

# DOUBLE WALL METAL CHIMNEYS FOR GENERATOR APPLICATIONS

## **FIELD OF APPLICATION:**

GENERATOR SETS AND DIESEL GENERATORS, TURBOGENERATORS, STEAM TURBINES AND GAS TURBINES.

EXHAUSTS USED IN THE ABOVE APPLICATIONS SHOULD COMPLY WITH THE FOLLOWING REQUIREMENTS AS PER EUROPEAN STANDARDS:

## **MATERIALS:**

INNER WALL: STAINLESS STEEL AISI 316L (1.4404) THICKNESS 0.5 mm.

OUTER WALL: STAINLESS STEEL AISI 304L (1.4307) THICKNESS 0.5 mm.

INSULATION: PREFORMED HIGH DENSITY MINERAL WOOL SLABS OF AVERAGE DENSITY OF 125 Kg/m<sup>3</sup> AND THICKNESS OF 25, 50, OR 60 mm.

## **OPERATING TEMPERATURE:**

600° C FOR CONTINUOUS DUTY

700° C FOR INTERMITTENT DUTY

## **PRESSURE TIGHTNESS**

(ACCORDING TO Pr EN 1856): H2 5000Pa 0.12 l/sm<sup>2</sup>

## **MAIN CHARACTERISTICS:**

- DOUBLE WALL CONSTRUCTION,
- THE INNER WALL SHOULD BE DESIGNED WITH THE AIM OF AUTOMATICALLY COMPENSATING THE THERMAL ELONGATION DUE TO HIGH TEMPERATURES.
- THE CHIMNEY SECTIONS SHOULD BE ASSEMBLED THROUGH «MALE/FEMALE» JOINTS, ON SUITABLY CALIBRATED, SELF-CENTERING, ANTI-SQUASH ENDS.
- THE PRESSURE TIGHTNESS OF THE SYSTEM IS OBTAINED APPLYING, DURING THE INSTALLATION, A SPECIAL CERAMIC SEALANT IN THE JOINING POINTS OF EACH SECTION. THIS CERAMIC SEALANT IS SUPPLIED BY THE MANUFACTURER AND HAS A 1000°C TEMPERATURE RESISTANCE.
- THE ENDS ACT AS A BARRIER TO LEAKAGE OF CONDENSATE.
- THE WALL CLIP (STANDARD ACCESSORY) ALLOWS STATIC CLAMPING BETWEEN THE CHIMNEY SECTIONS.
- ALL CHIMNEY SECTIONS SHOULD BE WELDED UNDER SHIELDING GAS.
- IT IS NECESSARY TO INSTALL AN ANTIVIBRATION JOINT IN ORDER TO AVOID THE TRANSMISSION OF THE VIBRATIONS FROM THE GENERATOR TO THE CHIMNEY.

## **INTERNATIONAL STANDARDS:**

THE PREFABRICATED EXHAUST MATERIAL AND ACCESSORIES SHOULD GENERALLY MEET INTERNATIONAL STANDARDS (UNI, DIN, AFNOR) IN REGARDS TO:

- QUICK AND EASY INSTALLATION WITH PROVISION FOR ADAPTING TO MORE COMPLEX PATHS
- LOW THERMAL INERTIA
- QUICK REACHING OF OPERATING CONDITIONS
- RAPID ACTIVATION OF DRAUGHT
- INNER WALL PERFECTLY IMPERMEABLE TO CONDENSATE
- LOW OUTER WALL TEMPERATURE

## **THE LINE SHOULD CONSIST OF THE FOLLOWING (see figure)**

- STRAIGHT CHIMNEY SECTION
- BOILER FITTING
- TEMPERATURE MEASURING DEVICE WITH INSPECTION OPENING
- ELBOWS
- COMPENSATION SECTION
- 90° TEE FITTING/INSPECTION OPENING WITH CIRCULAR CLOSURE
- 135° FITTING
- WALL SUPPORT
- SUPPORTING BASE
- UNBURNT FUEL CHAMBER
- INSPECTION OPENING
- INSPECTION OPENING WITH CONDENSATE CONVEYOR
- END CAP
- INSPECTION CAP
- CONDENSATE CONVEYOR
- WALL CLIP
- FIRE-STOP SAFETY SPACER
- FLAT OR SLOPING CHIMNEY RAIN STOP WITH CLIP (0° TO 45°)
- ANTI-BACKFLOW TERMINAL
- RAIN CAP
- TRUNCATED CONE TERMINAL
- CLIP FOR STAY CABLES

### **STRAIGHT CHIMNEY SECTION**

THE STRAIGHT CHIMNEY SECTION IS THE MAIN COMPONENT FOR BUILDING BOTH THE CONNECTING FLUE PIPE AND CHIMNEY.

### **COMPENSATION SECTION**

THE COMPENSATION SECTION, WITH ADJUSTABLE HEIGHT, SERVES FOR BUILDING ACHIMNEY SYSTEM TO THE REQUIRED SIZE. WHEN USED IN VERTICAL DIRECTION, IT IS RECOMMENDED NOT TO OVERLOAD THE SECTION OR INSTALL IT UNDER THE WALL SUPPORT. AT LEAST 8 EQUIDISTANT HOLES SHOULD BE DRILLED ON THE TWO OUTER SLIDING WALLS USING A 3.3 mm DIA. DRILL BIT.

### **ELBOWS**

THE ELBOWS ARE MADE OF SEGMENTS; EACH ONE SLOPING BY 22.5°. THIS ALLOWS FORMING WIDELY DIFFERING ANGLES OF DISPLACEMENT THANKS TO THE PROVISION FOR SWIVELLING ONE SEGMENT ABOUT THE OTHER. IF USED FOR OFFSETTING THE CHIMNEY IN VERTICAL PATHS, THEY SHOULD BE FOLLOWED BY A WALL SUPPORT.

### **TEMPERATURE MEASURING DEVICE WITH INSPECTION OPENING**

THE TEMPERATURE MEASURING DEVICE WITH INSPECTION OPENING IS USED FOR ANALYSIS OF THE SMOKE/ FUMES, MEASURING THE EFFICIENCY OF COMBUSTION AND CHECKING THE GENERATOR OUTLET TEMPERATURE. THIS COMPONENT ALLOWS COMBINING THE SMOKE DETECTION FUNCTION WITH THAT OF INSPECTION.

### **EXTRUDED 90°TEE FITTING / INSPECTION OPENING WITH CIRCULAR CLOSURE**

THE 90° TEE FITTING SERVES FOR CORRECT AND EASY CONNECTION BETWEEN THE CONNECTING FLUE PIPE AND CHIMNEY WITH COUPLING AT 90°, WITH INTERNAL AND EXTERNAL EXTRUSION. WHEN PROVIDED WITH SPECIAL CAP (SEE SPECIFICATIONS « INSPECTION CAP»), THE FITTING PERFORMS THE DUAL FUNCTION OF INSPECTION OPENING.

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### **WALL SUPPORT**

THE WALL SUPPORT SERVES FOR SUPPORTING THE CHIMNEY INSTALLED IN THE VICINITY OF AN ALREADY EXISTING SUPPORT STRUCTURE. AN APPROPRIATE ANCHORING SYSTEM SHOULD BE USED, CONFORMING TO SUCH STRUCTURE. MAX. PERMISSIBLE DISTANCE BETWEEN TWO SUPPORTS, THEREFORE MAX. PERMISSIBLE LOAD IS: 13 m FOR DIA. 80 TO 200; 10 m FOR Ø 250 TO 350. THE WALL SUPPORT IS ADJUSTABLE AND REVERSIBLE. DISTANCE FROM THE WALL IS ADJUSTABLE FROM 80 mm TO 120 mm

### **SUPPORTING BASE**

THE SUPPORTING BASE ENSURES THE NECESSARY SUPPORT FOR CHIMNEYS RESTING ON A FLAT BASE.

### **UNBURNT FUEL CHAMBER**

THE UNBURNT FUEL CHAMBER SHOULD BE FITTED AT THE BOTTOM OF THE CHIMNEY WHEN USING SOLID OR LIQUID FUELS. FOR GASEOUS FUELS, REFERENCE SHOULD BE MADE TO THE INSPECTION OPENING WITH CONDENSATE CONVEYOR. BUILT WITH

SINGLE WALL

**INSPECTION OPENING**

THE INSPECTION OPENING ALLOWS INSPECTION INSIDE THE CHIMNEY. THIS COMPONENT SHOULD BE INSTALLED COMPLETE WITH AGAS-TIGHT CLOSURE. WHEN INSTALLED AT THE BOTTOM OF CHIMNEYS FOR SERVICE WITH GAS-FIRED APPLIANCES, IT SHOULD BE PROVIDED WITH A CONDENSATE CONVEYOR.

**INSPECTION OPENING WITH CONDENSATE CONVEYOR**

THE FUNCTIONS OF INSPECTION OPENING AND CONDENSATE CONVEYOR ARE COMBINED IN ONE SINGLE PRODUCT. BUILT IN SINGLE WALL VERSION.

**END CAP**

THE END CAP IS USED FOR TERMINATING THE CHIMNEY. AS IT IS REMOVABLE, IT ALLOWS ACCESS INSIDE THE CHIMNEY FOR INSPECTION AND CLEANING.

**INSPECTION CAP**

THE INSPECTION CAP FITTED WITH GASKET TO ENSURE TIGHT SEAL, IS APPLIED TO THE EXTRUDED 90° TEE FITTING. AS IT IS REMOVABLE AND PROVIDED WITH A TIGHTENING HANDLE, IT ALLOWS ACCESS INSIDE THE CHIMNEY FOR INSPECTION AND CLEANING.

**CONDENSATE CONVEYOR**

THE CONDENSATE CONVEYOR SERVES FOR DRAINING OFF ANY CONDENSATE PRODUCED DURING THE TRANSIENT PHASE OF BRINGING THE CHIMNEY UP TO OPERATING CONDITIONS OR RAIN WATER COMING FROM THE TRUNCATED CONE TERMINAL.

**WALL CLIP**

TASK OF THE WALL CLIP IS TO GUIDE THE CHIMNEY AND ALLOW SLIDING DUE TO THERMAL ELONGATION. IT SERVES FOR BRACING, NOT SUPPORT. THE WALL CLIP SHOULD BE INSTALLED ABOUT EVERY TWO SECTIONS, PREFERABLY CLOSE TO THE JOINT BETWEEN SECTIONS. A SPACER, SIZE 80 mm TO 130 mm, MIGHT BE AVAILABLE.

**FIRE-STOP SAFETY SPACER**

THE FIRE-STOP SAFETY SPACER IS USED WHEN CROSSING SLABS IN ORDER TO AVOID THE CHIMNEY FROM COMING INTO CONTACT WITH COMBUSTIBLE AND/OR INFLAMMABLE MATERIALS (pr EN1856/1859). IT ALSO HAS THE TASK OF PRESERVING THE PASSIVATED LAYER OF THE STAINLESS STEEL CHIMNEY.

**FLAT CHIMNEY RAIN STOP WITH CLIP**

THE FLAT CHIMNEY RAIN STOP, FOR USE ON FLAT ROOFING, AND PROVIDED WITH A SUITABLE CLIP ACTING AS DRIP ELEMENT, SERVES TO PREVENT INFILTRATION OF WATER OR SNOW.

**SLOPING CHIMNEY RAIN STOP 5° TO 30° WITH CLIP**

THE SLOPING CHIMNEY RAIN STOP, FOR USE ON PITCHED ROOFS WITH SLOPE FROM 5° TO 30°, AND PROVIDED WITH A SUITABLE CLIP ACTING DRIP ELEMENT, SERVES TO PREVENT INFILTRATION OF WATER OR SNOW.

**ANTI-BACKFLOW TERMINAL**

THE ANTI-BACKFLOW TERMINAL HAS BEEN DESIGNED TO PREVENT INFILTRATION OF RAIN AND SNOW IN THE CHIMNEY AS WELL AS TO ENSURE PERFECT EXTRACTION OF

**THE FUMES AND SMOKE UNDER WINDY CONDITIONS. THANKS TO ITS SPECIAL STRUCTURE, IT EXHIBITS LOW PRESSURE DROPS, WHILE UNDER RISING WIND CONDITIONS THE KINETIC ENERGY BECOMES A FACTOR CAPABLE OF INCREASING THE DRAUGHT EFFECT.**

**RAIN CAP / ANTIWIND PROTECTION**

THE RAIN CAP SERVES FOR PREVENTING INFILTRATION OF RAIN OR SNOW INSIDE THE CHIMNEY ALTHOUGH IT ALLOWS FREE FLOW OF THE SMOKE AND FUMES.

**TRUNCATED CONE TERMINAL**

THE TRUNCATED CONE TERMINAL ALLOWS FREE FLOW OF SMOKE AND FUMES INTO THE ATMOSPHERE. IT DOES NOT HAVE THE FUNCTION OF PROTECTING AGAINST ATMOSPHERIC AGENTS, HENCE A90° OR 135° FITTING SHOULD BE PROVIDED, AS WELL AS A CONDENSATE CONVEYOR FOR DRAINAGE OF THE RAIN WATER.

**CLIP FOR STAY CABLES**

THE CLIP FOR STAY CABLES SERVES FOR BRACING THE CHIMNEY WITH THE AID OF STAY CABLES (NOT SUPPLIED AS STANDARD) WHENEVER THE OVERHANG FROM THE LAST CLAMPING EXCEEDS 1.5 m. WHEN IT IS NOT POSSIBLE TO USE ALL THREE ANCHORING SIDES, THE CABLES CAN BE REPLACED BY AT LEAST TWO SUFFICIENTLY RIGID STRUCTURAL SHAPES.