

KEY PARTNERS

AIR LIQUIDE
EXXON MOBIL
PETROINEOS
REPSOL
SONARA
TOTAL
VARO Refining

PROVEN RESULTS OF WELL PROTECTED AND SEALED PROCESS

- Limit drastically the risk of pipe burst
- Increase daily production up to 10%
- Increase dramatically the pipes life
- Reduce maintenance
- Limit Atmospheric emissions (NO_x, CO...)

CASE STUDY

Oven BA 101 Petroineos Lavera / France

- Process: Atmospheric distillation oven
- Oven type: 30.000 t
- Number of pipes: 232 units
- Temperatures: 1382°F / 750°C (Radiation)
- Fuel: Refinery gas

PBI Solutions:

- **TecHeat Protect**® (<1% of the Radiation area's pipes + thermocouples)
- **TecHeat Expansion**® (24 Bellows on Convection & Radiation's crossovers)
- **Porthole seal**

Results:

- Saving 5 t/day of Fuel gas
- Assembly max 30 min/unit
- Reduced 2% O₂ = 1% efficiency increase
- No modification of the structure needed



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Optimize furnaces efficiency

- TecHeat Protect®
- TecHeat Expansion®



PROTECTION

Against
Outer pipe corrosion
Inner pipe coking

- Avoid pipe burst
- Increased operating life
- Reduced maintenance

TecHeat Protect® PIPE

- Up to 2 192°F/1 200°C
- High chemical inertness
- High protection against all burners (Fuel, Gas...)

Inspection door >



- > Washable
- > No scale penetration
- > Reduce refinery's carbon footprint
- > No furnace structural modification required
- > TecHeat Expansion® range installed off SR & TAR
- > Excellent thermal, wear & chemical resistance (H₂S, SO₂,...)
- > Easy to implement, hardware & assembling instructions included
- > Various fastening options, can be opened or disassembled for control and maintenance

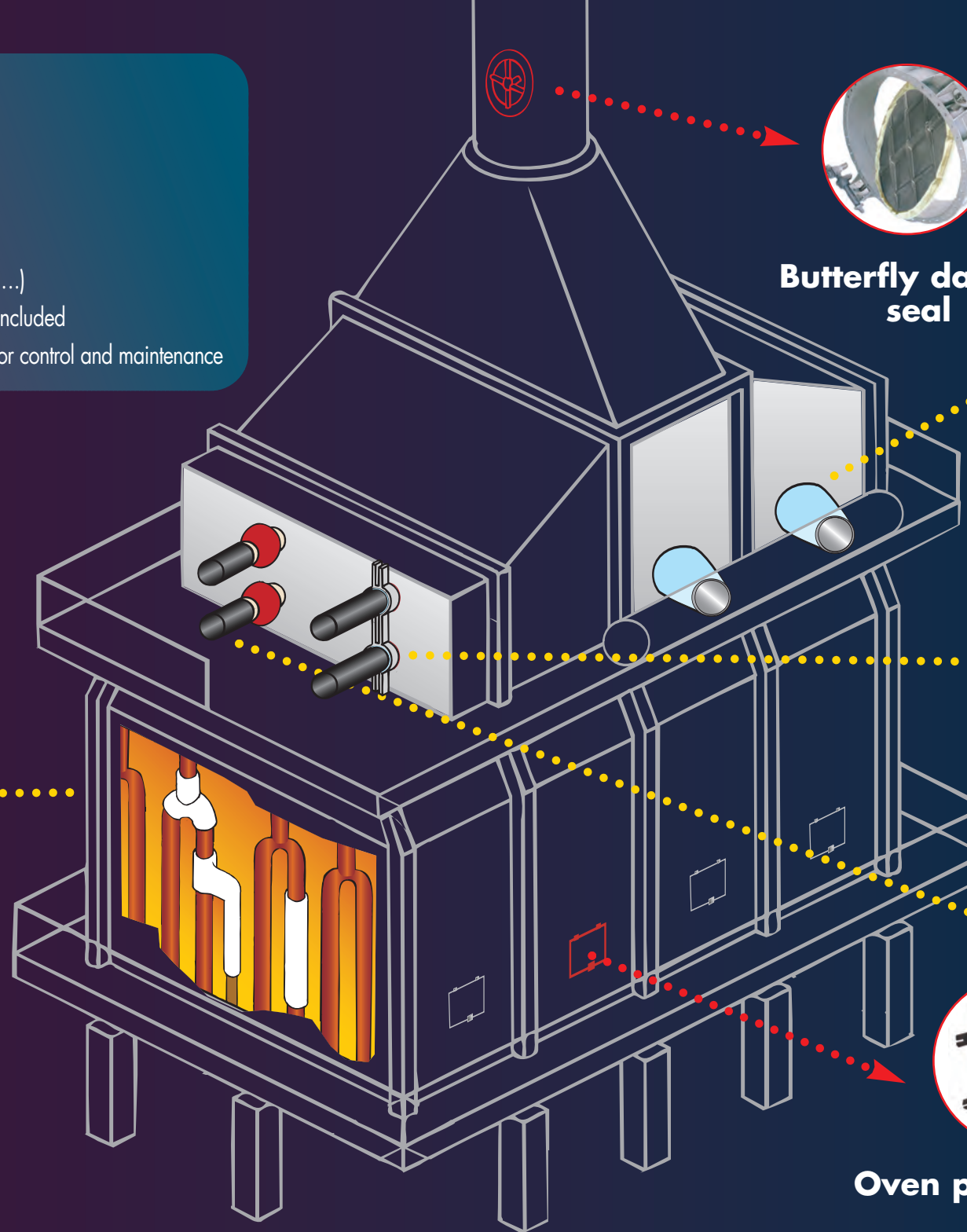
TecHeat Protect® ELBOW

TecHeat Protect® THERMOCOUPLE

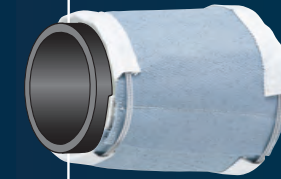
Reduce significantly welding embrittlement



TecHeat Protect® SUPPORT

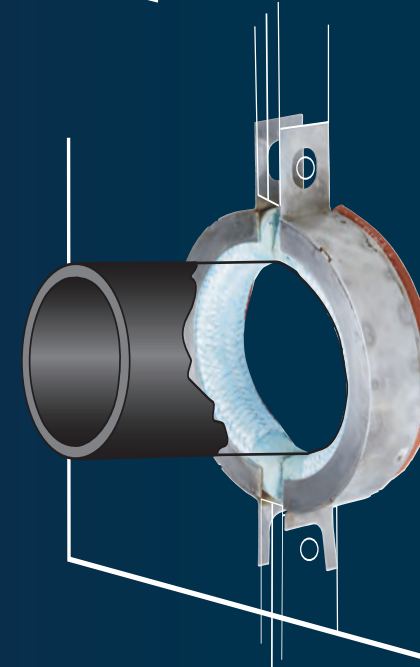


Butterfly damper seal



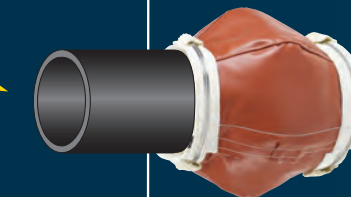
TecHeat Expansion® SLEEVE

- Fastening on ferrule
- Axial expansion up to +100 mm
- Up to 1 382°F / 750°C



TecHeat Expansion® COLLAR

- Fastening on corner piece
- Unlimited axial expansion
- Up to 1 832°F/1 000°C



TecHeat Expansion® BELLOW

- Fastening on ferrule
- Axial expansion up to +300 mm
- Up to 1 382°F / 750°C

Oven porthole seal



SEALING

Against
Unwanted air in the furnaces
Atmospheric emissions (NO_x,...)

- Reduced operating cost
- Increased efficiency