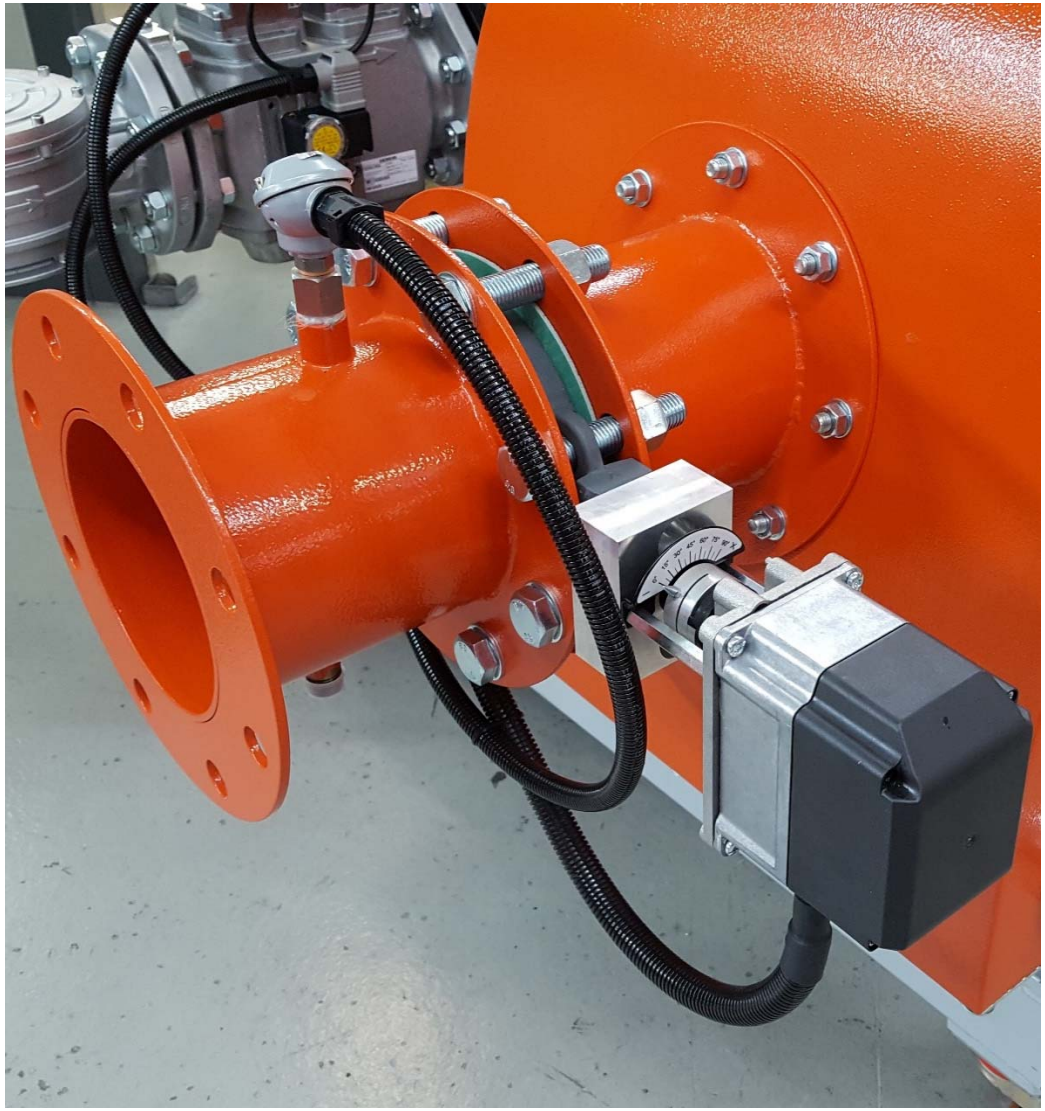


TBG 600-800 LX ME FGR



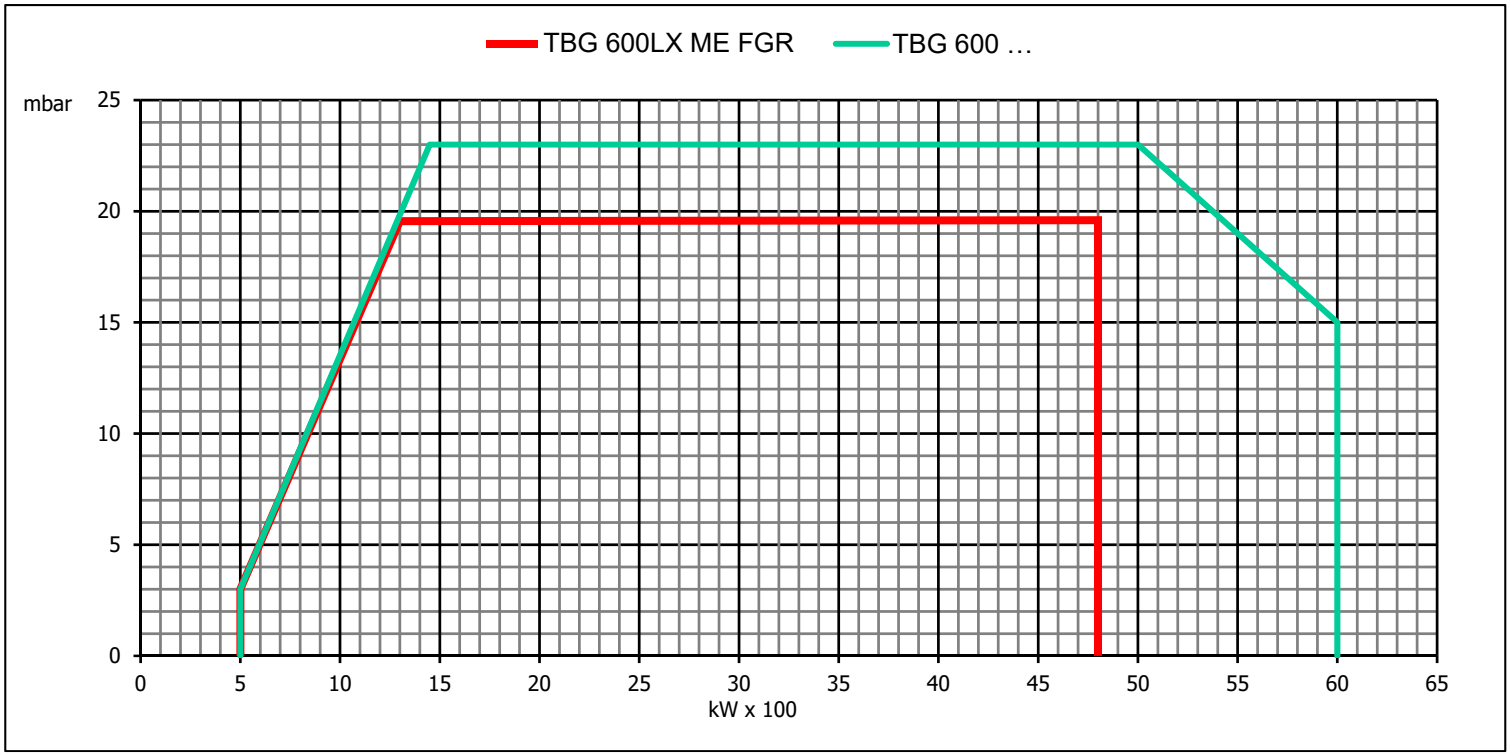
TBG 600-800 LX ME FGR





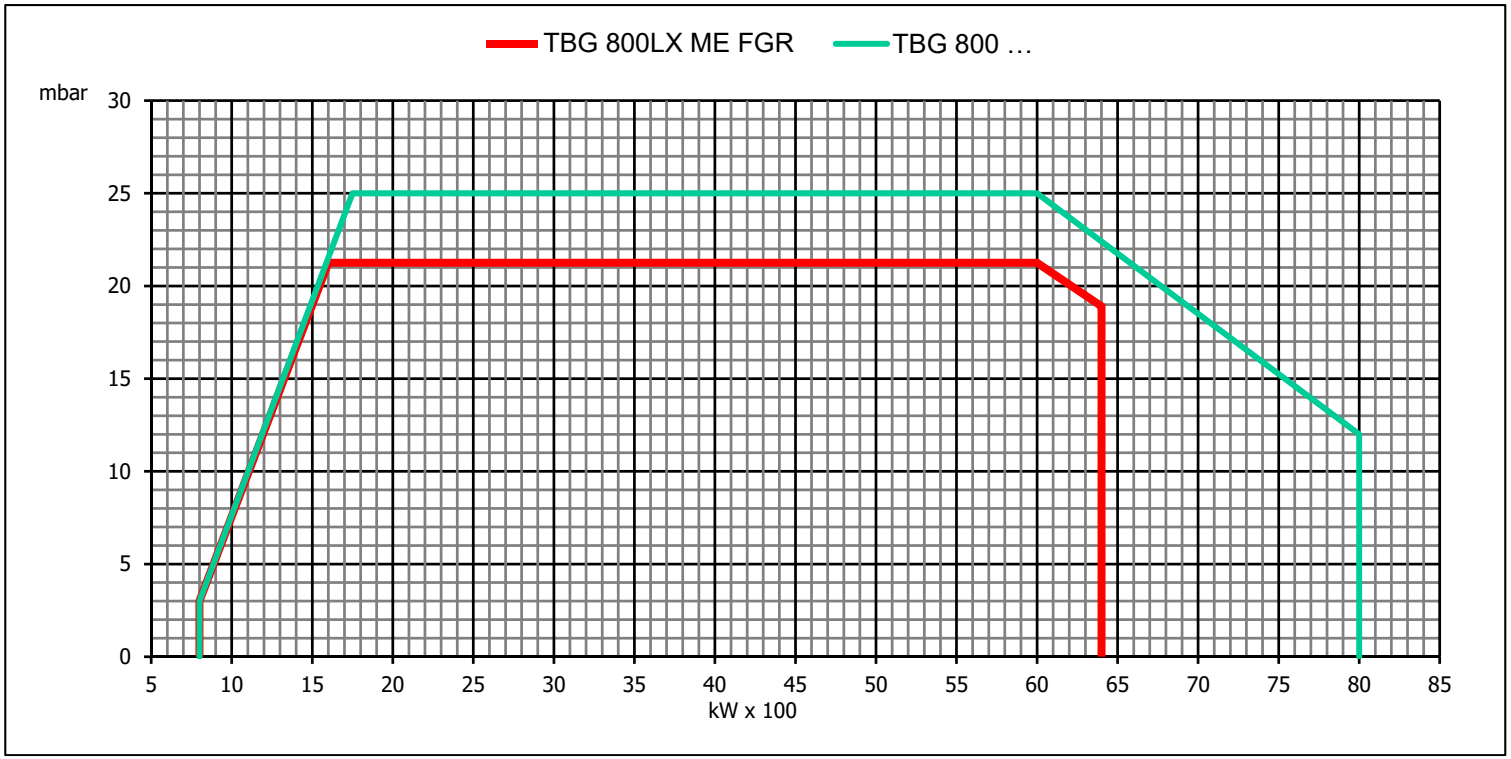
TBG 600 LX ME FGR

6T 蒸汽锅炉用，出力范围500-4800kW



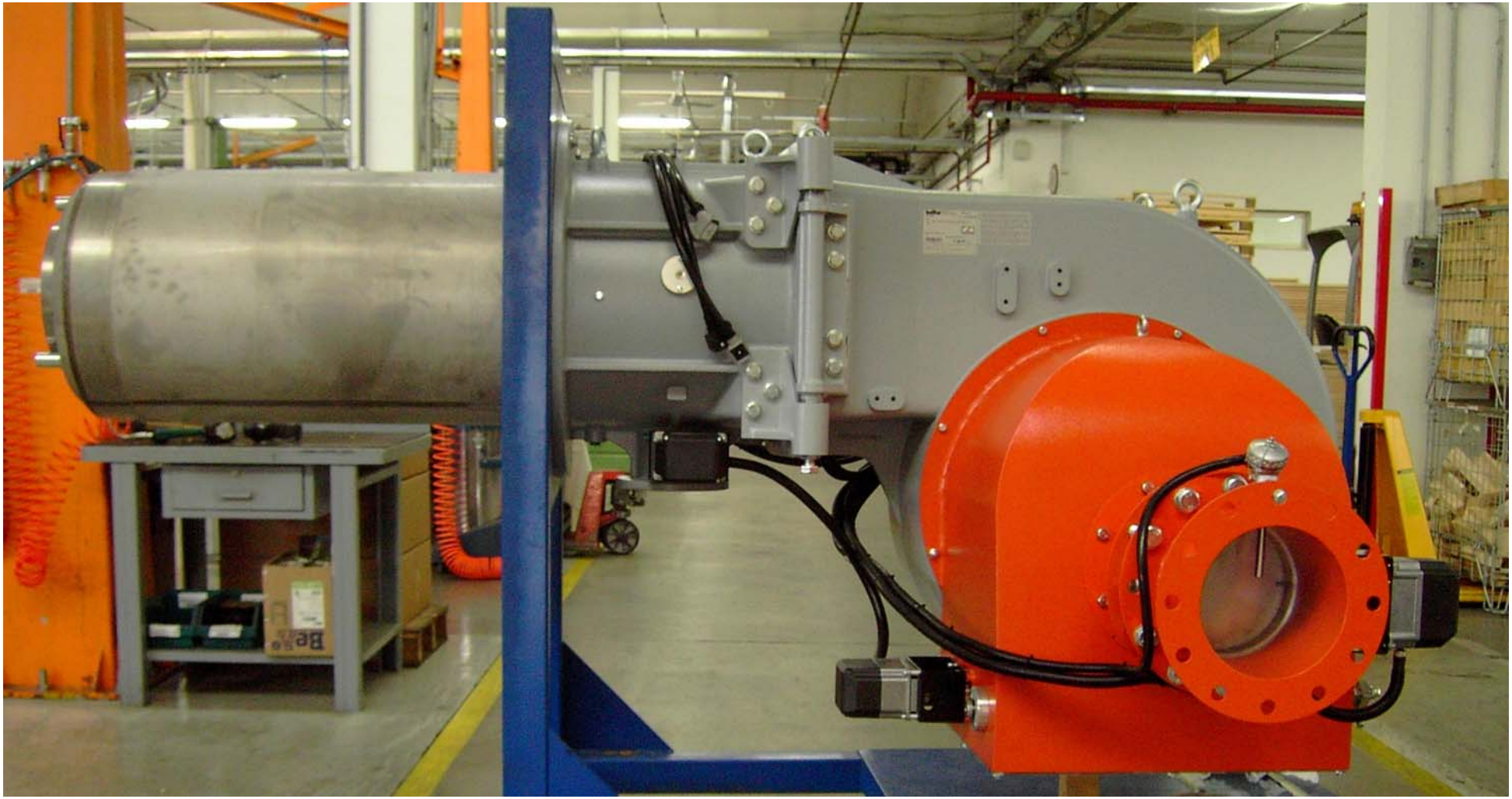
TBG 800 LX ME FGR

8T 蒸汽锅炉用，出力范围800-6400kW



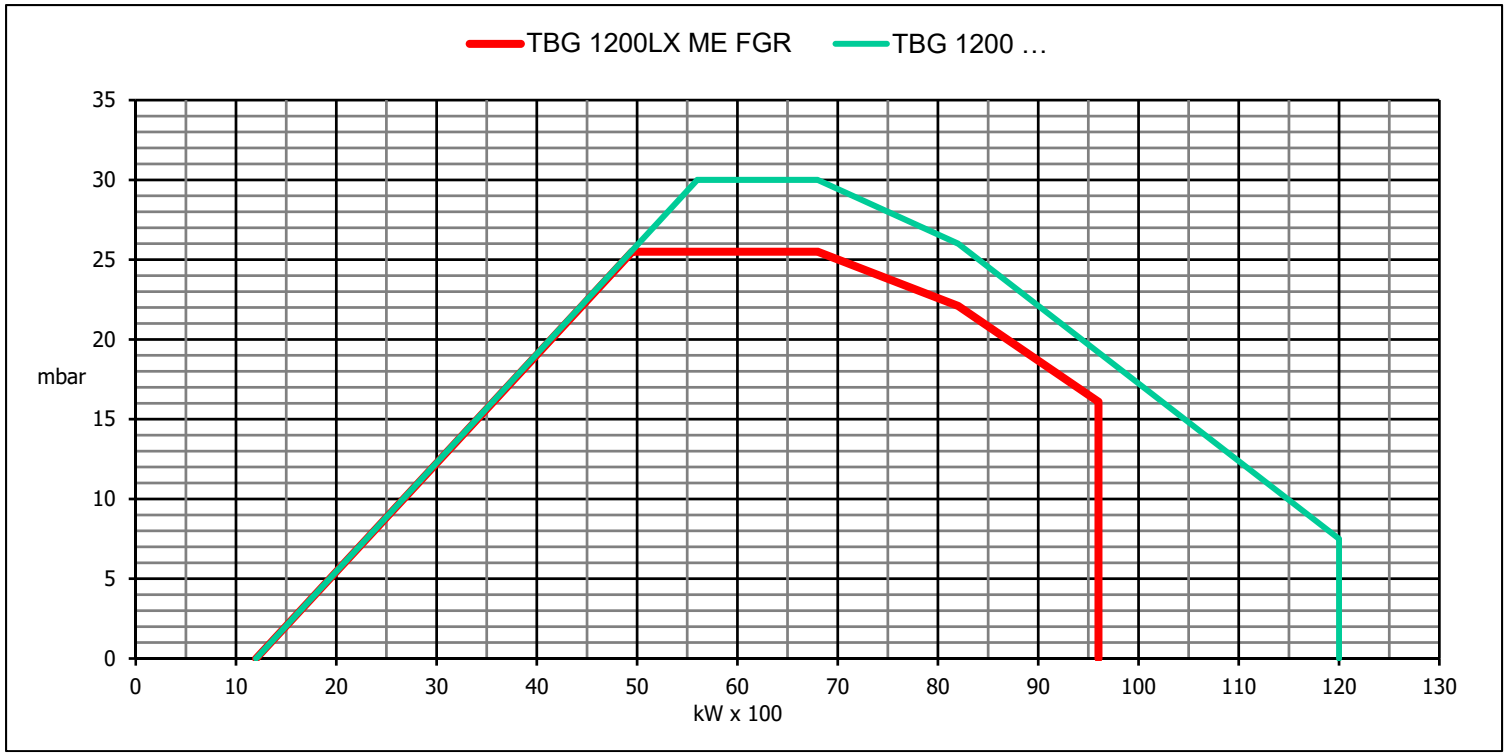
TBG 1200 LX ME FGR

TBG 1200 LX ME FGR



TBG 1200 FGR LX ME

10T 蒸汽锅炉用，出力范围1200-9600kW



一体式FGR燃烧器降低出力

FGR系统会降低燃烧器功率。FGR版本燃烧器功率降低的程度大致是20%，具体的降低量需要根据具体情况决定。

如果使用一体FGR燃烧器时，配备了烟气外循环系统。燃烧器叶轮会同时吸取助燃空气和烟气，并混合烟气和助燃空气。

因此，尽管供应的总气体量不变，但是其中的烟气会降低氧气的总浓度。助燃空气中氧气的减少，会降低燃烧器功率。

百得一体FRG的燃烧器的程控器

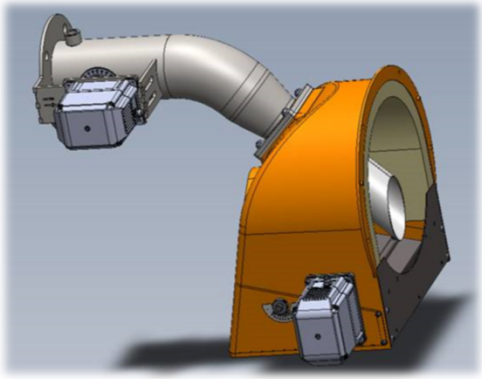
LAMTEC BT330:

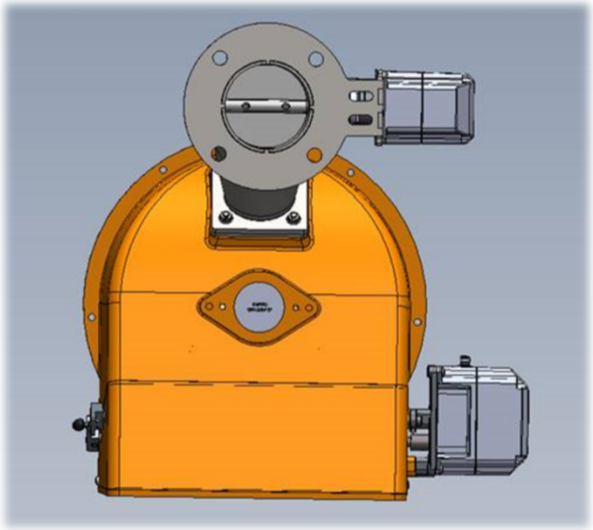
- 3 伺服电机控制输出
- 1 模拟控制输出 0 - 10 V, 0/4 - 20 mA
  for用于通过VSM100(可选性)控制助燃空气风机速度。
- 可以连续工作，同时火检也要能连续工作

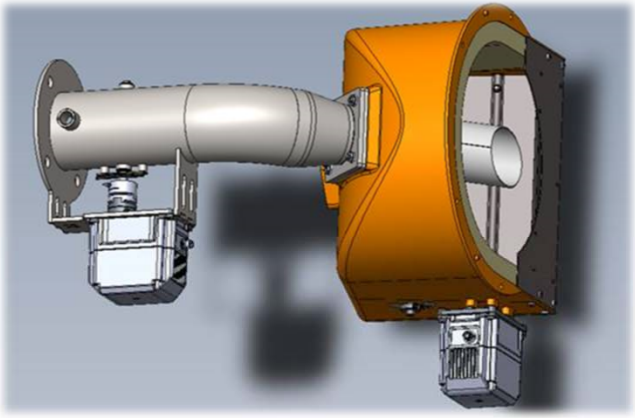
百得一体FRG的燃烧器的UV

西门子 **QRA2 M**

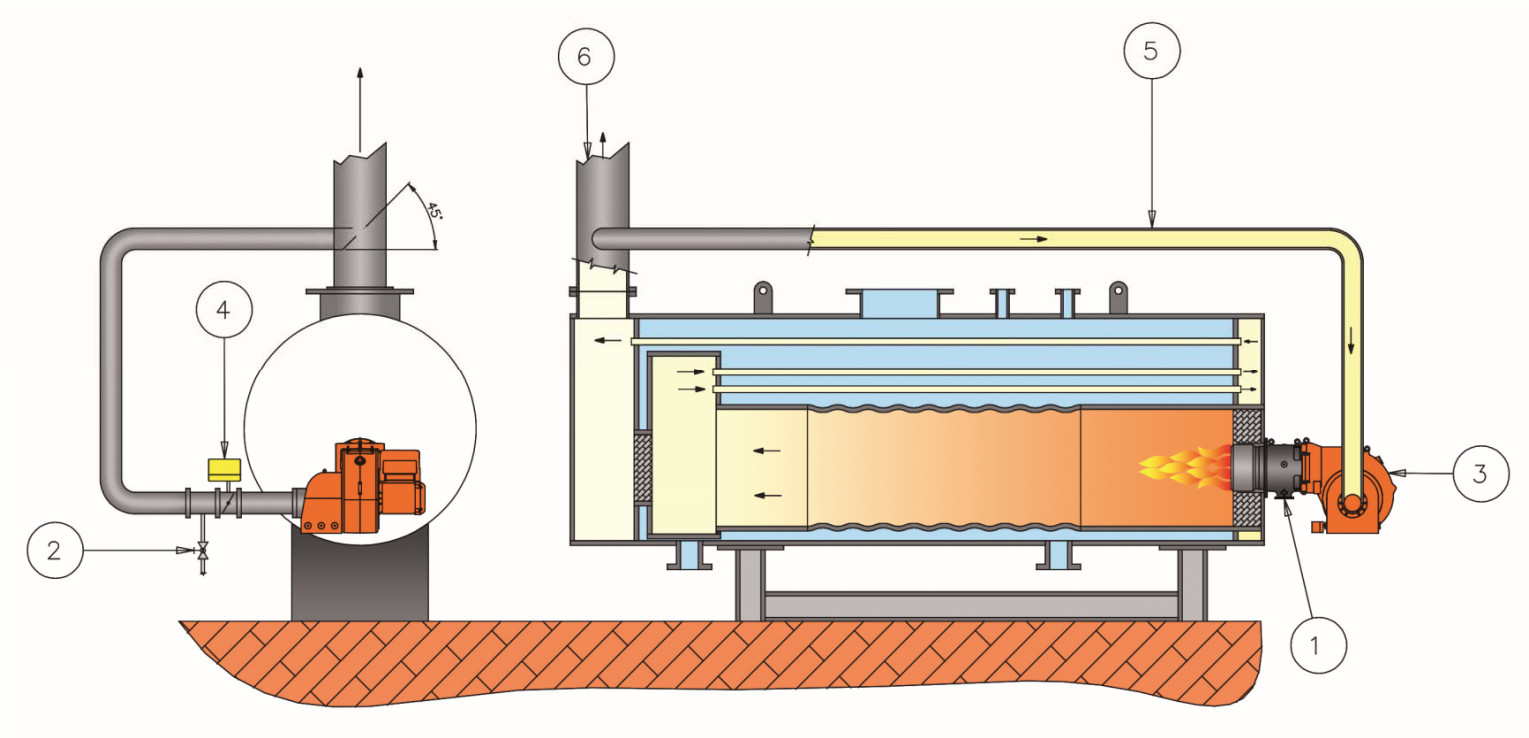
百得一体FRG的一体化的烟气蝶阀







一体机FGR燃烧器系统结构



1.燃气进口

2.冷凝水排放阀

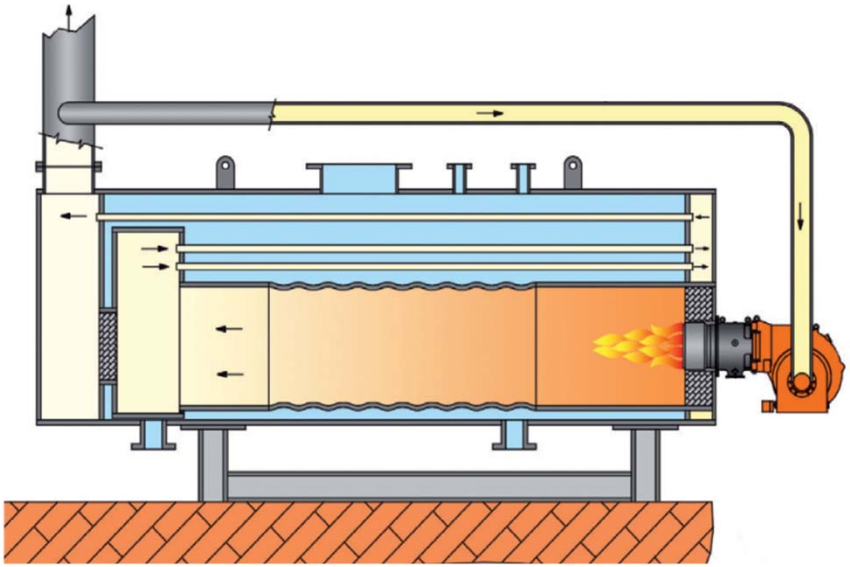
3.燃烧器

4.燃气回流阀

5.烟气再循环管

6.烟囱

百得推荐的炉膛尺寸的条件



建议的尺寸基于以下条件：

1.蒸汽锅炉 P=12 bar, Tvap.=198° C。

2.锅炉结构是三回程。

3.炉膛尺寸包括后烟室。

4.从热交换器前回收烟气 。

5.单位燃烧强度F.I ,百得建议1 < F.I. < 1.3 [MW/m3]

6.满足以上条件，百得能保证燃烧器NOx的排放到达50mg/m3

对于其他情况的炉膛尺寸，请联系当地销售办公室。

单位燃烧强度（热负荷）F.I. [MW/m^3]

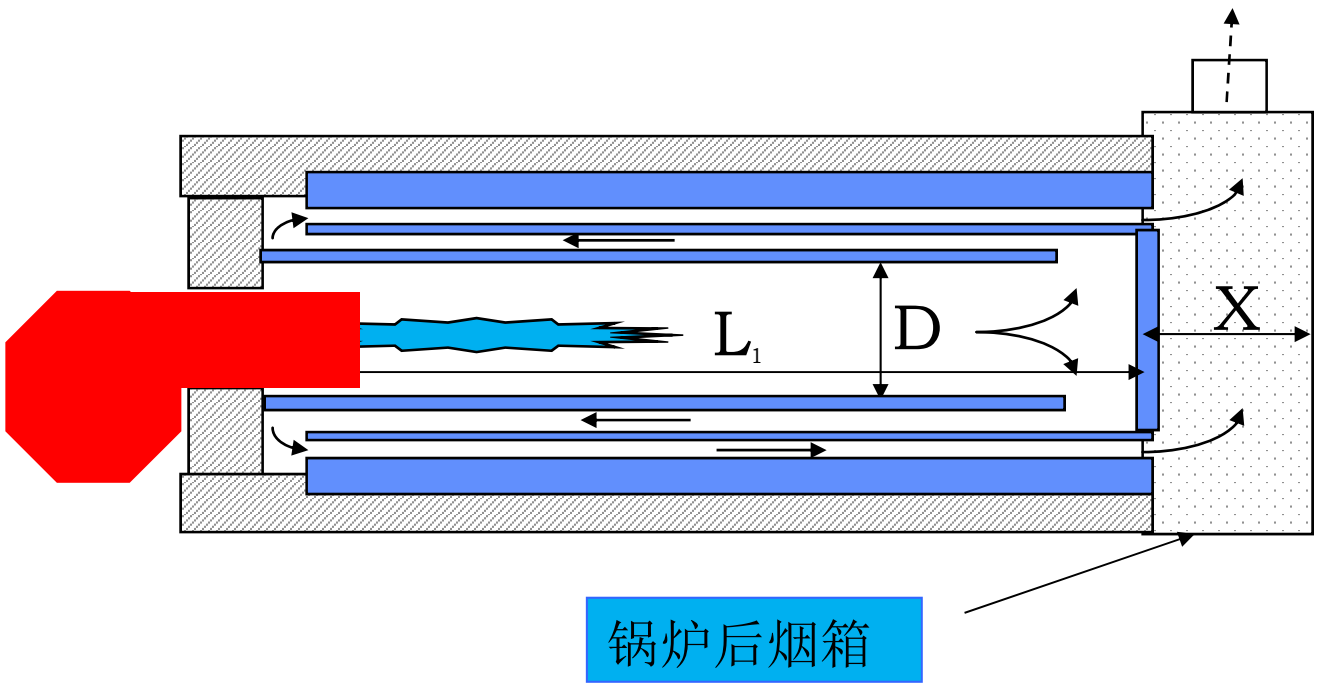
$$F.I. = \frac{[MW]}{V_F}$$

MW = 燃烧器输出 [MW]
V_F = 燃烧炉膛的容积 [m^3]

为了获得尽可能低的NOx 排放值， F.I. 值必须尽可能的低。
欧洲的锅炉制造商在三回程锅炉中(为获得低NOx排放值适合的锅炉几何尺寸)考虑采用以下值

1 [MW/m^3] < F.I. < 1,3 [MW/m^3]

燃气燃烧器商用锅炉 (3-回程)



$$L = 0.20 - 0.23 \cdot \sqrt{\frac{kW}{10}}$$

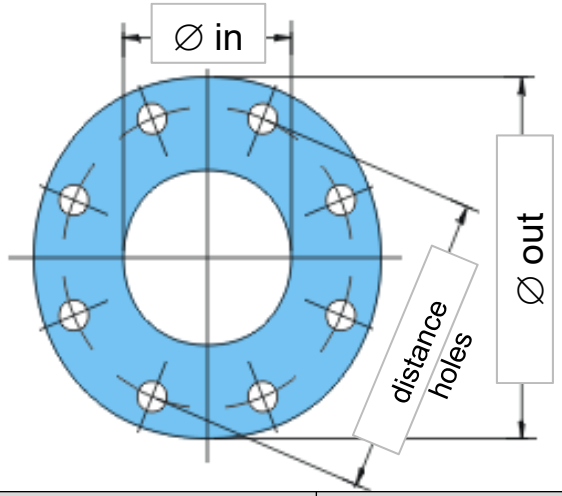
燃烧炉膛的长度被扩展为 $L=L_1+X$

$$D = 0.12 - 0.14 \cdot \sqrt[3]{\frac{kW}{10}}$$

百得推荐的炉膛尺寸

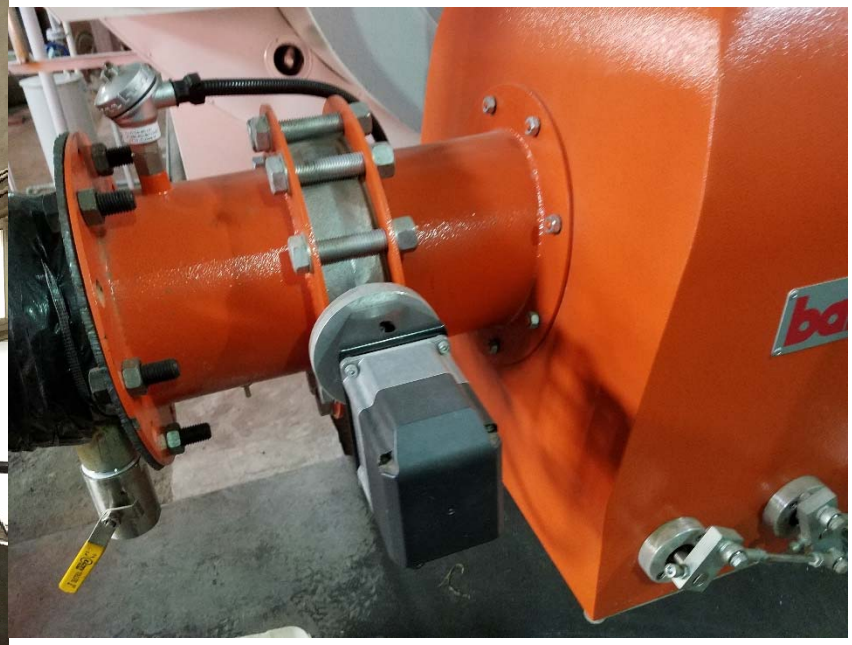
锅炉	Baltur 燃烧器型号	输出[t/h]	直径 [mm]	长度[mm]	炉膛容量 [m3]	燃烧器热输出[kW]	F.I [MW/m3]
0.5t/h(三回程）	TBG 80 LX ME FGR	0.50	525.00	1,400.00	0.30	383.50	1.27
1.0t/h(三回程）	TBG 110 LX ME FGR	1.00	630.00	1,950.00	0.61	767.00	1.26
1.5t/h(三回程）	TBG 140 LX ME FGR	1.50	710.00	2,350.00	0.93	1,150.50	1.24
2.0t/h(三回程）	TBG 260 LX ME FGR	2.00	770.00	2,650.00	1.23	1,534.00	1.24
3.0t/h(三回程）	TBG 360 LX ME FGR	3.00	890.00	2,950.00	1.83	2,301.00	1.25
4.0t/h(三回程）	TBG 480 LX ME FGR	4.00	950.00	3,400.00	2.41	3,068.00	1.27
5.0t/h(三回程）	TBG 480 LX ME FGR	5.00	1,020.00	3,600.00	2.94	3,835.00	1.30
6.0t/h(三回程）	TBG 600 LX ME FGR	6.00	1,100.00	3,950.00	3.75	4,602.00	1.23
8.0t/h(三回程）	TBG 800 LX ME FGR	8.00	1,200.00	4,700.00	5.31	6,136.00	1.15
10.0t/h(三回程）	TBG 1200 LX ME FGR	10.00	1,300.00	5,250.00	6.96	7,670.00	1.10

FGR燃烧器的法兰的尺寸



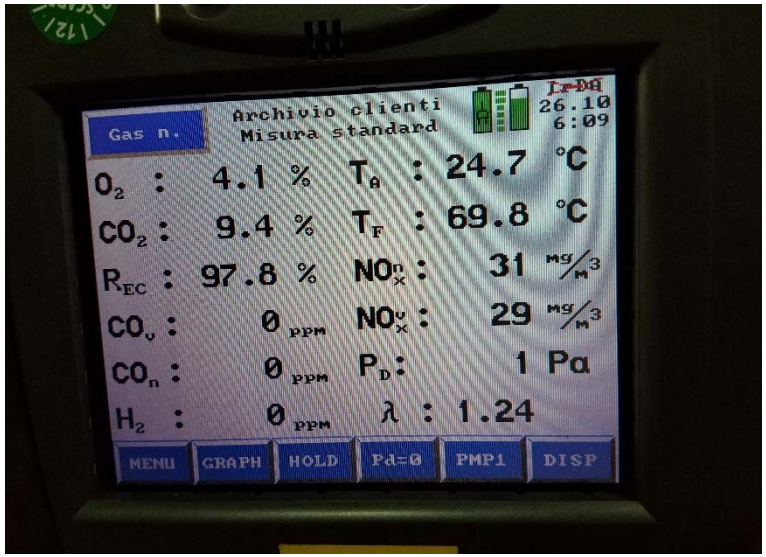
Burners models	Flange dimension	Æ out (mm)	Æ in (mm)	distance between holes (mm)	Numbers holes	holes diameter (mm)
TBG 80LX ME FGR	DN65	160	77.5	130	4	14
TBG 110LX ME FGR						
TBG 140LX ME FGR	DN80	190	90.5	150	4	18
TBG 200LX ME FGR						
TBG 260 LX ME FGR	DN100	210	116	170	4	18
TBG 360 LX ME FGR						
TBG 480 LX ME FGR	DN125	240	141.5	200	8	18
TBG 600 LXME FGR	DN150	265	170.5	225	8	18
TBG 800 LX ME FGR						
TBG 1200 LX ME FGR	DN200	320	221.5	280	8	18

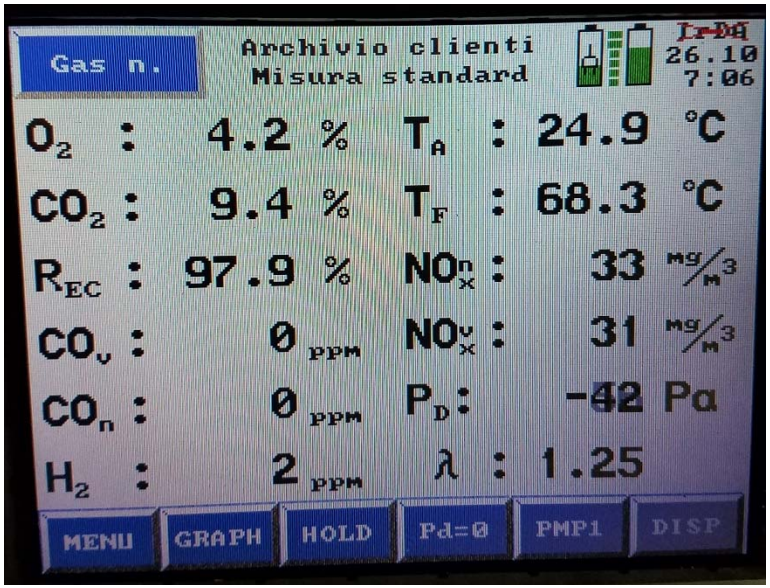
百得FGR燃烧器在中国区的应用

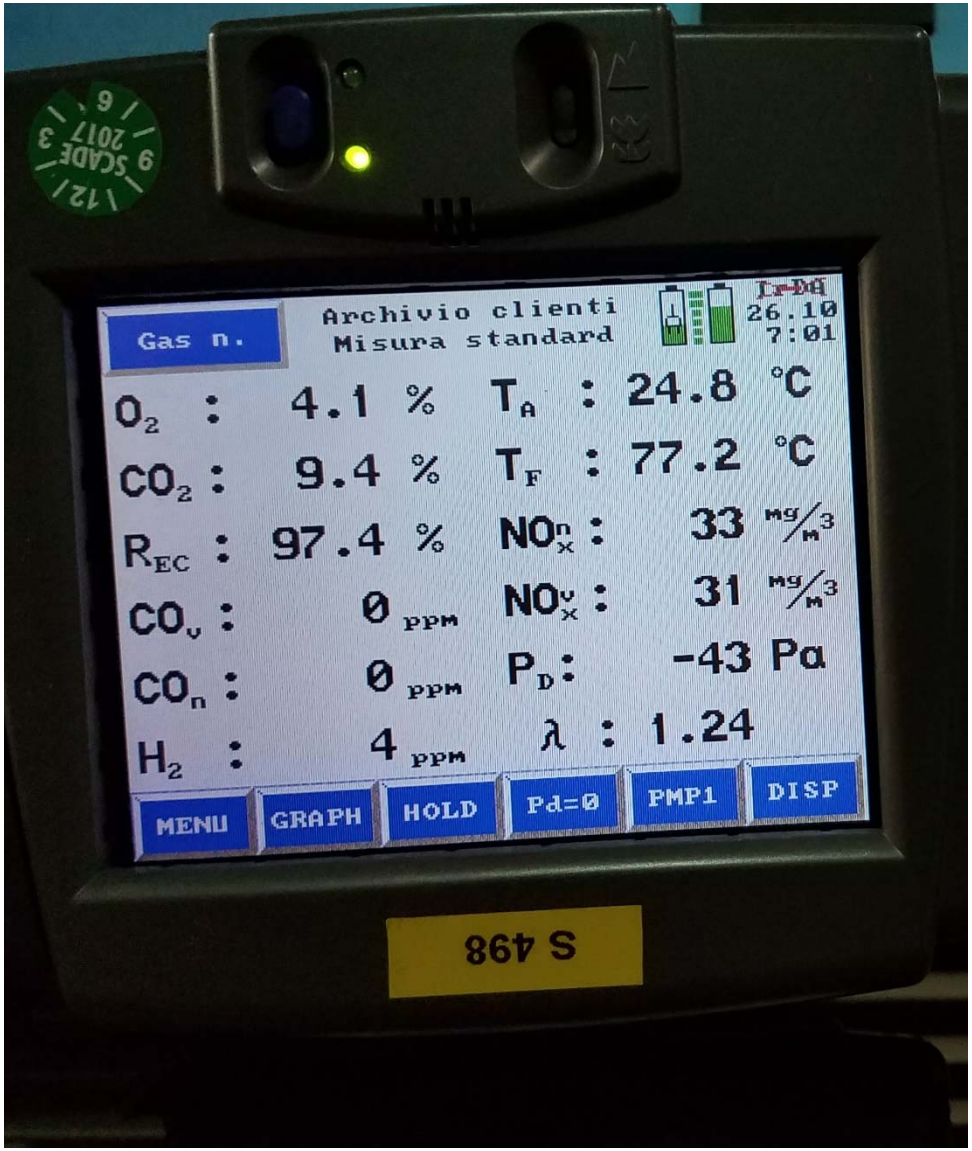


百得FGR燃烧器在中国区的应用

百得FGR燃烧器在中国区的应用

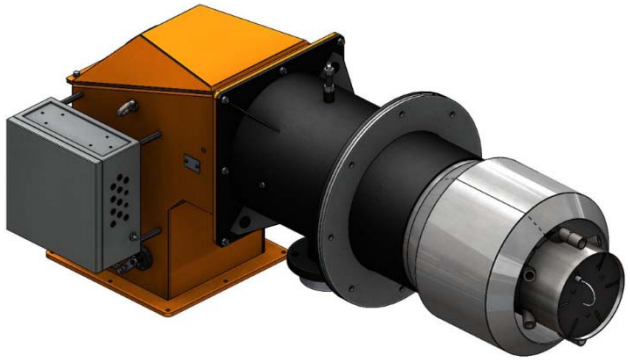


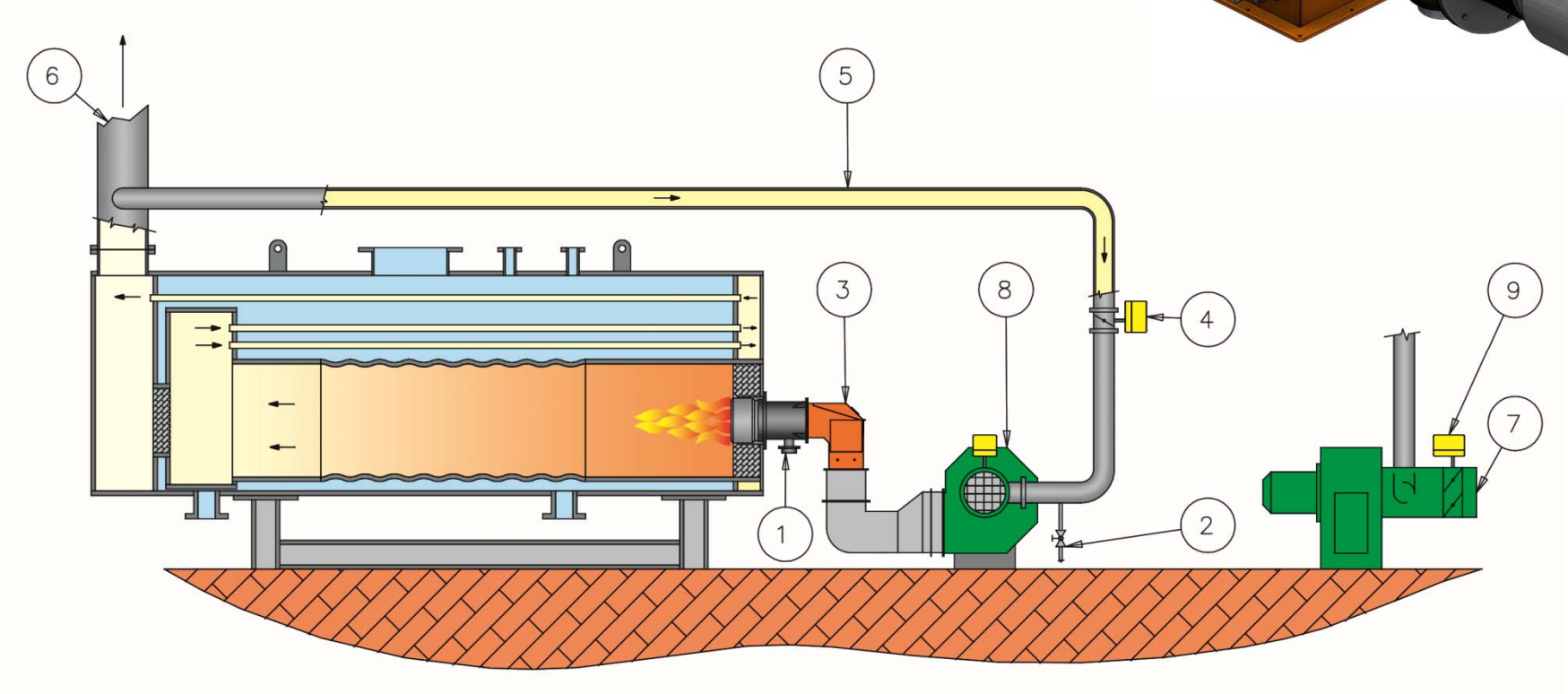




分体FGR燃烧器

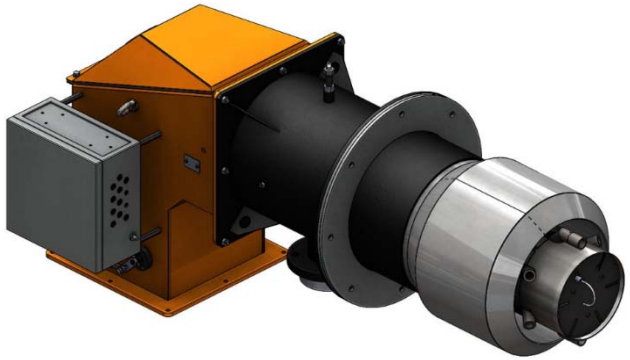
外部的烟气从风机进口进入

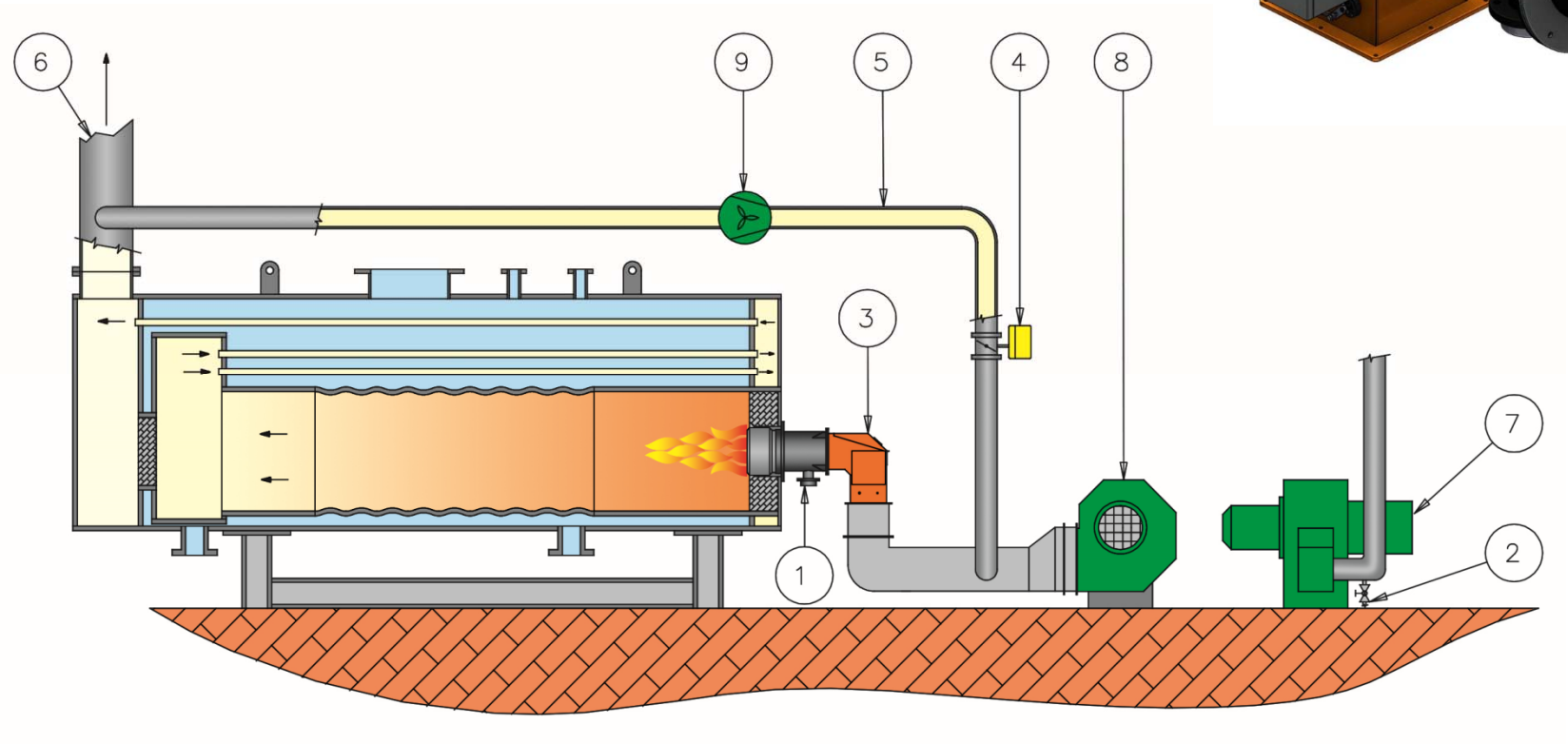




分体FGR燃烧器

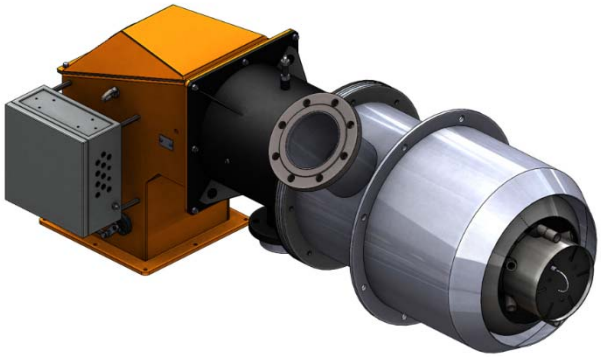
外部的烟气从风机下游进入

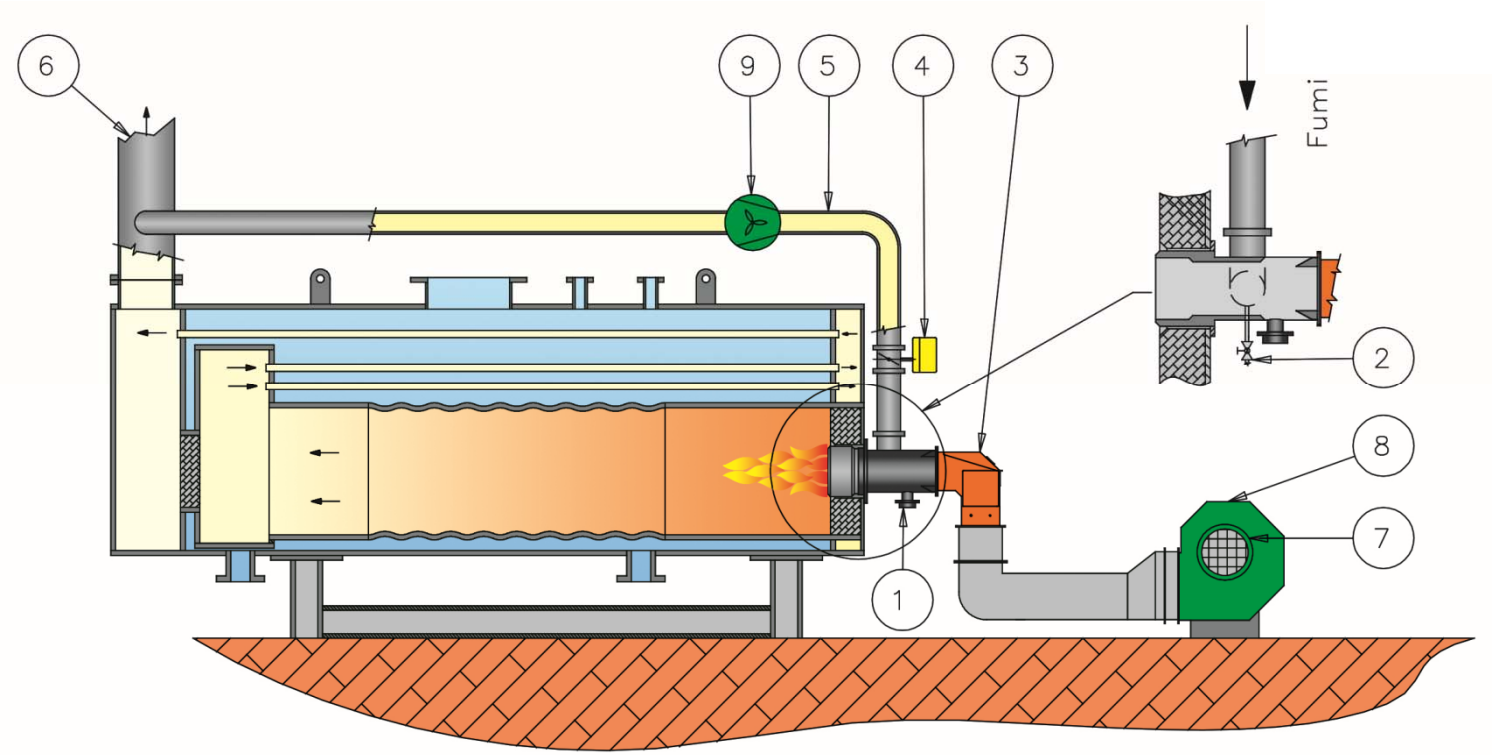




分体FGR燃烧器

外部的烟气从燃烧头下游进入





应用案例

国家：意大利

城市：米兰

出力: 11 MW

燃料：天然气和轻油

燃烧器: IBR 7 GL Low-NOx (FGR):

- 带有 FGR (from 5% to 20%)

锅炉: 3-回程蒸汽锅炉 (12 bar)

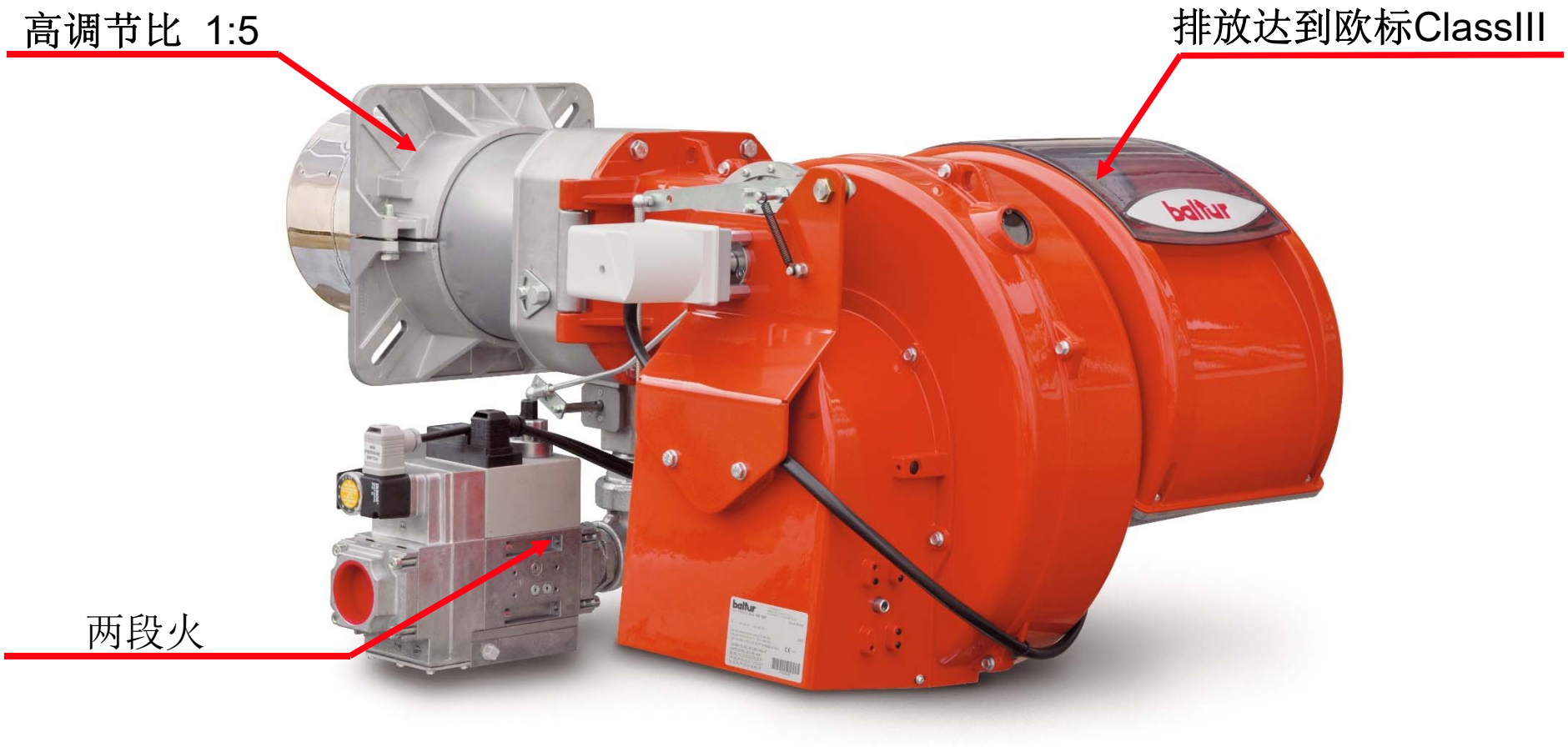
应用: 加热

分体FGR燃烧器-IBR7GL

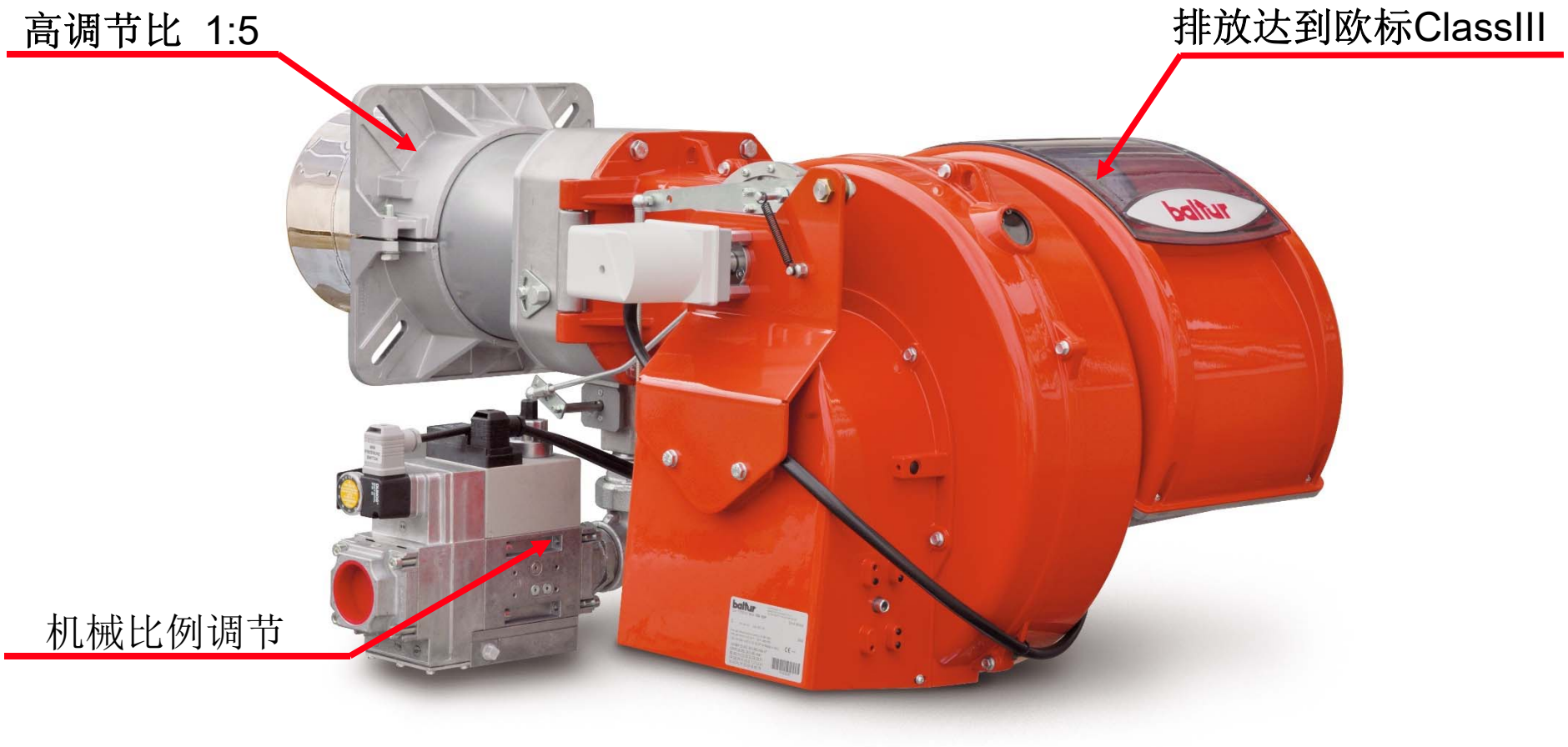
分体FGR燃烧器-IBR7GL

新ClassIII燃烧器

TBG 80-110-140-200 LX P

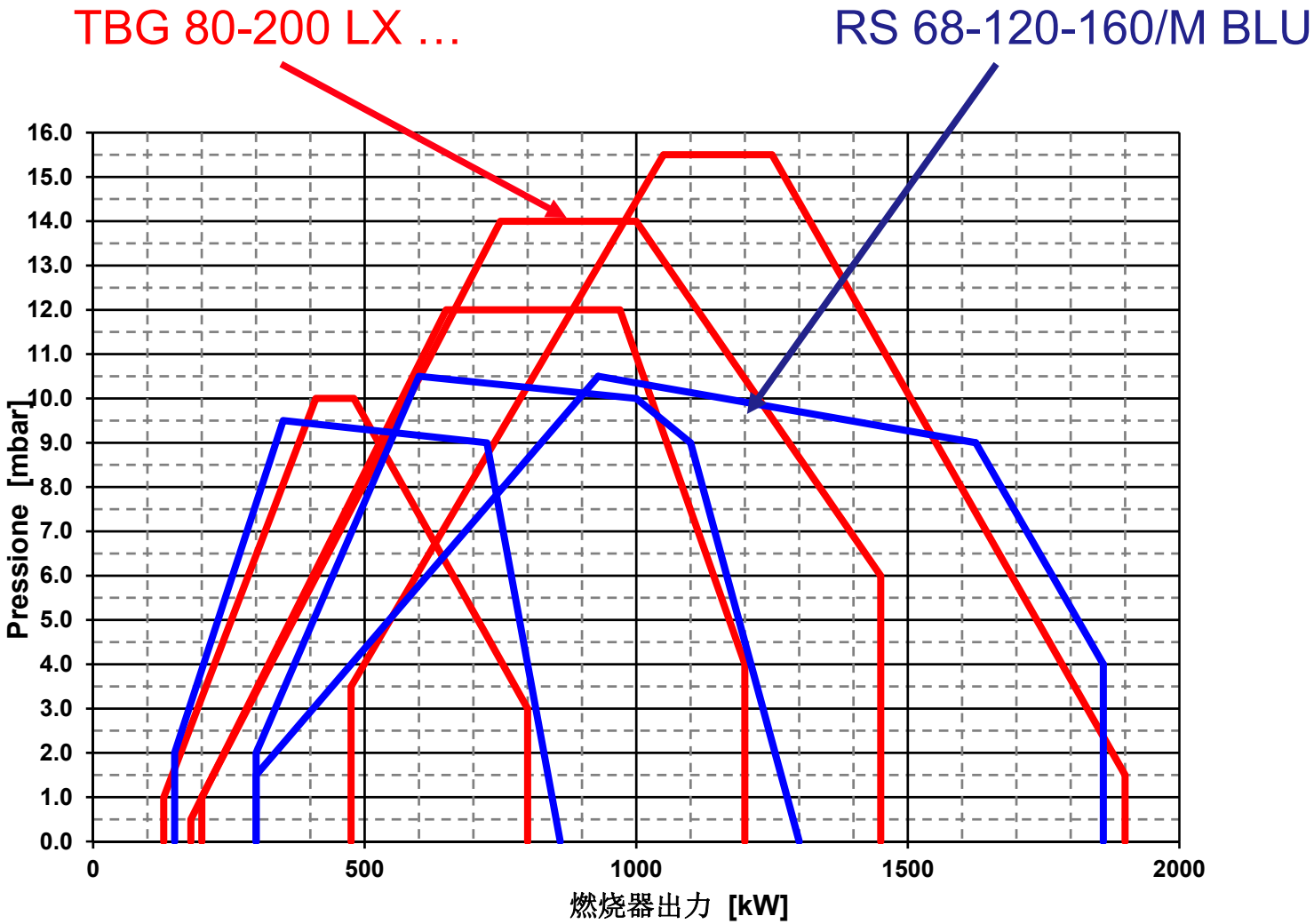


TBG 80-110-140-200 LX MC

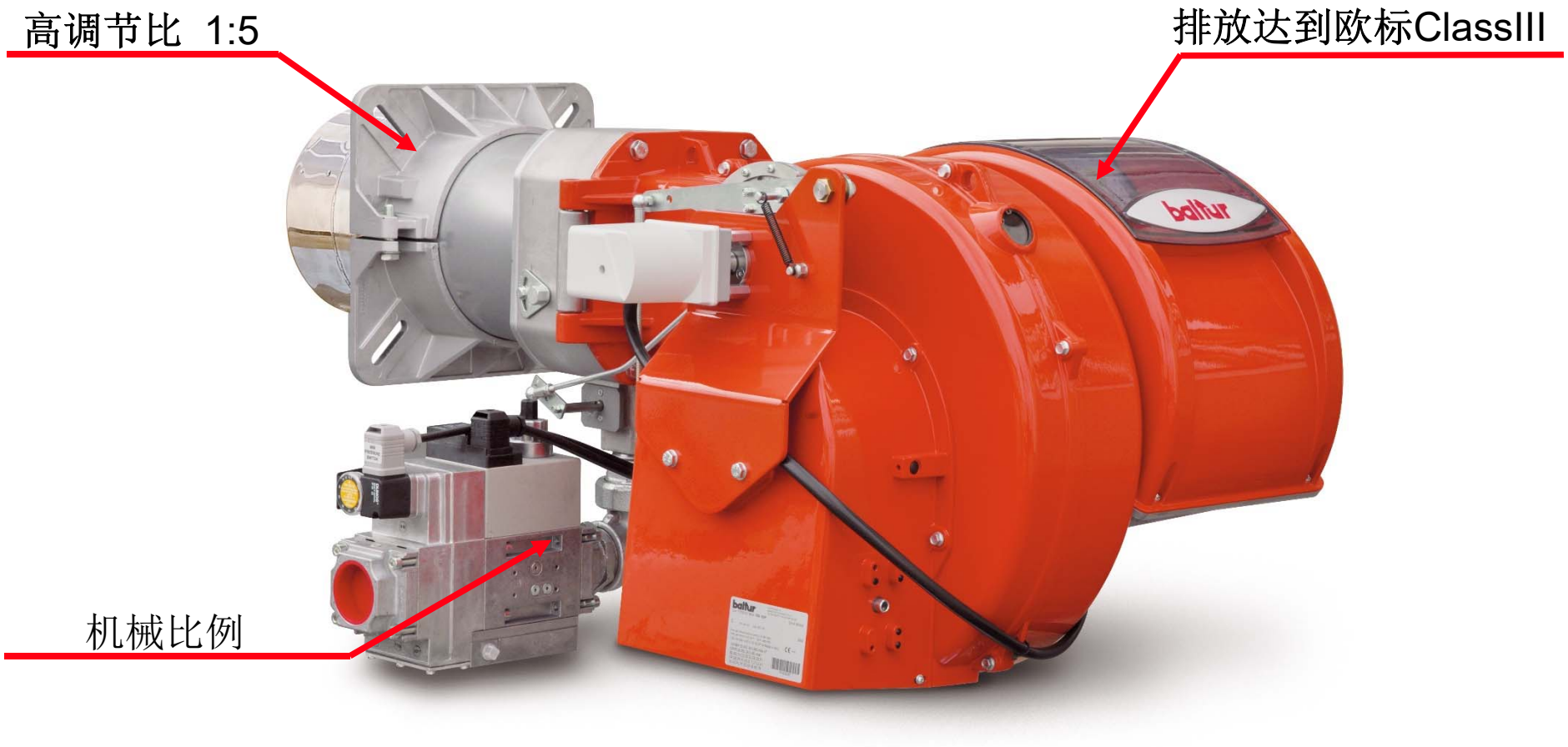


TBG 80-200 LX MC VS RS 68-120-160 M/BLU

TBG 80-200 LX… VS RS 68-160/M BLU



TBG 260 LX MC



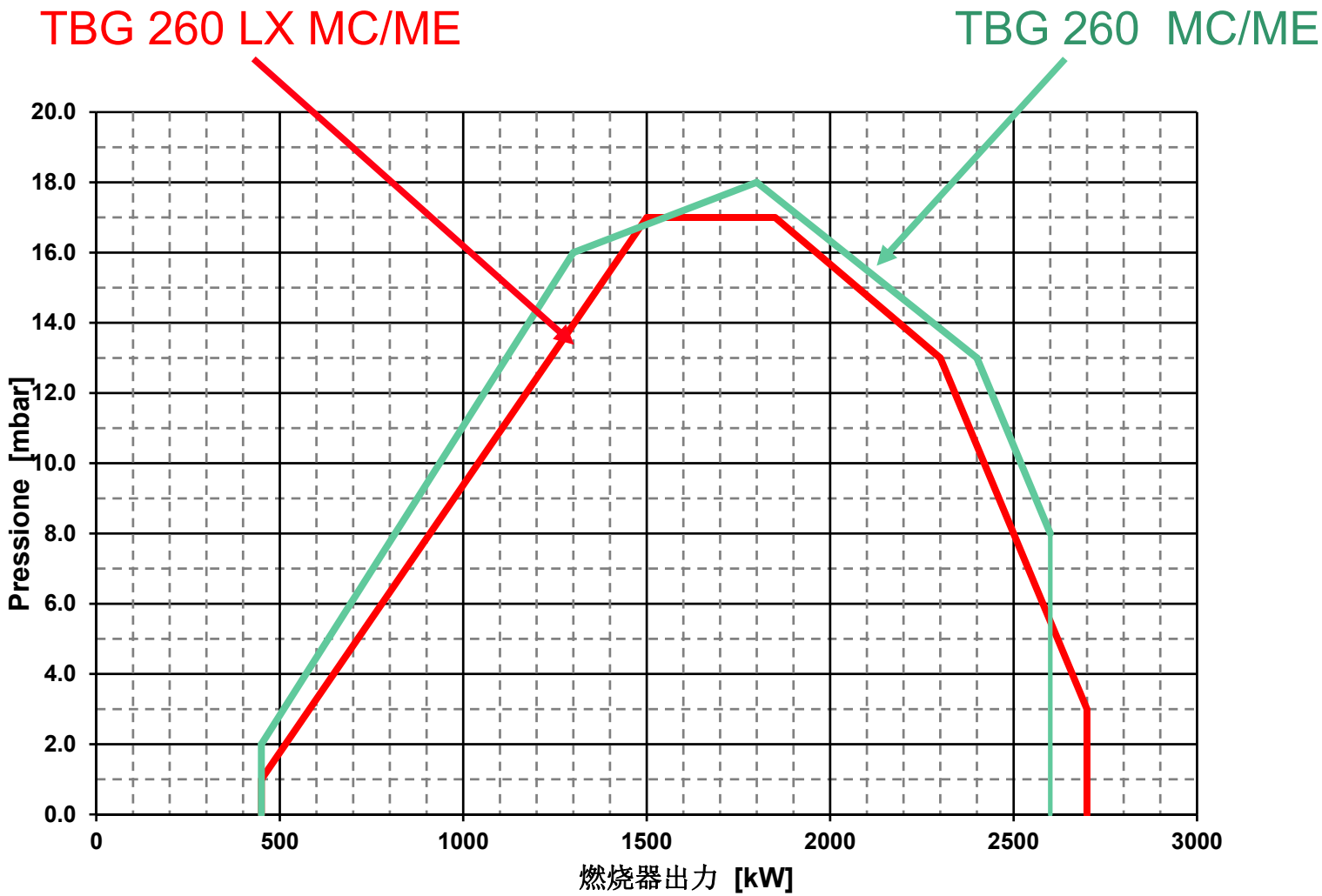
TBG 260 LX ME

高调节比 1:5

排放达到欧标ClassIII

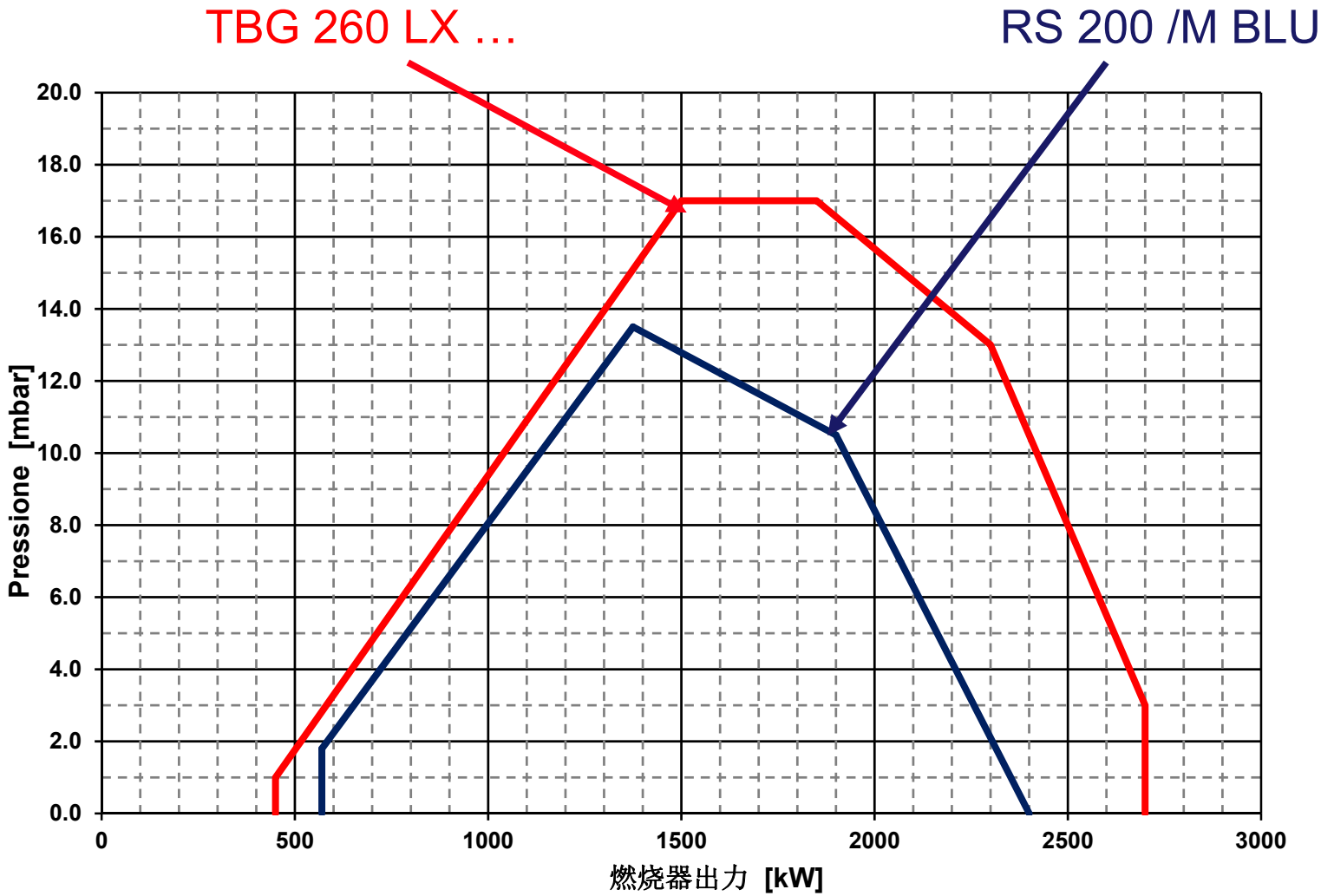
电子比例

TBG 260 LX …VS TBG 260 ME/MC



TBG 260 LX …VS RS 200 M/BLU

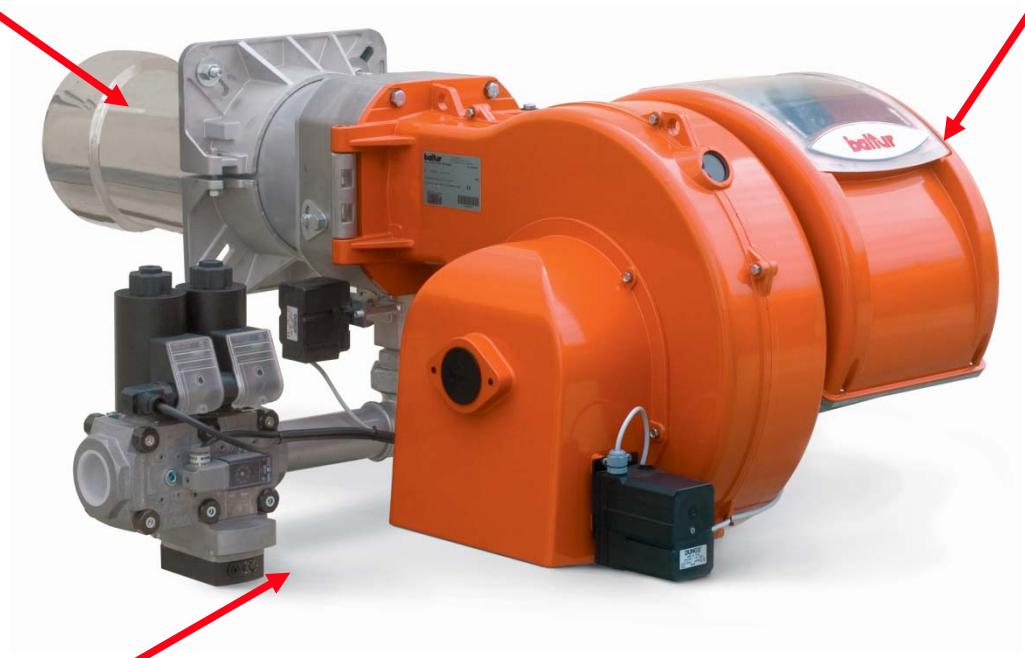
TBG 260 LX… VS RS 200/M BLU



TBG 360 LX ME

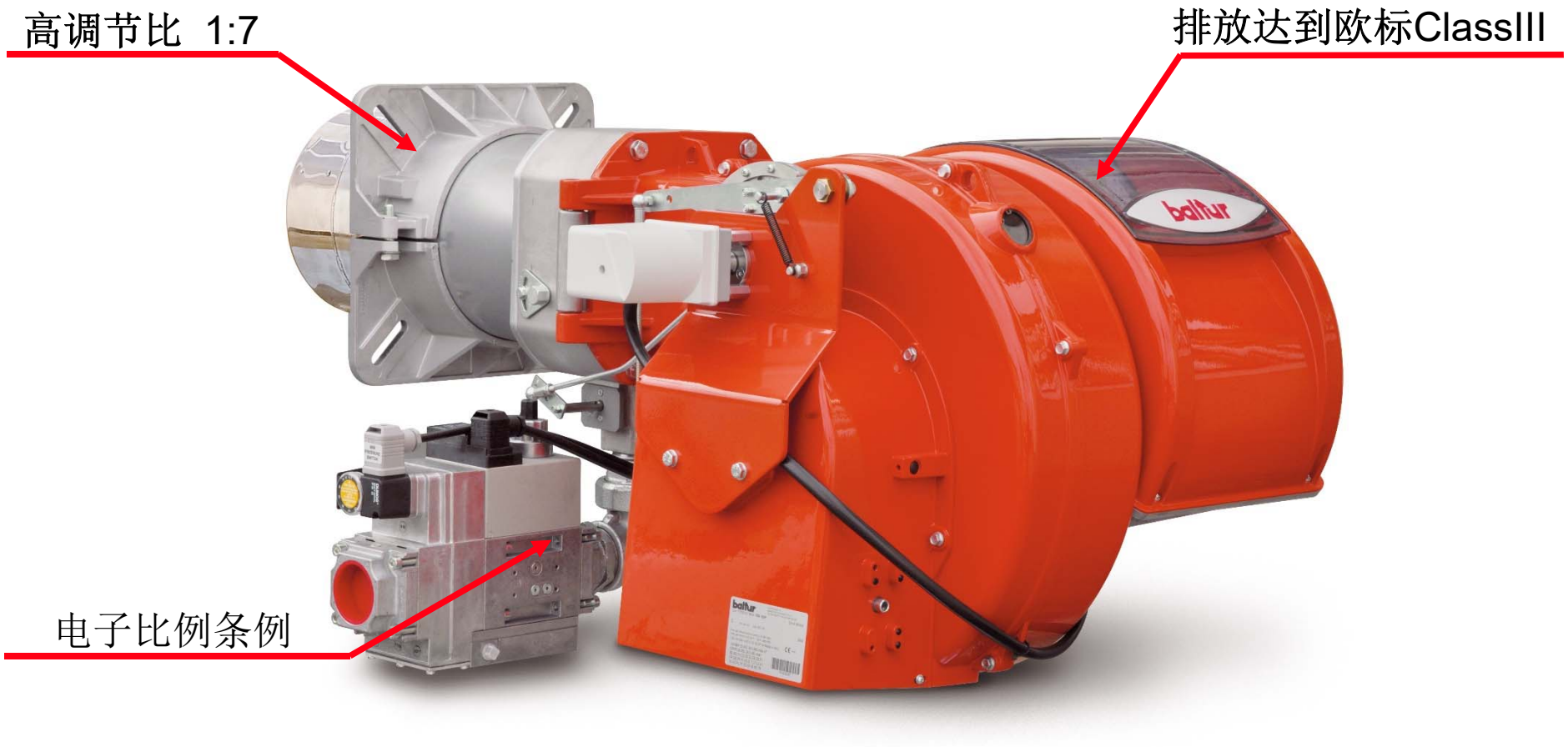
高调节比 1:7

排放达到欧标ClassIII

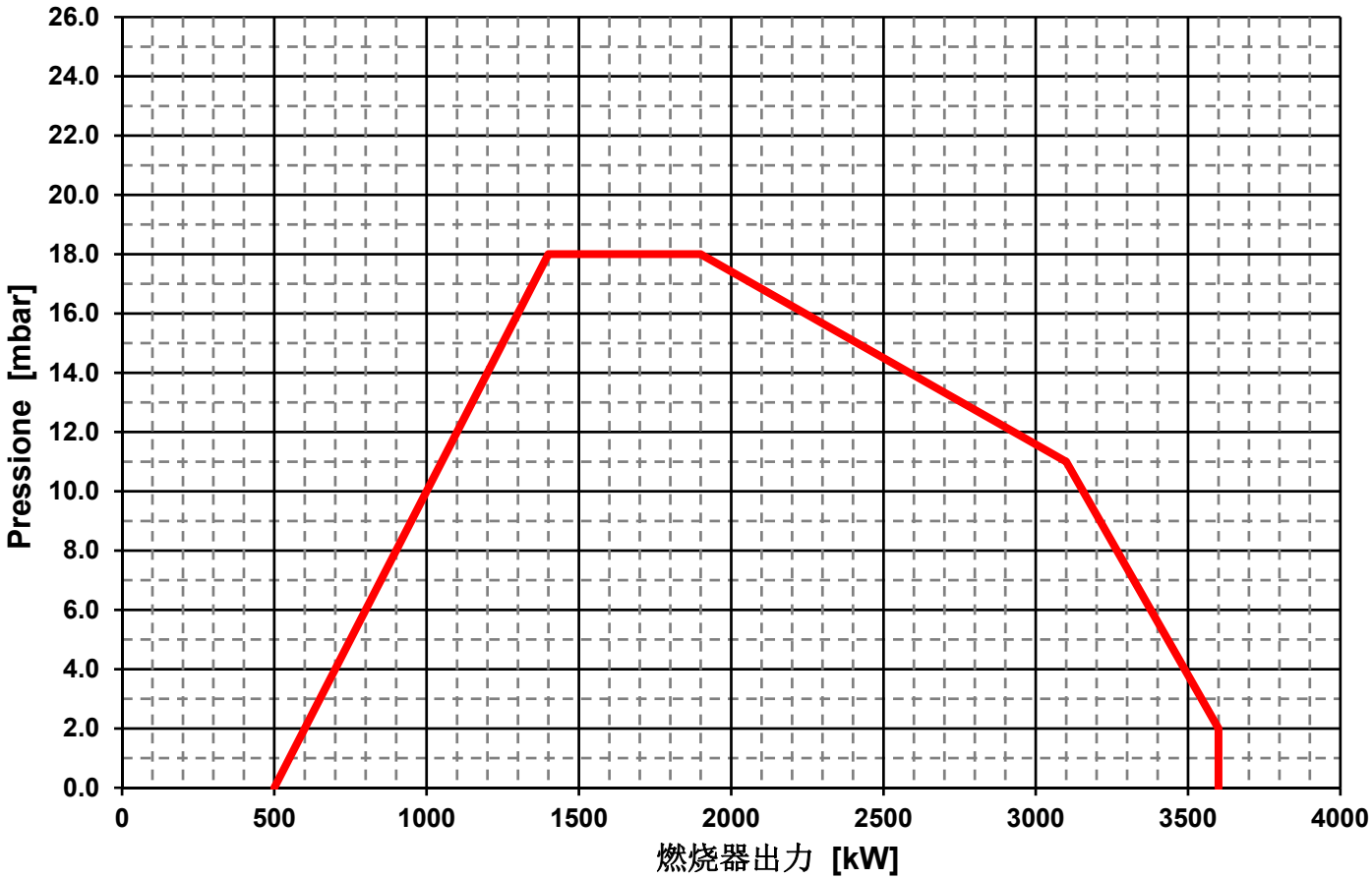


机械比例条件

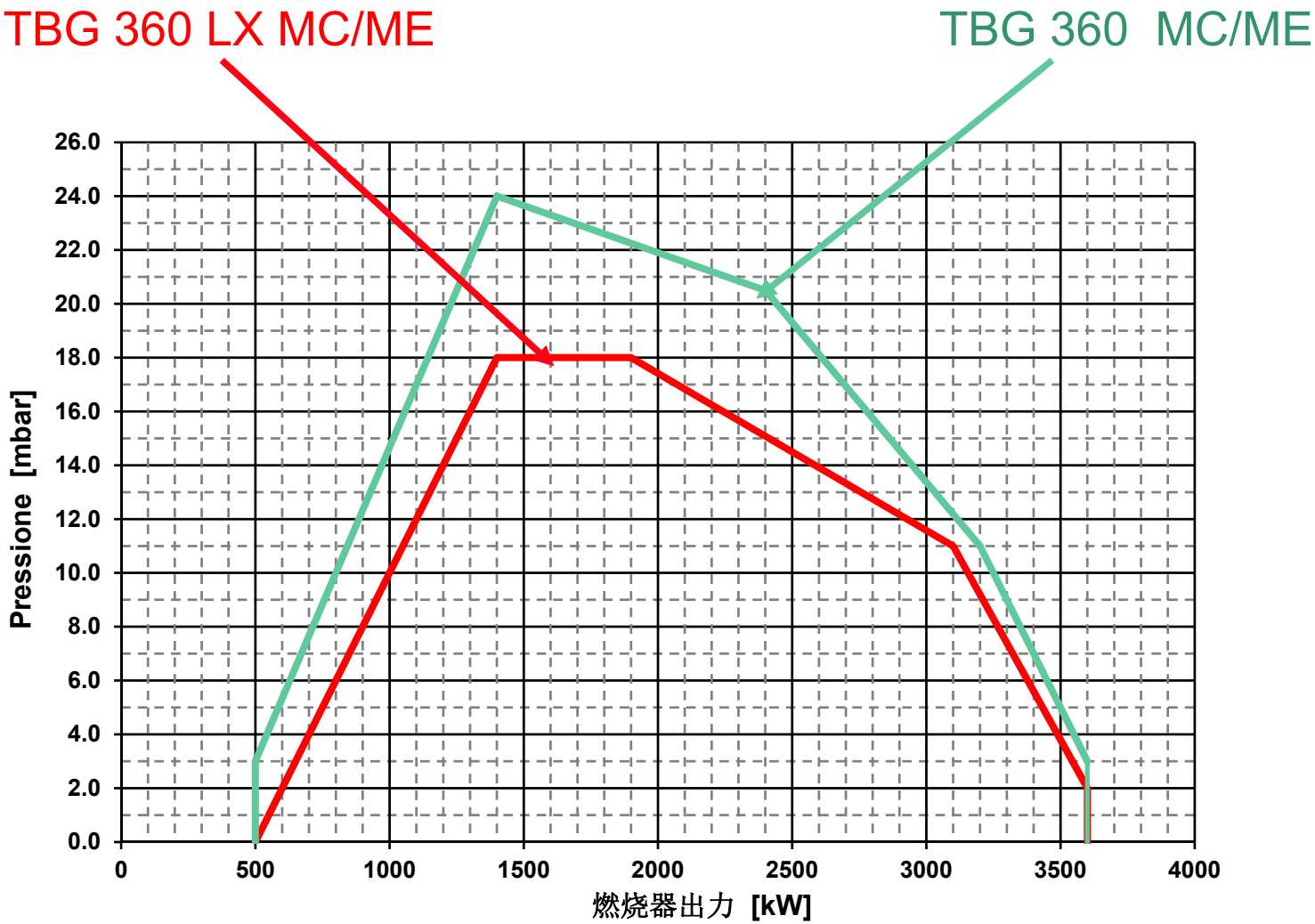
TBG 360 LX MC



新的TBG 360 LX MC/ME



TBG 360 LX …VS TBG 360 ME/MC

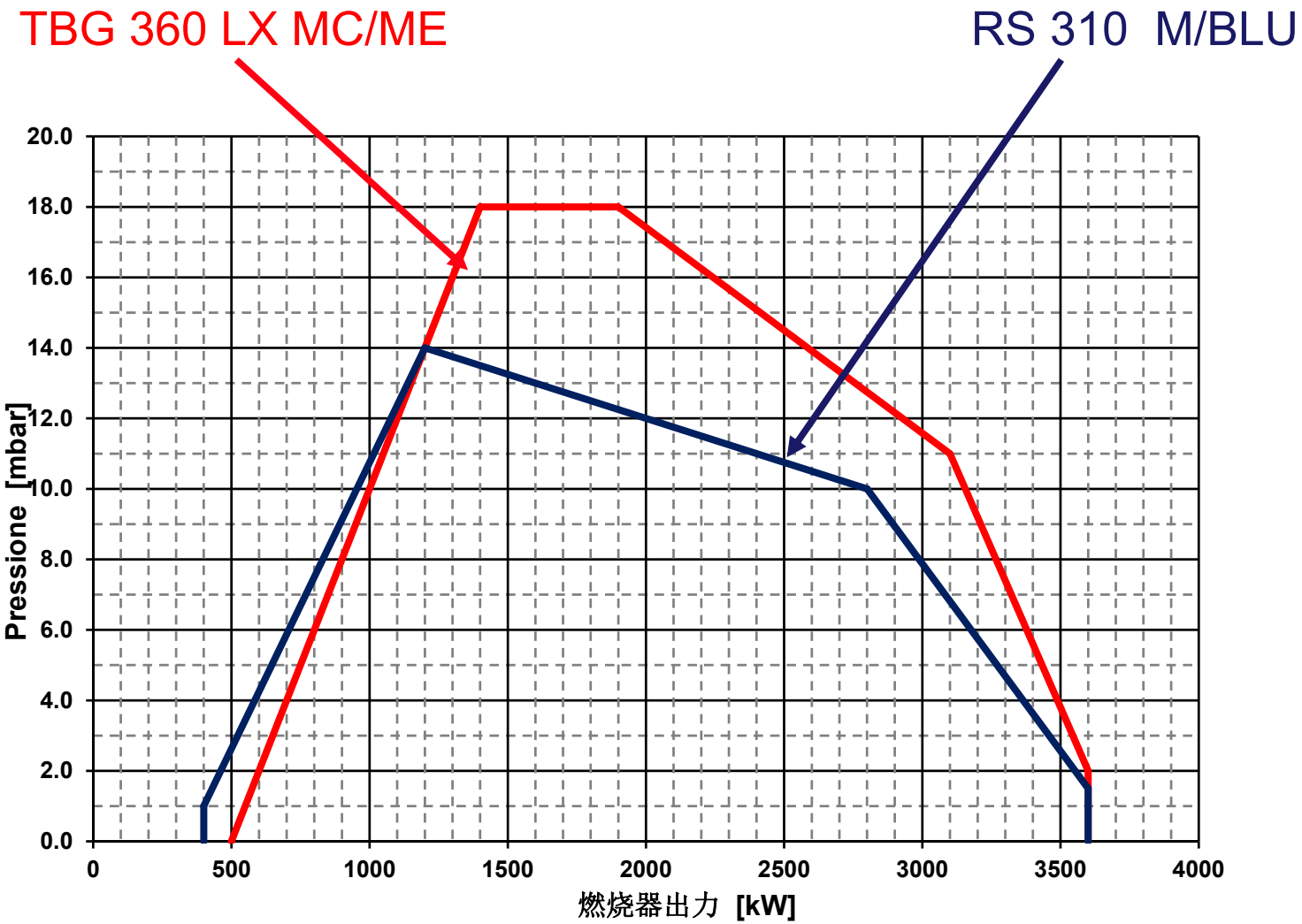


TBG 360 LX …VS RS 310/M BLU

TBG 360 LX MC/ME

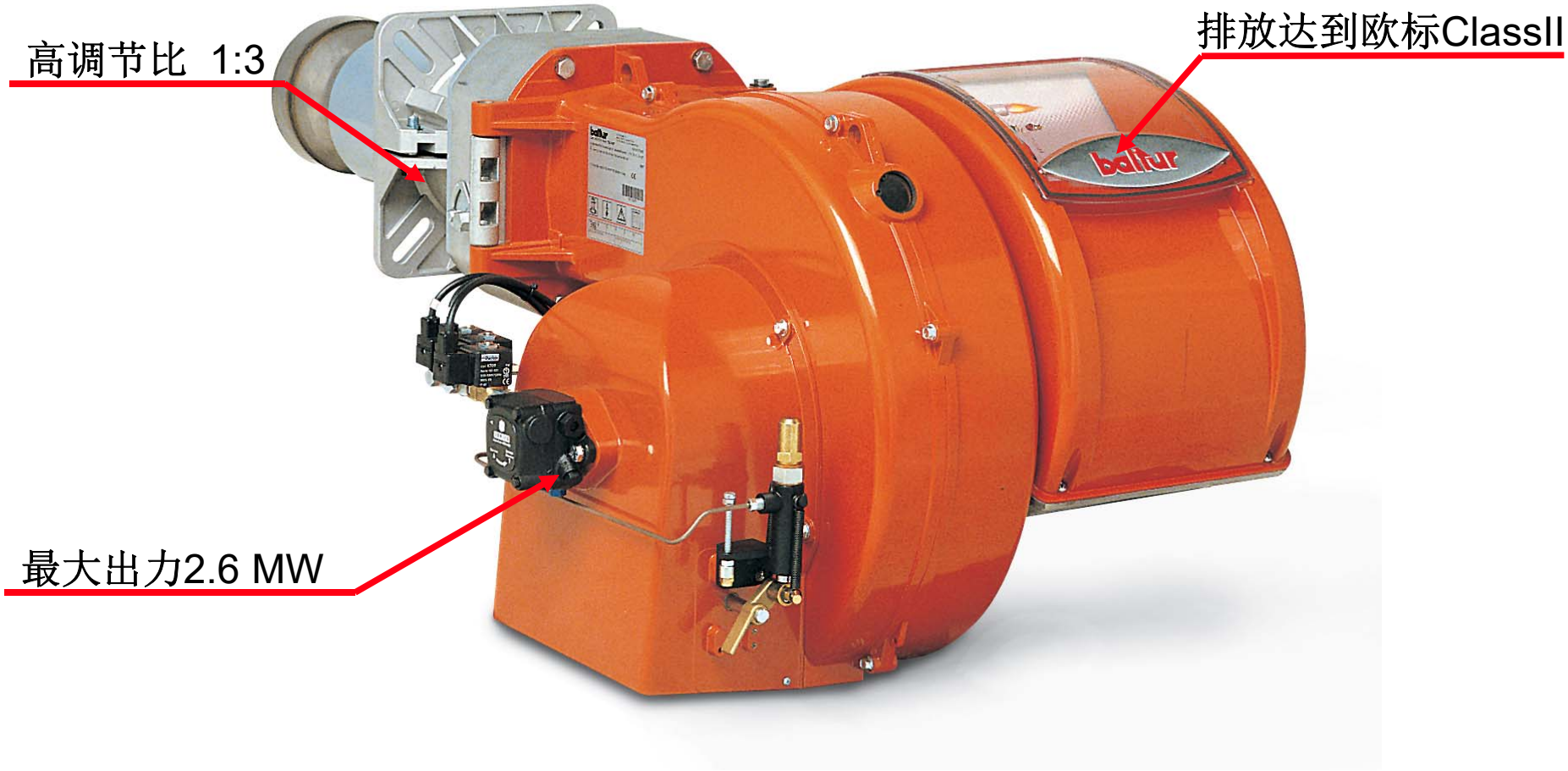
RS 310/M BLU

TBG 360 LX …VS RS 310 M/BLU



新的燃油燃烧器

新的燃油燃烧器TBL 260 P



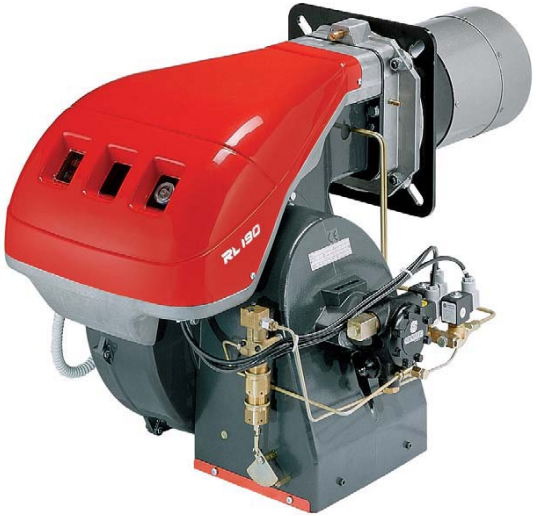
新的燃油燃烧器TBL 260 P

新产品	老产品
TBL 260 P	BT 250

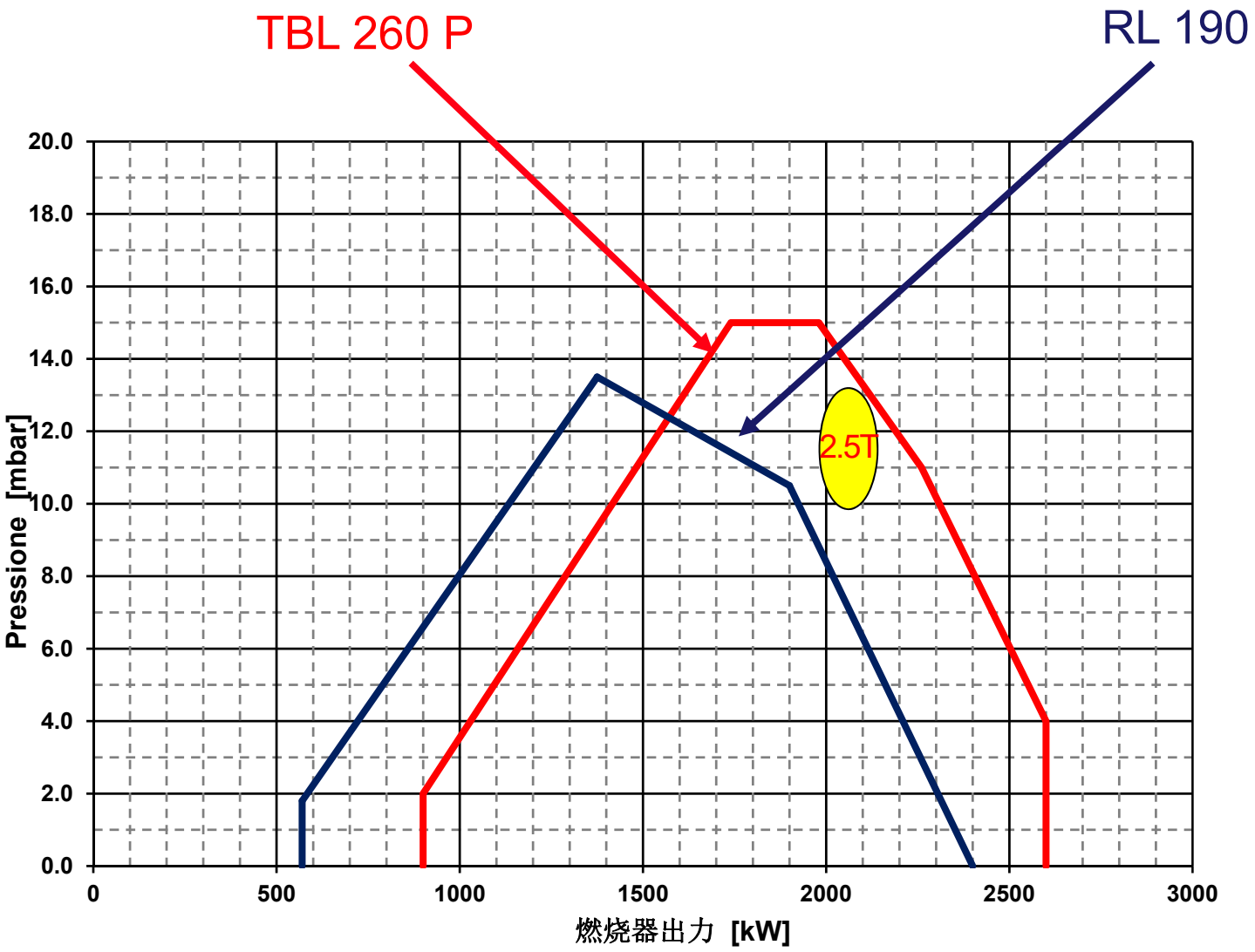
TBL 260 P VS RL 190

TBL 260 P

RL 190



TBL 260 P VS RL 190



新分体燃烧器TBR

新 TBR 燃烧器系列

- 全新的设计和外形
- 全新的颜色
- 多管路位置
- 高调节比。
  燃气 8 : 1
- ME和MC版本
- 标准IP54。可以更高
- 有燃气或燃油点火管路
- 符合欧标EN标准

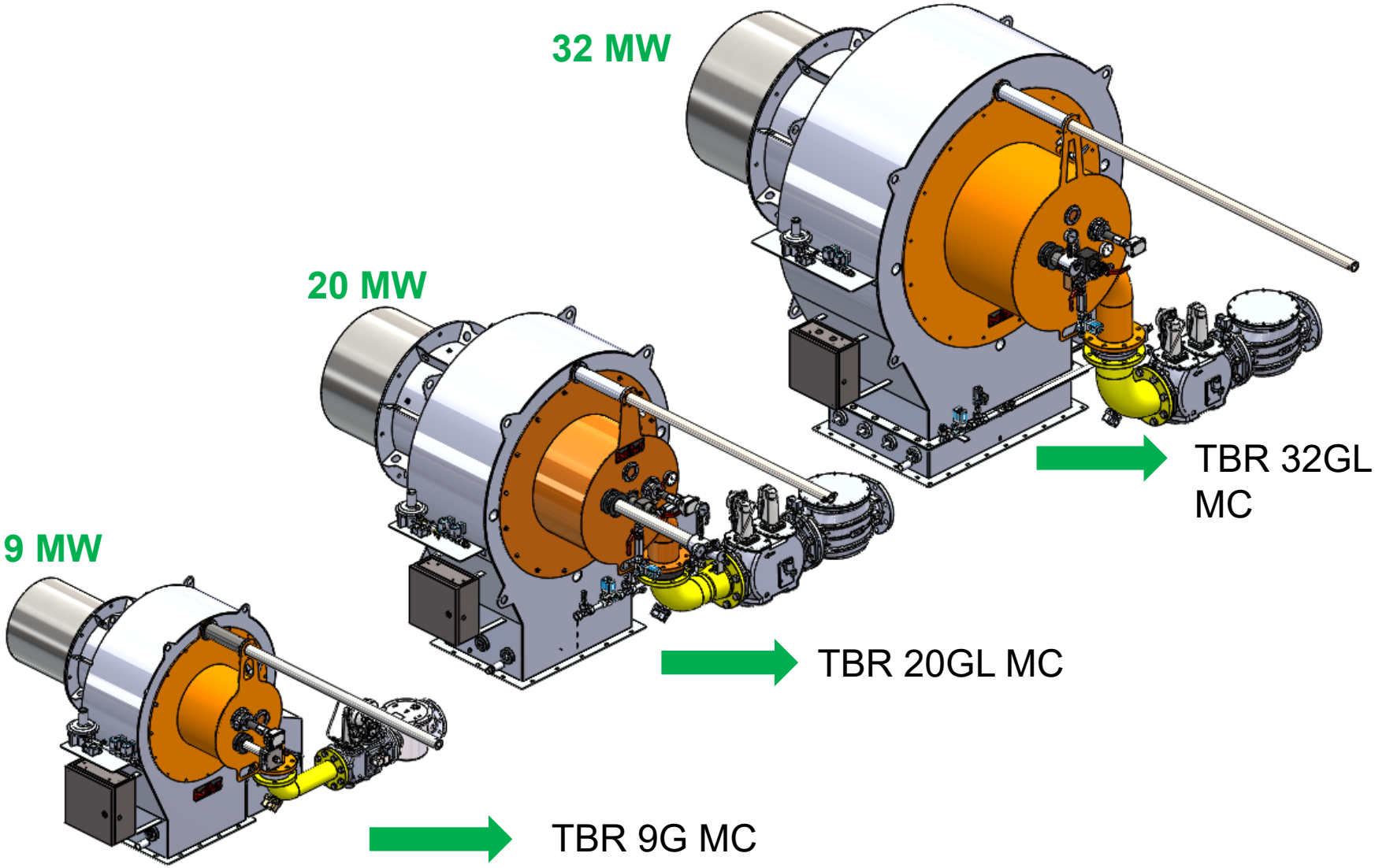
新 TBR 燃烧器系列

型号	出力 [kW]	调节比(燃气)	调节比(轻油)	调节比 (重油)
TBR 4	570-4.000	8:1	4:1	3:1
TBR 6	860-6.000	8:1	4:1	3:1
TBR 9	1.285-9.000	8:1	4:1	3:1
TBR 12	1.715-12.000	8:1	4:1	3:1
TBR 16	2.285-16.000	8:1	4:1	3:1
TBR 20	2.860-20.000	8:1	4:1	3:1
TBR 26	3.715-26.000	8:1	4:1	3:1
TBR 32	4.575-32.000	8:1	4:1	3:1
TBR 38	5.430-38.000	8:1	4:1	3:1
TBR 44	6285-44.000	8:1	4:1	3:1
TBR 50	7.145-50.000	8:1	4:1	3:1

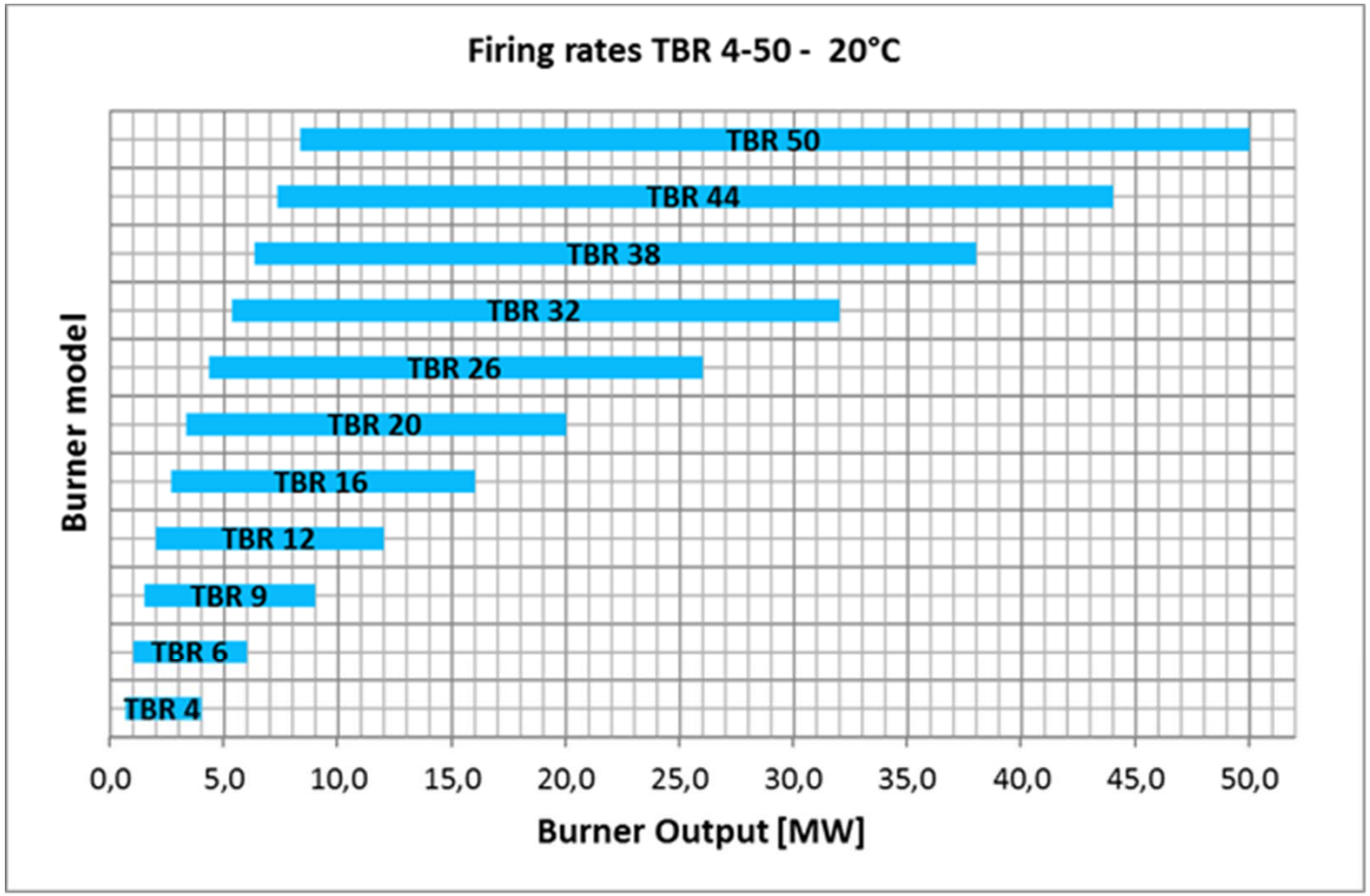
新 TBR 系列将有机械比例调剂版本(….**MC** 版本) 和 电子比例调节 (….**ME** 版本).

G – 天然气
L – 轻油
N – 重油
GL – 天然气- 轻油
GN – 天然气- 重油

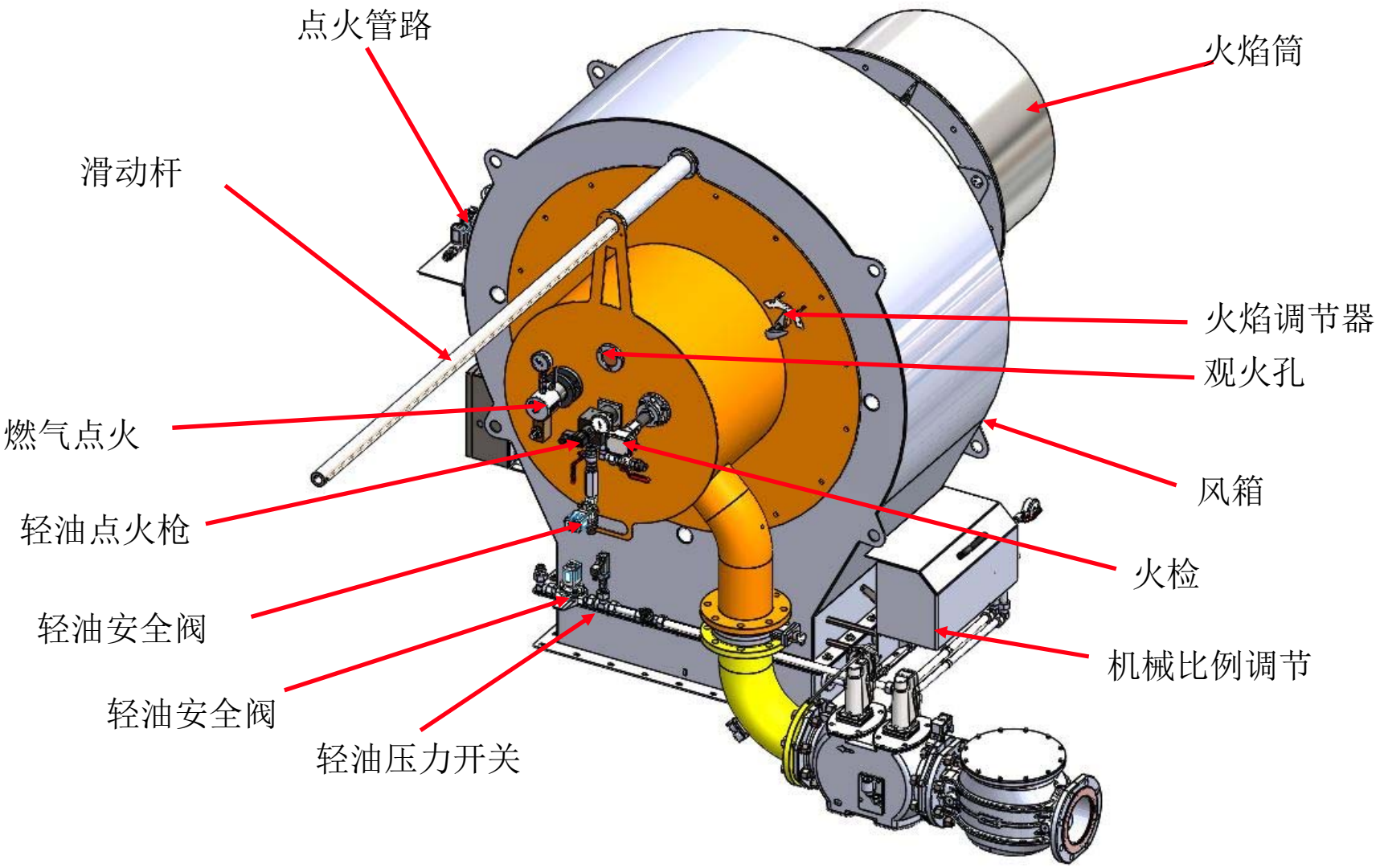
新 TBR 燃烧器系列



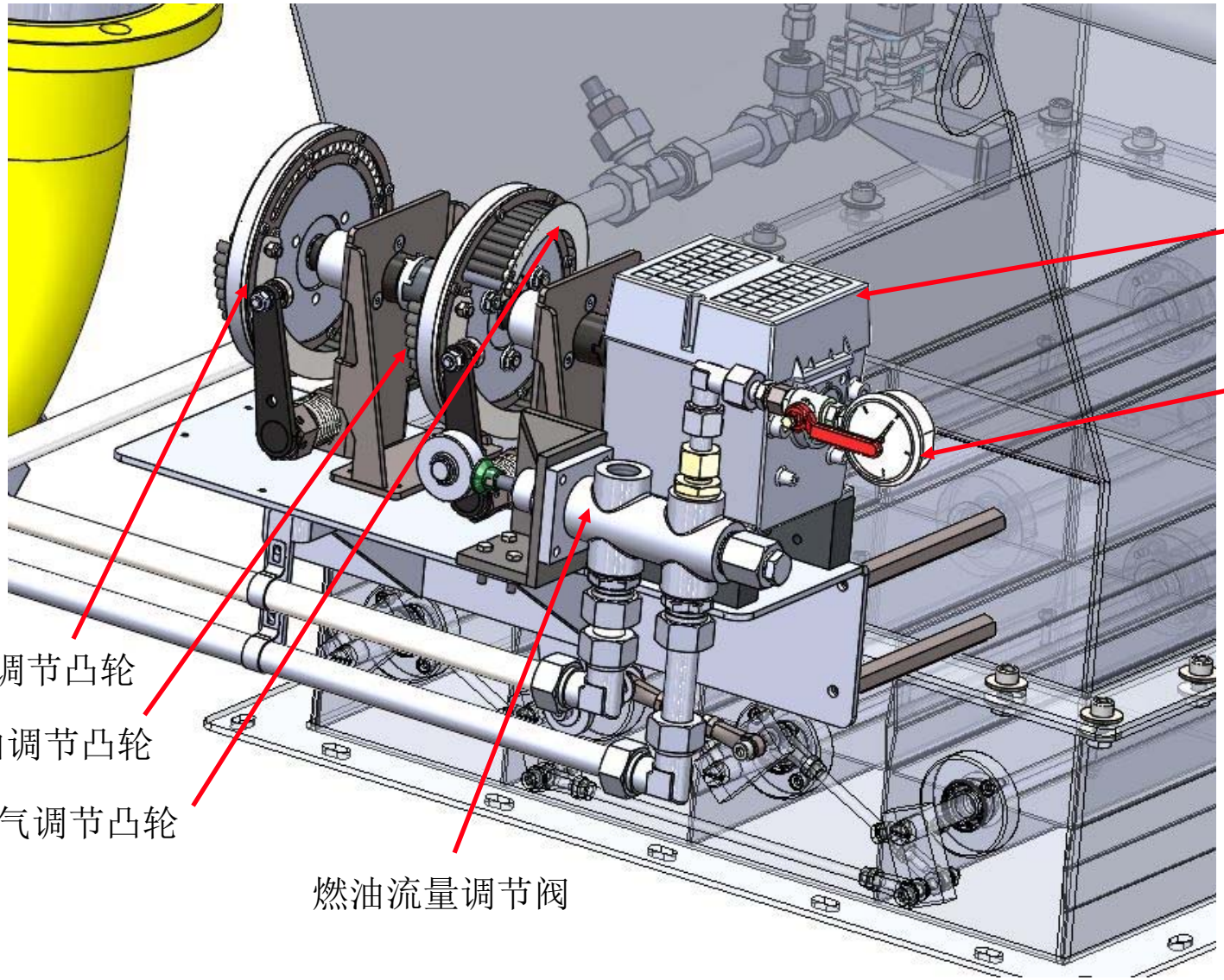
新 TBR 燃烧器出力


Firing rates TBR 4-50 - 20°C
TBR 50
TBR 44
TBR 38
TBR 32
TBR 26
TBR 20
TBR 16
TBR 12
TBR 9
TBR 6
TBR 4
Burner model
0,0
5,0
10,0
15,0
20,0
25,0
30,0
35,0
40,0
45,0
50,0
Burner Output [MW]

新 TBR 燃烧器系列


点火管路
火焰筒
滑动杆
火焰调节器
观火孔
燃气点火
风箱
轻油点火枪
火检
轻油安全阀
机械比例调节
轻油安全阀
轻油压力开关

新 TBR 燃烧器系列

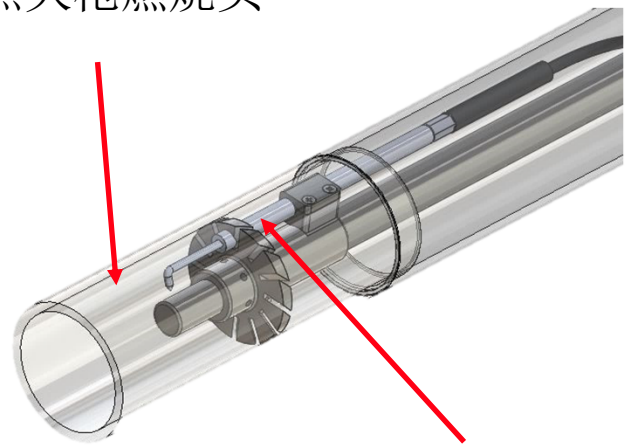


新 TBR 燃烧器系列

新的点火系统:

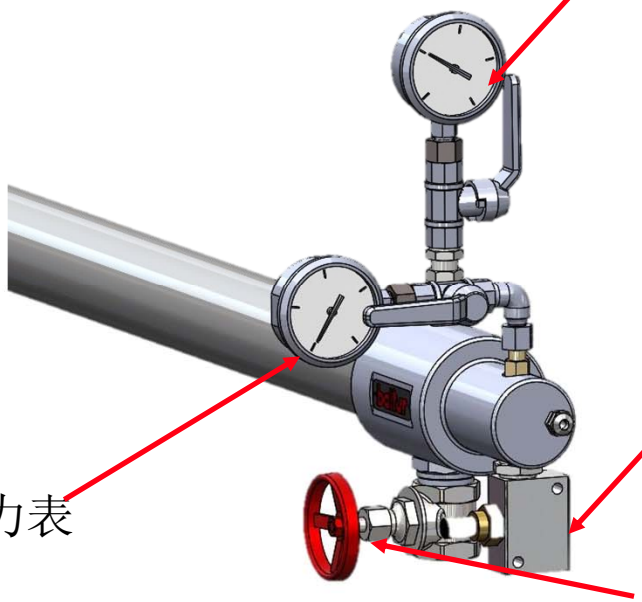
- 天然气
- LPG
- 长点火 (可选项)
- 带有电离电极 (可选项)

点火枪燃烧头



点火电极

空气压力表



燃气流量调节

燃气压力表

空气流量调节

新TBR 燃烧器系列

型号	出力 [kW]	调节比(燃气)	调节比(轻油)	调节比 (重油)
TBR 4	570-4.000	8:1	4:1	3:1
TBR 6	860-6.000	8:1	4:1	3:1
TBR 9	1.285-9.000	8:1	4:1	3:1
TBR 12	1.715-12.000	8:1	4:1	3:1
TBR 16	2.285-16.000	8:1	4:1	3:1
TBR 20	2.860-20.000	8:1	4:1	3:1
TBR 26	3.715-26.000	8:1	4:1	3:1
TBR 32	4.575-32.000	8:1	4:1	3:1

从2018-4-1开始销售，现在开始订货

燃料

G – 天然气
L – 轻油
GL – 天然气 – 轻油

燃料

MC – 机械比例调节
ME – 电子比例调节

新TBR 燃烧器系列

型号	出力 [kW]	调节比(燃气)	调节比(轻油)	调节比 (重油)
TBR 4	570-4.000	8:1	4:1	3:1
TBR 6	860-6.000	8:1	4:1	3:1
TBR 9	1.285-9.000	8:1	4:1	3:1
TBR 12	1.715-12.000	8:1	4:1	3:1
TBR 16	2.285-16.000	8:1	4:1	3:1
TBR 20	2.860-20.000	8:1	4:1	3:1
TBR 26	3.715-26.000	8:1	4:1	3:1
TBR 32	4.575-32.000	8:1	4:1	3:1

从 2019-4-1开始销售

燃料

N – 重油
GN – 天然气 – 重油

燃料

MC – 机械比例调节
ME – 电子比例调节

新 TBR 燃烧器系列

型号	出力 [kW]	调节比(燃气)	调节比(轻油)	调节比 (重油)
TBR 38	5.430-38.000	8:1	4:1	3:1
TBR 44	6285-44.000	8:1	4:1	3:1
TBR 50	7.145-50.000	8:1	4:1	3:1

从2018-4-1根据要求，定制生产

燃料

G – 天然气
L – 轻油
GL – 天然气 – 轻油
N – 重油
GN – 天然气 – 重油

燃料

MC – 机械比例调节
ME – 电子比例调节

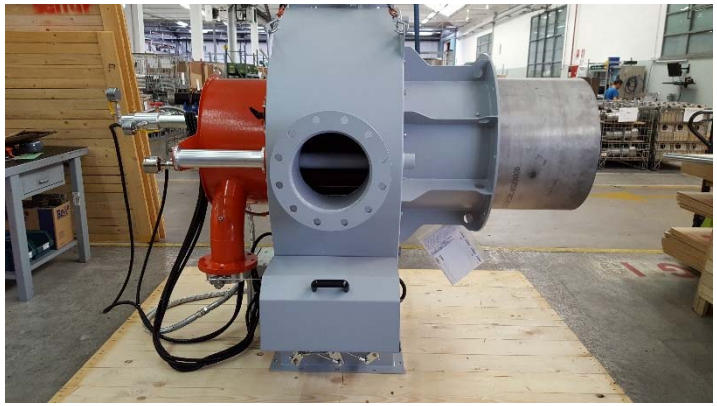
baltur

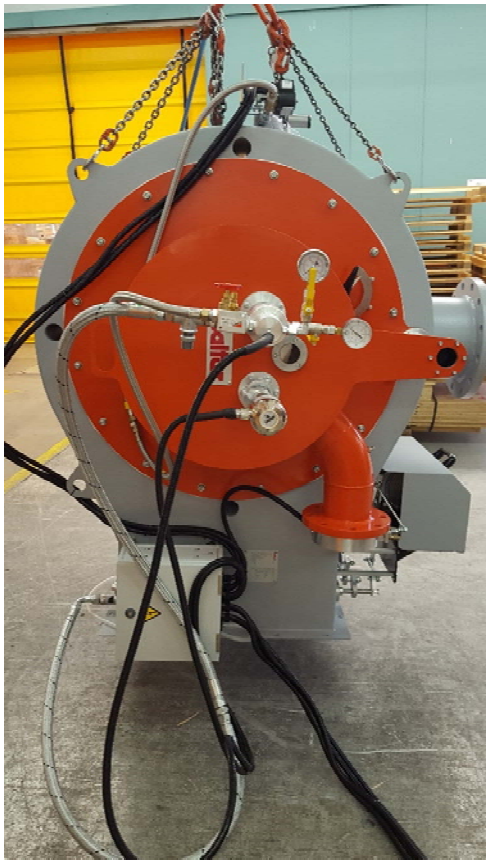
4台TBR 9G MC 燃烧器

baltur

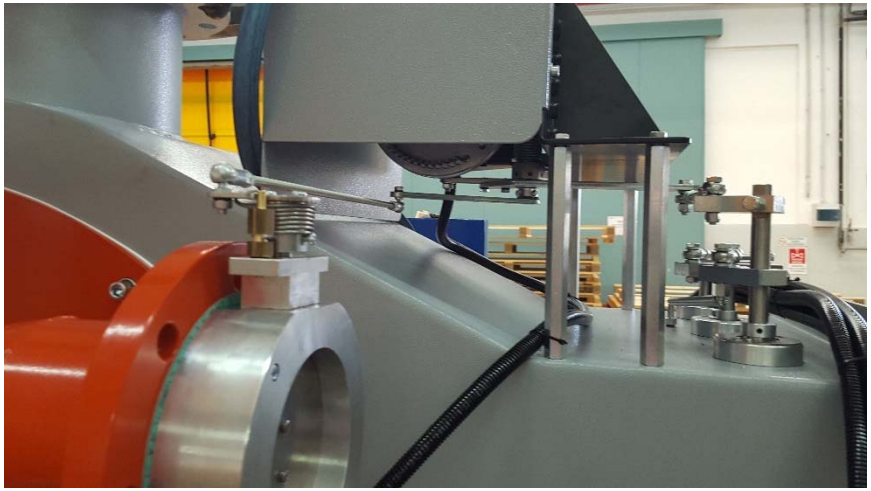
4台TBR 9G MC 燃烧器

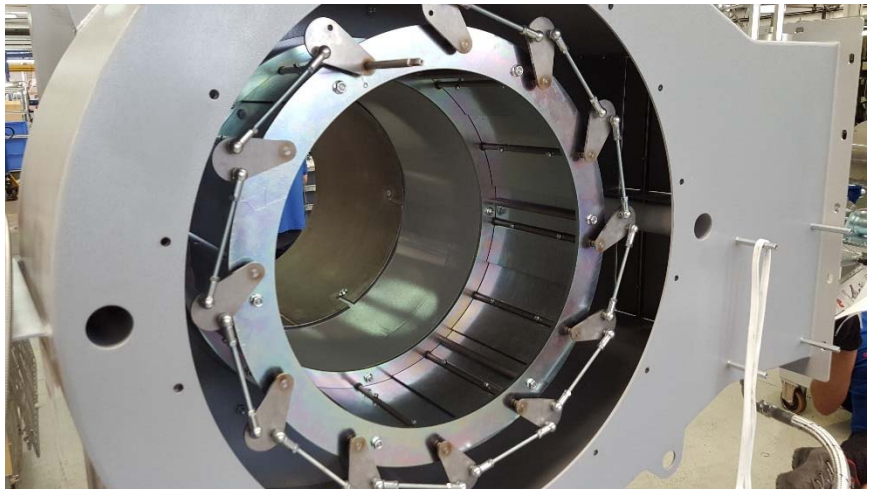
6台TBR 20G MC燃烧器在浙江绍兴



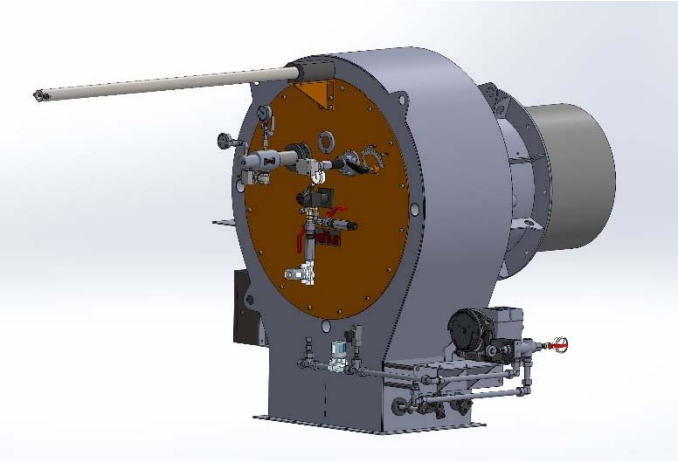


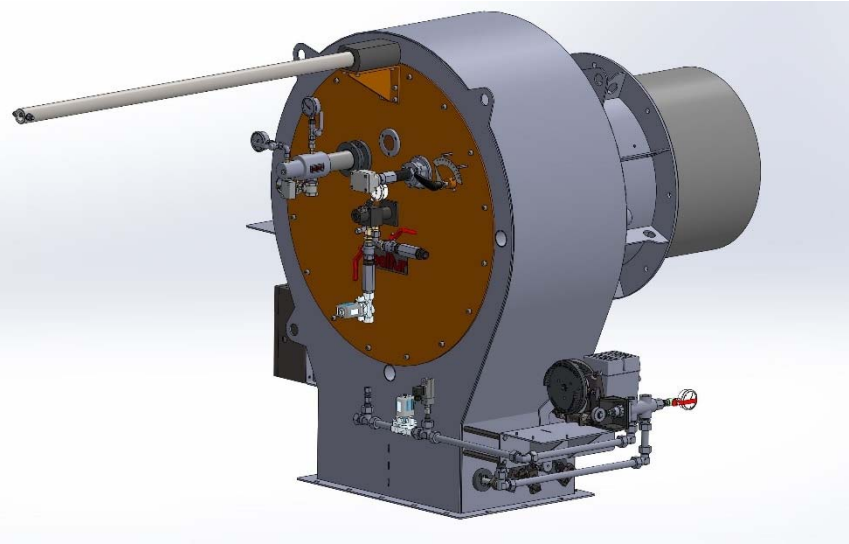
6台TBR 20G MC燃烧器在浙江绍兴

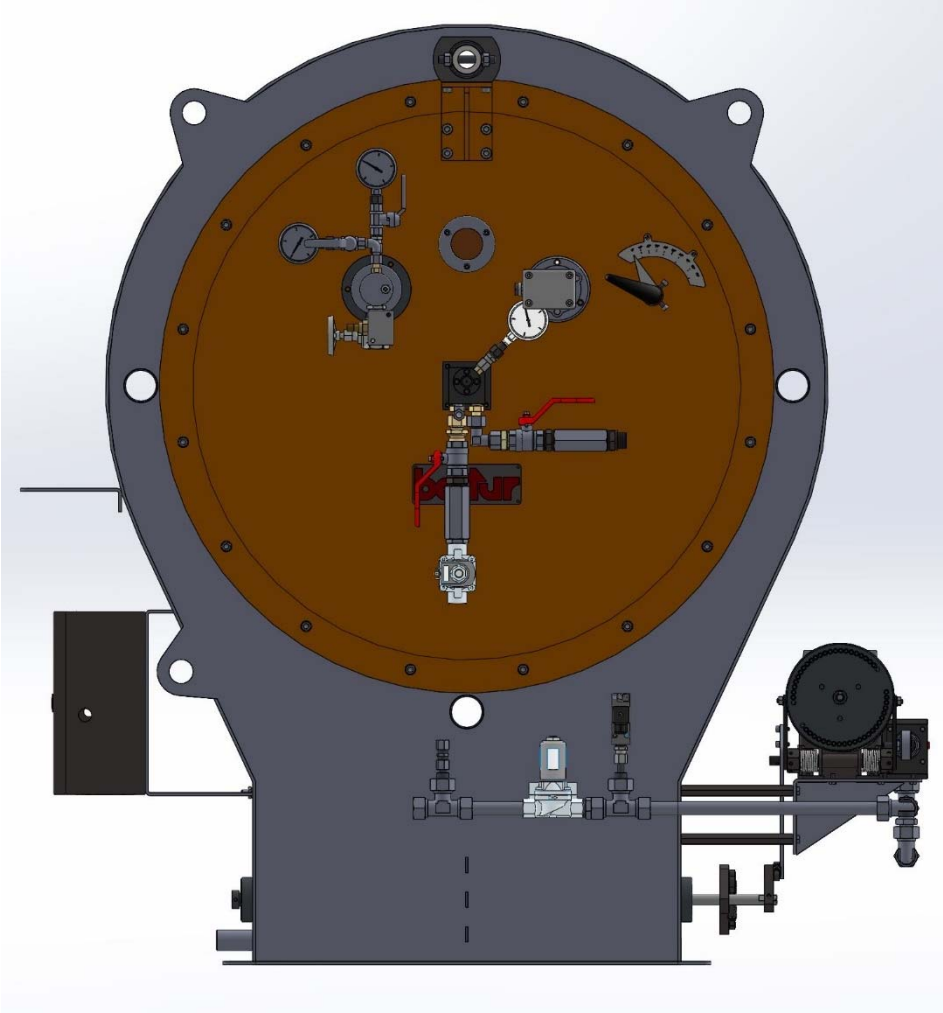




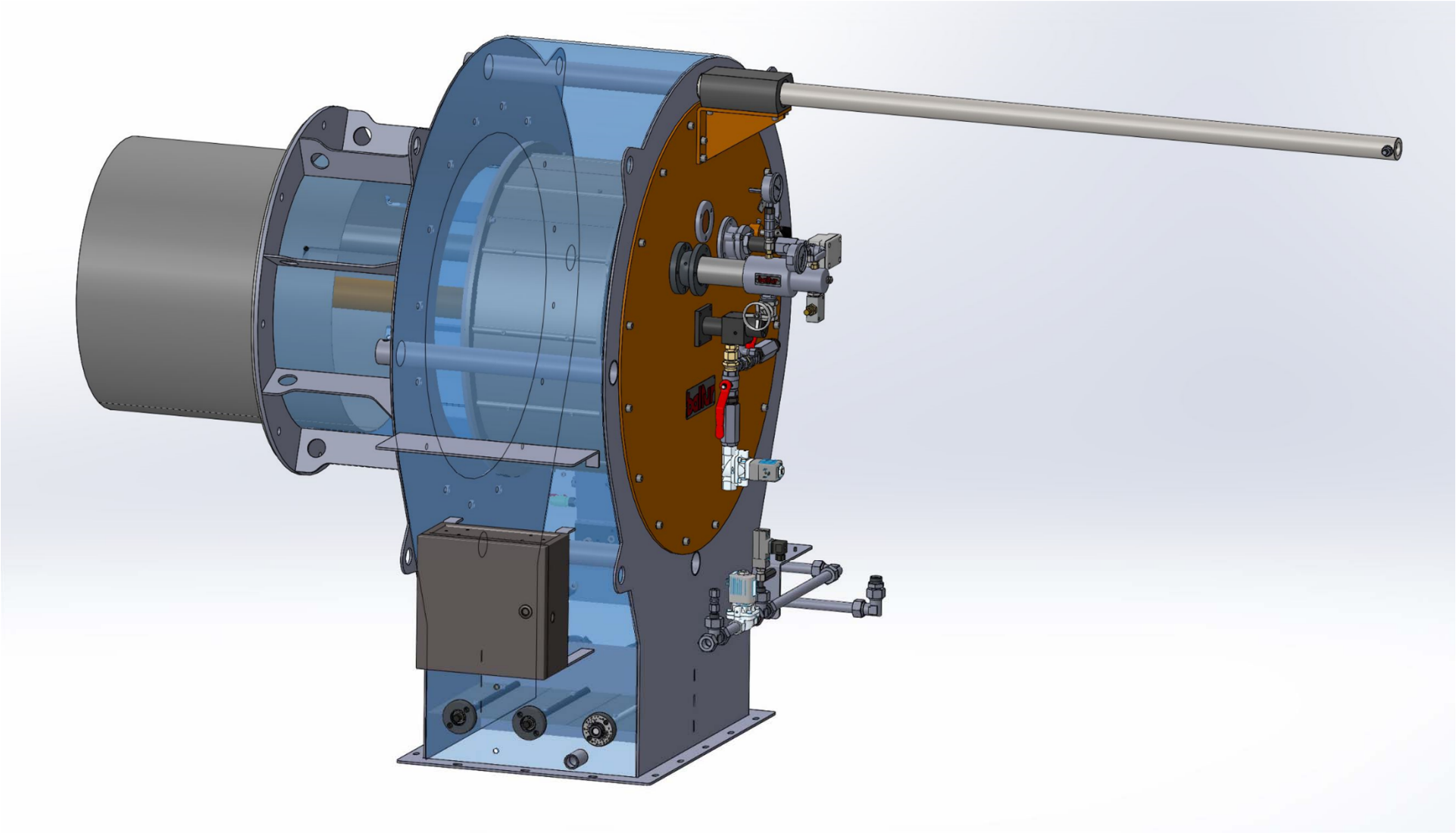
6台TBR 20L MC燃烧器浙江宁波







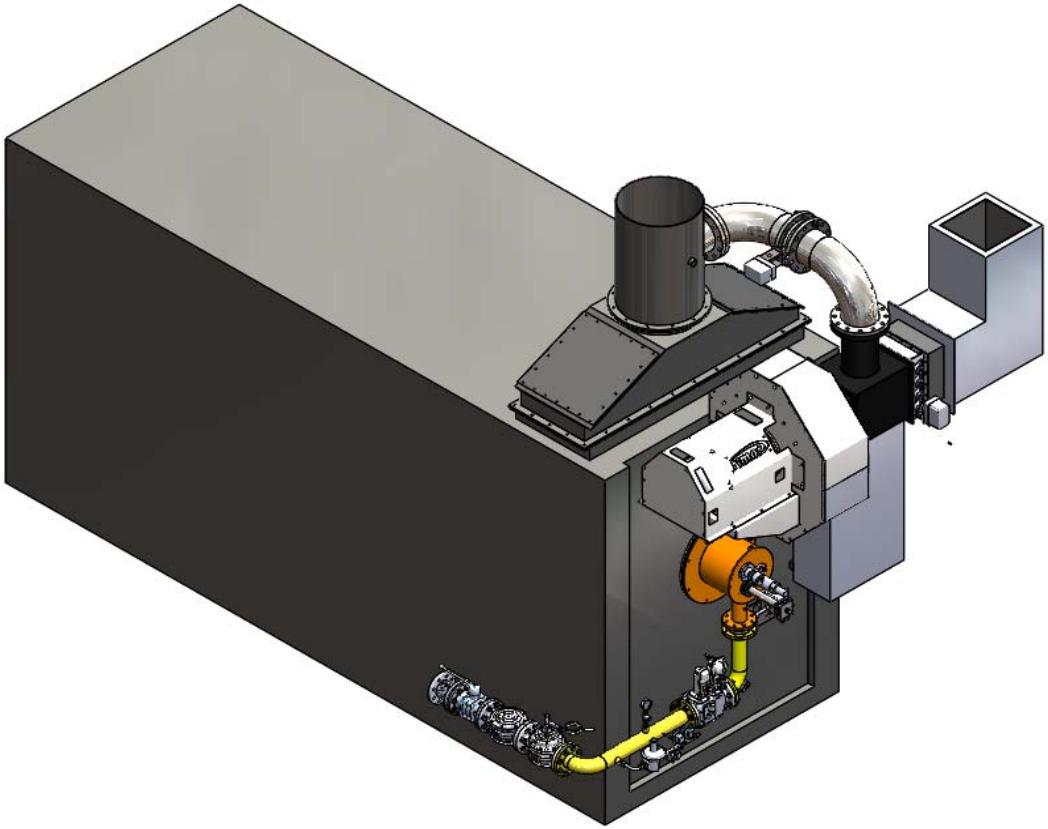
6台TBR 20L MC燃烧器浙江宁波



TBR 燃烧器FGR的应用

TBR燃烧器可以被改变成为板式燃烧器，应用于锅炉改造。

TBR 燃烧器FGR的应用



超级热水锅炉
*锅炉出力：**4300 5MW　3 TBR***

应用:
- *空气预热 **120° C***
- *烟气循环*

沃盖拉 （Voghera ）– 意大利

***2016** 年*

新TBR 应用在FGR

新TBR 应用在FGR

新TBR 燃烧器未来将会推出的版本

- 在2019 年底，TBR系列燃烧器通过辅助雾化系统可以燃烧粘度100°E@50°C的重油。

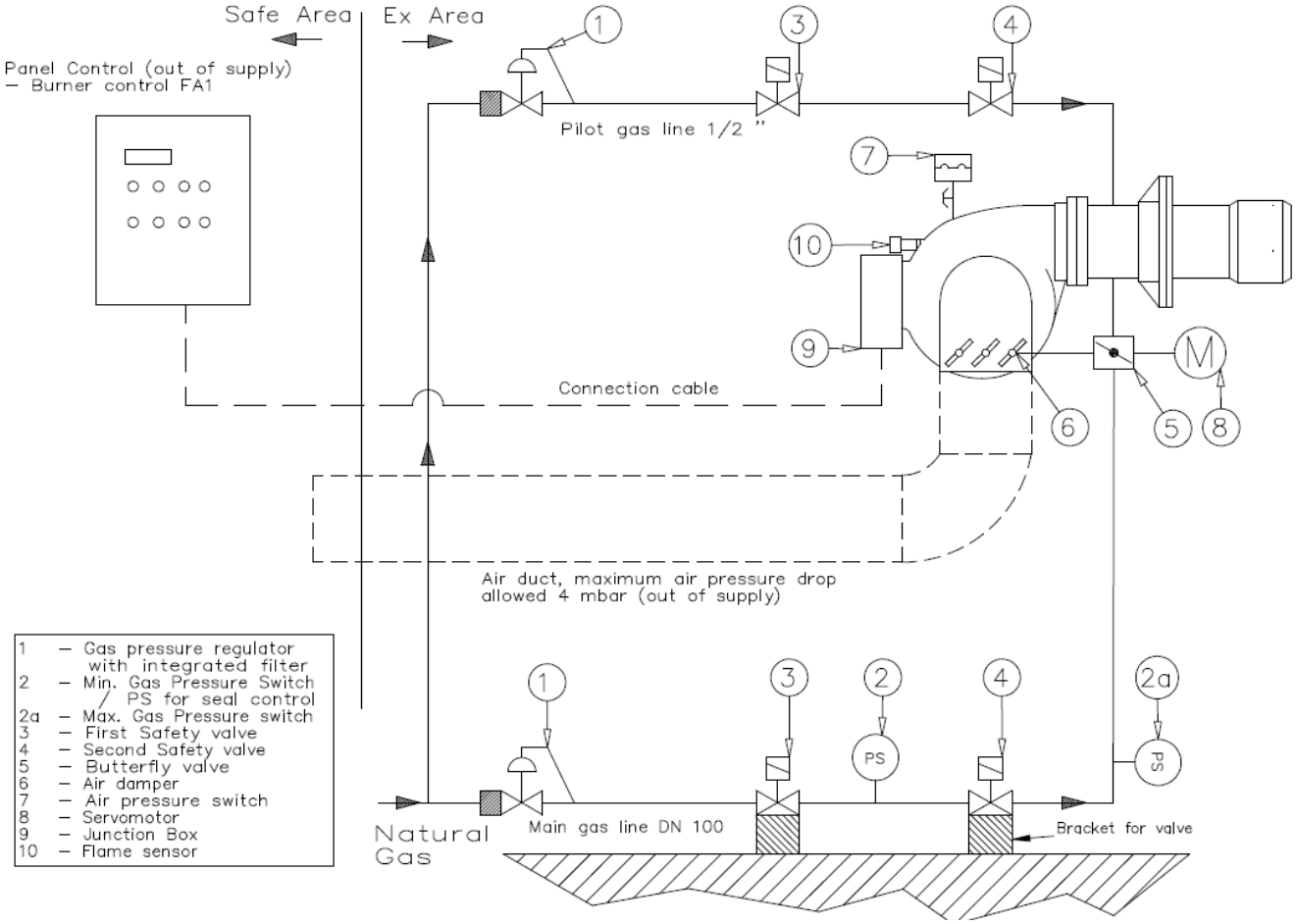
- TBR燃烧器应用于其他的其他燃料 (煤矿夹层气体, 生物气, 合成气体, 等等)

燃烧器项目

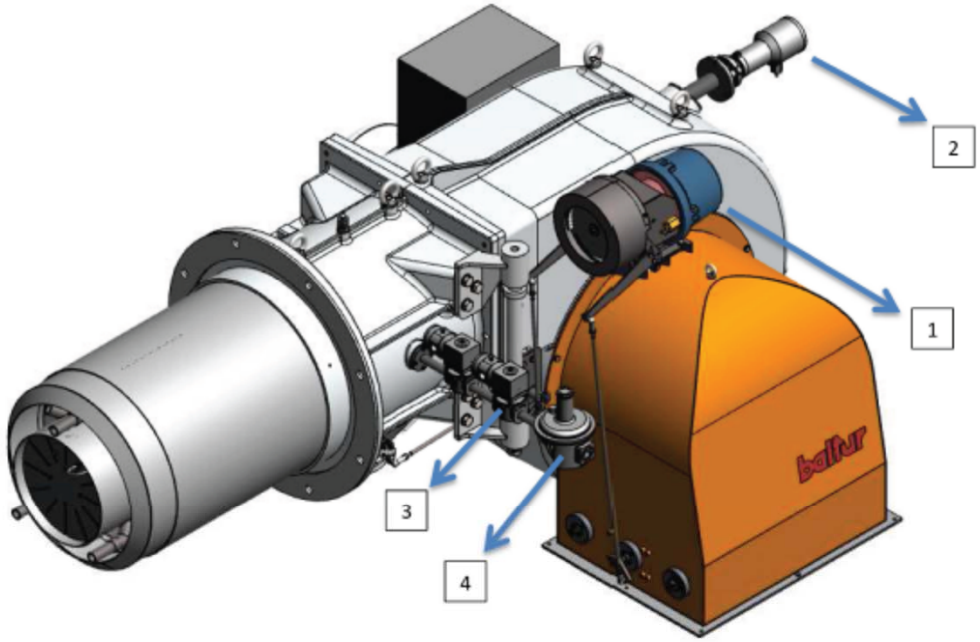
TBG 1200 MC Ex 项目

n° 9 – 热水锅炉

n° 9 – TBG 1200 MC Ex 燃烧器

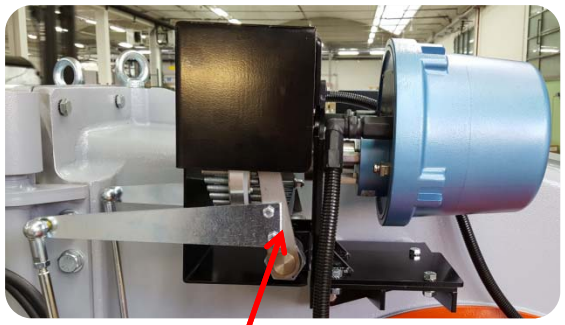


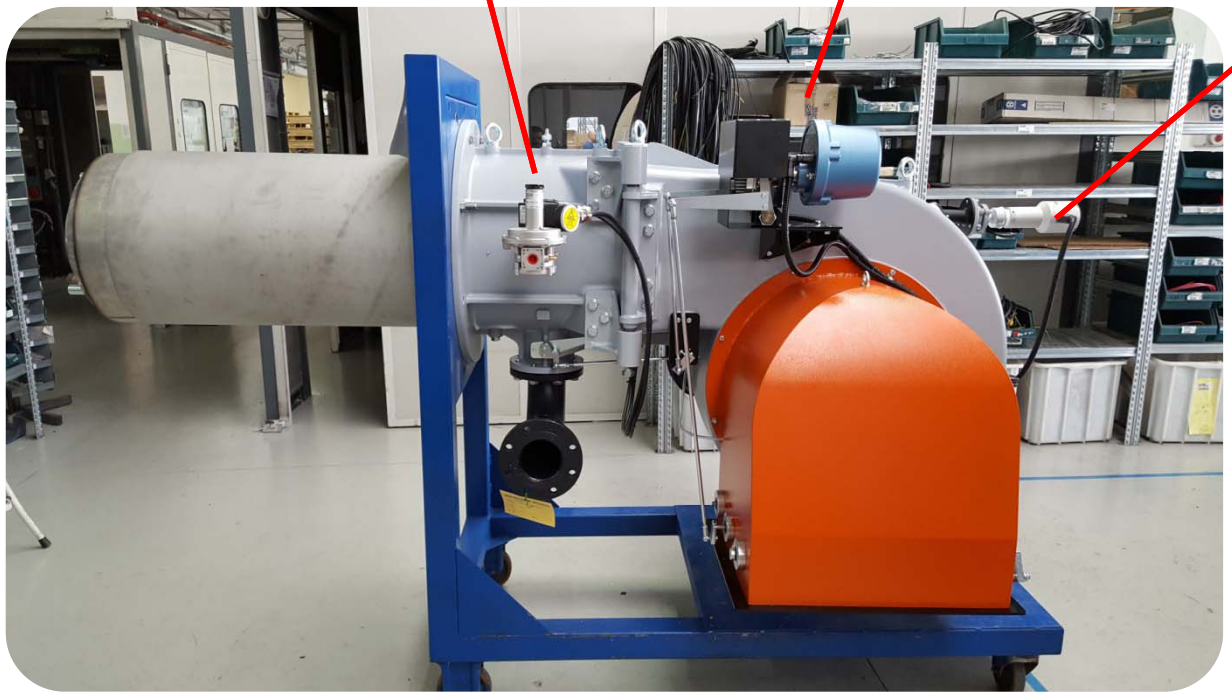
TBG 1200 MC Ex 项目



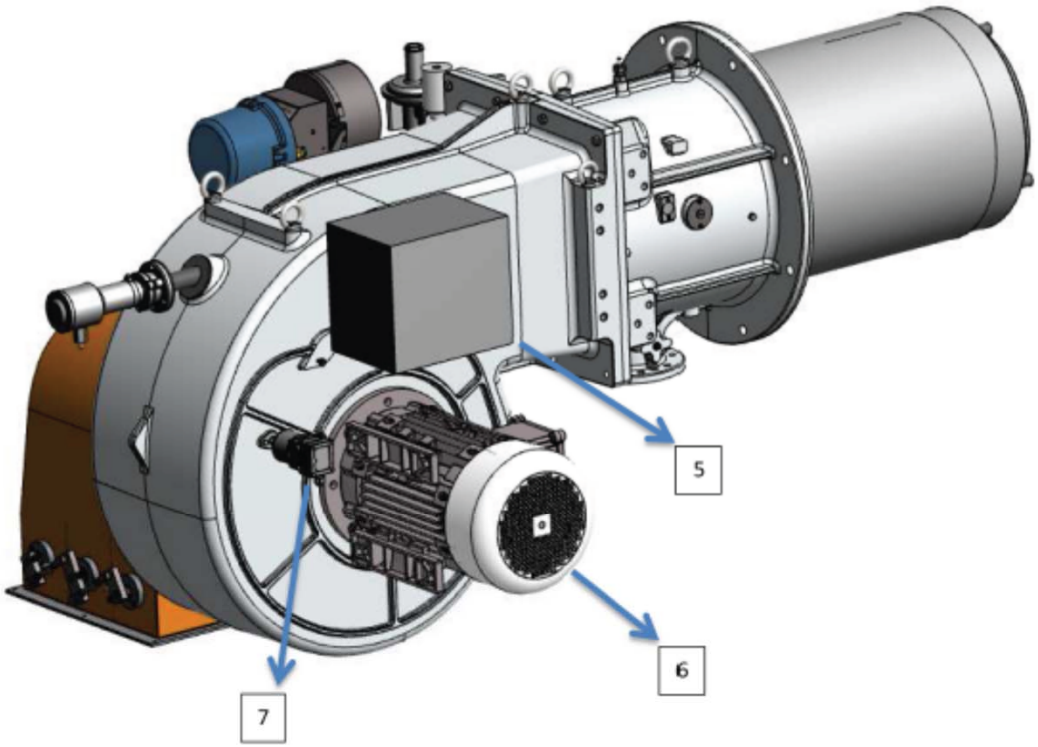
TBG 1200 MC PG

TBG 1200 MC Ex 项目

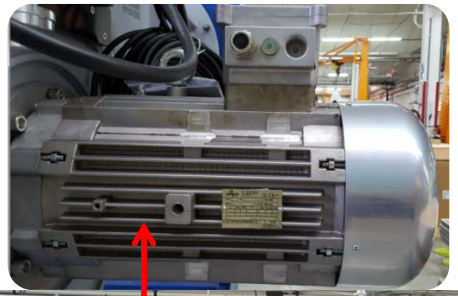


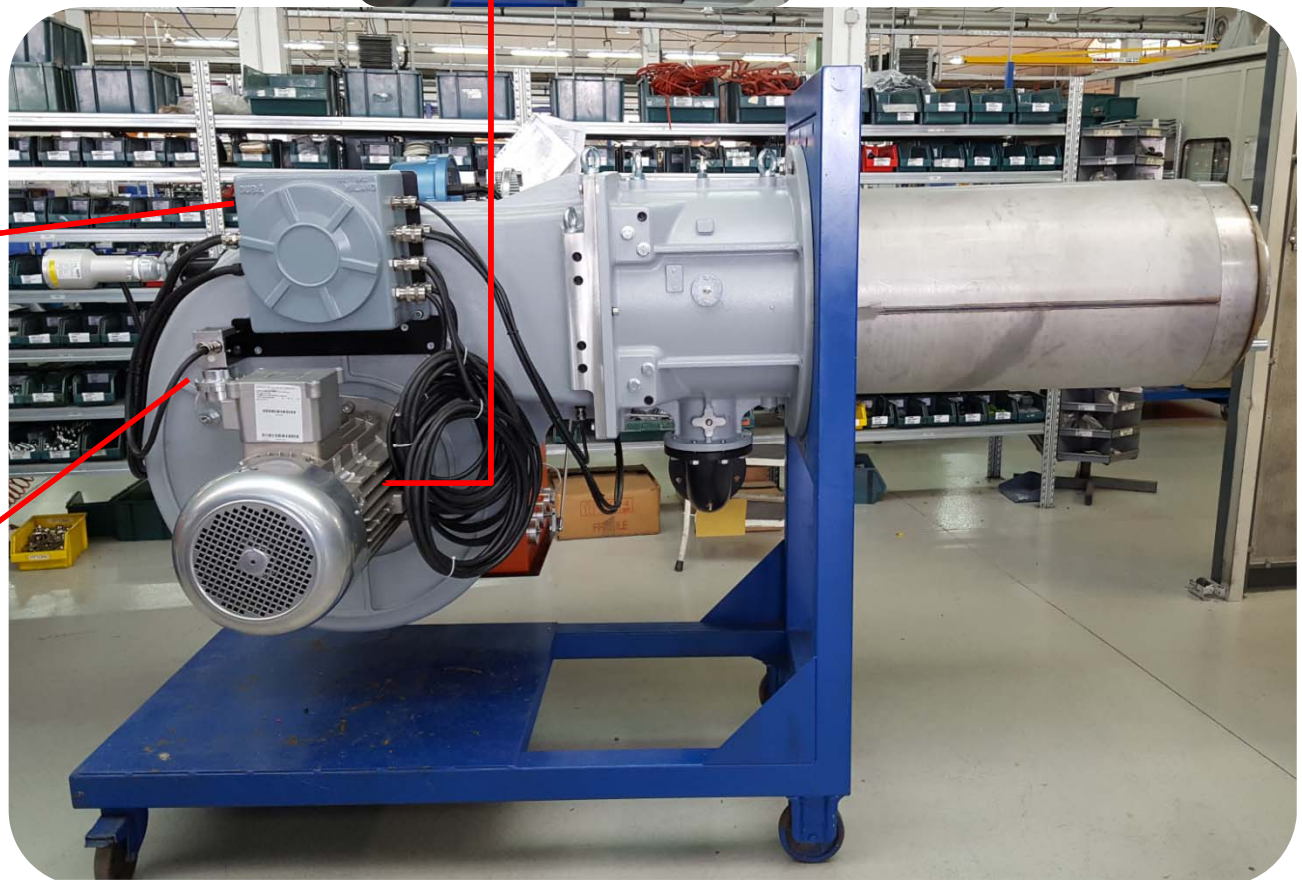


TBG 1200 MC Ex 项目

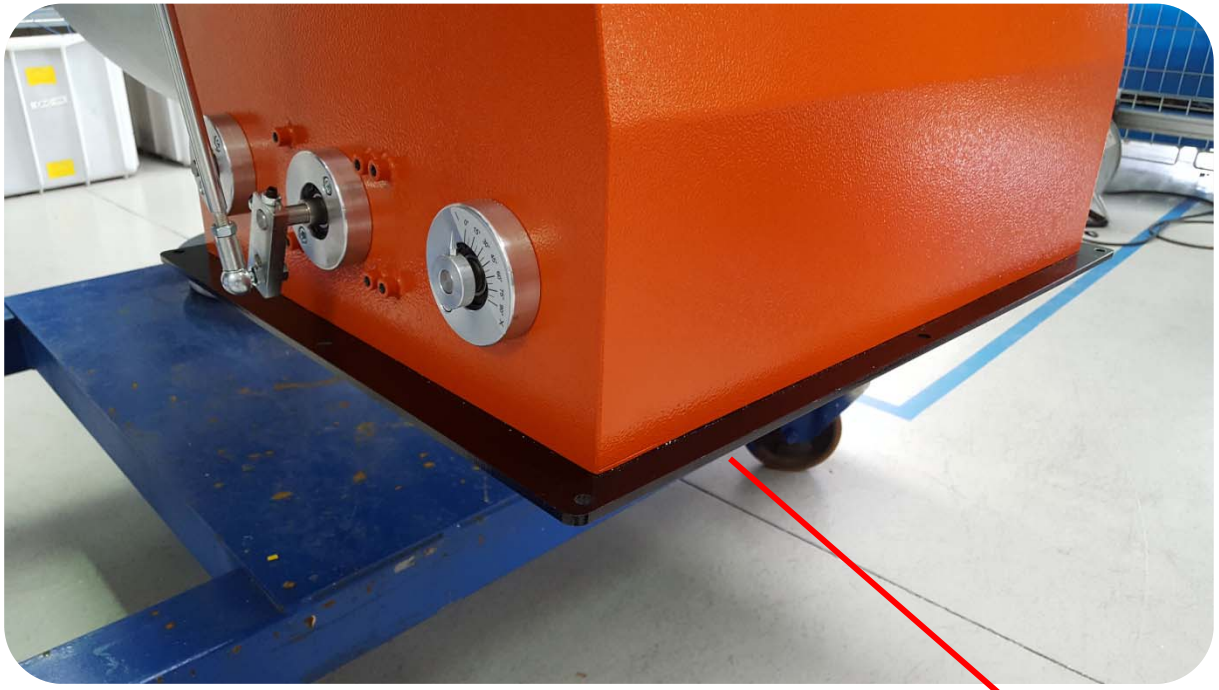


TBG 1200 MC Ex 项目





TBG 1200 MC Ex 项目



法兰和风道连接口

TBG 1200 MC Ex 项目