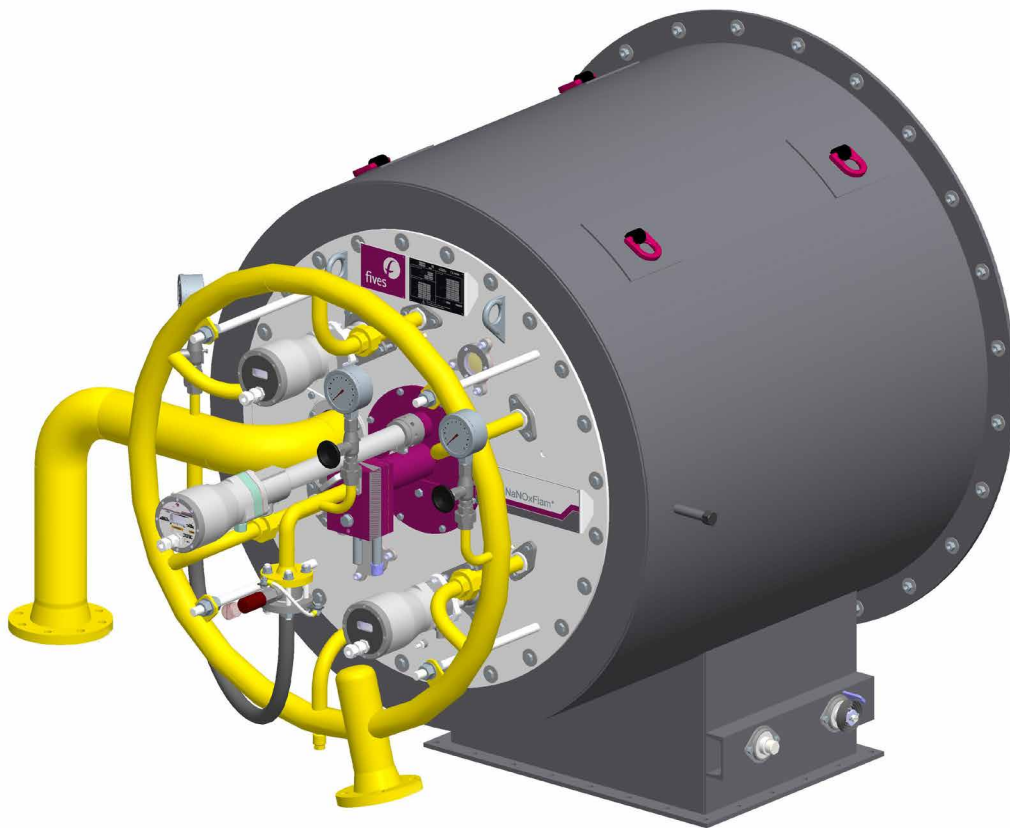


Pillard NANOxFlam[®]

Ultra low NOx burner



Pioneering technology, already recognized as “Best Emerging Technique”

- Ultra low NOx performances ≤ 10 ppm (with low Flue Gas Recirculation)
- Low noise level
- High thermal operation efficiency (low excess air and low CO emission)

Pillard NANOxFlam® is the latest version of pre-mixing burners. It is already registered as “Best Emerging Technique” (B.E.T.) in the “Best Available Technique Reference Documents” (BREF)

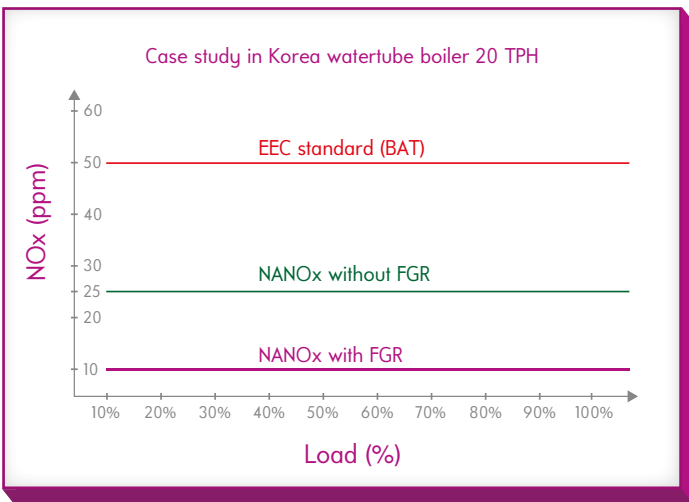
ULTRA LOW NOX EMISSION LEVELS

Existing NOx reduction techniques (such as combustion staging and external flue gas recirculation, FGR) are currently challenged by increasingly stringent environment regulations.

To help its customer meeting the lowest emission requirements while avoiding expensive SCR (Selective Catalytic Reduction) treatment of combustion gases, Fives has developed the Pillard NANOxFlam®, a new generation Ultra Low NOx gas burner.

Pillard NANOxFlam® uses a unique patented premix technology. Fuel gas and air are mixed before injection into the combustion zone, resulting in flames where temperatures are lower and uniform, thus reducing drastically NOx emissions while maintaining low CO emissions :

- < 25 ppm/@3%O₂ NOx without FGR
- < 10 ppm/@3%O₂ NOx with FGR
- < 20 ppm/@3%O₂ CO with or without FGR



APPLICATIONS

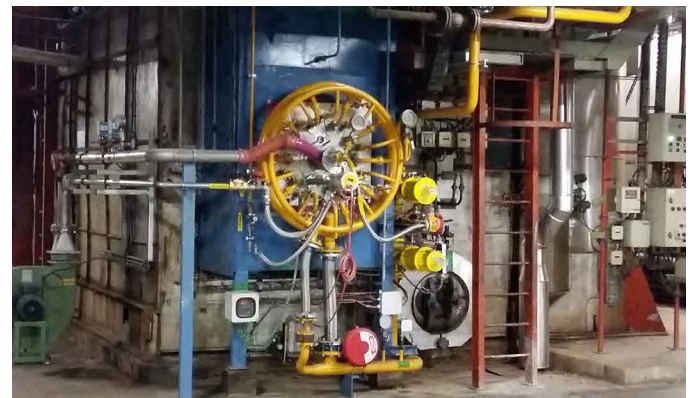
- Single burners (fire tube boiler, hot gas generator)
- Multiple burners (water tube boilers up to 100 steam t/h)



Pillard NANOxFlam® in Korea (operating since 2015)

PROVEN TECHNOLOGY

- Utilization of DO as back-up fuel
- High efficiency (low excess air and low CO emissions)
- Simple and reliable design
- Low noise level



Pillard NANOxFlam® in France (operating since 2013)

Key features

Range of heat release	5 to 60MW per burner
Turn down ratio	1 to 7
Excess air	≤ 12% (±3%)
Gas pressure	From 300mb to 2barg
Combustion air temperature	100°C
Combustion air pressure drop	≤ 300 DaPa
Fitting	With individual damper and windbox (package version)
Fuels	Natural gas, Diesel Oil in back up