Protection of petroleum or gas tanks

using a

PREVECTRON®

early streamer emission

lightning conductor

Indelec

lightning protection

PROTECTION OF PETROLEUM OR GAS TANKS

USING A PREVECTRON® EARLY STREAMER EMISSION (E.S.E.) LIGHTNING CONDUCTOR

GENERAL

1→The lightning protection system should be in full compliance with French lightning protection standard NF C 17-102 (Protection of structures and open areas against lightning using Early Streamer Emission air terminals).

2→To ensure an effective system and satisfactory long term performance, all fittings need to be mechanically robust and provide good corrosion resistance in conditions of 50° C and 95% relative humidity.

3→All materials used should be suitable for lightning protection installations.

AIR TERMINAL

1→The air terminal should be of the PREVECTRON® Early Streamer Emission (E.S.E.) type which is equipped with a lower series of energy collecting electrodes and an upper series of spark-generating electrodes. The triggering device of the E.S.E. air terminal is sealed in a stainless-steel housing fixed at the centre of its central rod.

2→The air terminal should be fixed at the top of a free-standing ground mounted support tower within the area to be protected. The height of the tower would be dependent on the level of protection and the protection radii required. Guy wires must not be used.

3→The tower should be installed outside the safety area and a minimum distance of 8 metres from the tank must be respected. One installation may protect several tanks.

DOWN CONDUCTOR

1→The down conductor should be high conductivity round or flat solid copper conductor with minimum size 50 mm^2. It should be fixed to the structure of the tower by means of 3 fasteners per metre.

2→The down conductor should be connected to the air terminal by a metallic adapter located on the E.S.E. air terminal. It should then run down the tower taking the shortest direct route down to the earth termination network, avoiding any sharp corners, thereby providing a low impedance path from the air terminal to its earth termination system.

3→A 6 digit Lightning Flash Counter may be installed on the tower in order to count the actual lightning strikes on the E.S.E. air terminal.

4→The base of the down conductor should be protected from accidental knocks and other damage by means of a 2 metre stainless-steel protection sheath fixed to the tower.

5→A test clamp should be provided at the bottom of the tower in a P.V.C or concrete inspection pit so that the down conductor may be disconnected from the earth termination and regular checks of the earth termination resistance be carried out.

EARTH TERMINATION SYSTEM

1→The down conductor should be connected to its own earth termination system using a crow-foot earth termination. The crow-foot termination is made of conductors of the same cross-sectional area as the down conductor of the installation and arranged in a crow-foot fashion (three 7 to 8 metre long conductors buried horizontally). A copper-covered steel earth rod should be added at the end of each copper run.

2→The earth termination system should be orientated away from storage tanks.

3→The resistance value of the earth termination system should be 10 Ohms or less.

4→Each earth conductor and rod connection should be housed in a proprietary concrete or P.V.C pit in order to facilitate inspection. The pit should be complete with a lid and the assembly should be installed flush with ground level.

5→The lightning conductor earth termination system must then be connected to the general earthing network of the site in order to achieve an equipotential earth network. This connection should be equipped with a disconnecting clamp housed in a concrete or P.V.C inspection pit.

Conforming the international standard CEI 61643-11 and the French standard NF EN 61643-11, the installation of a type 1 overvoltage arrester (DGV) is now mandatory for all structure equipped with a lightning air terminal.

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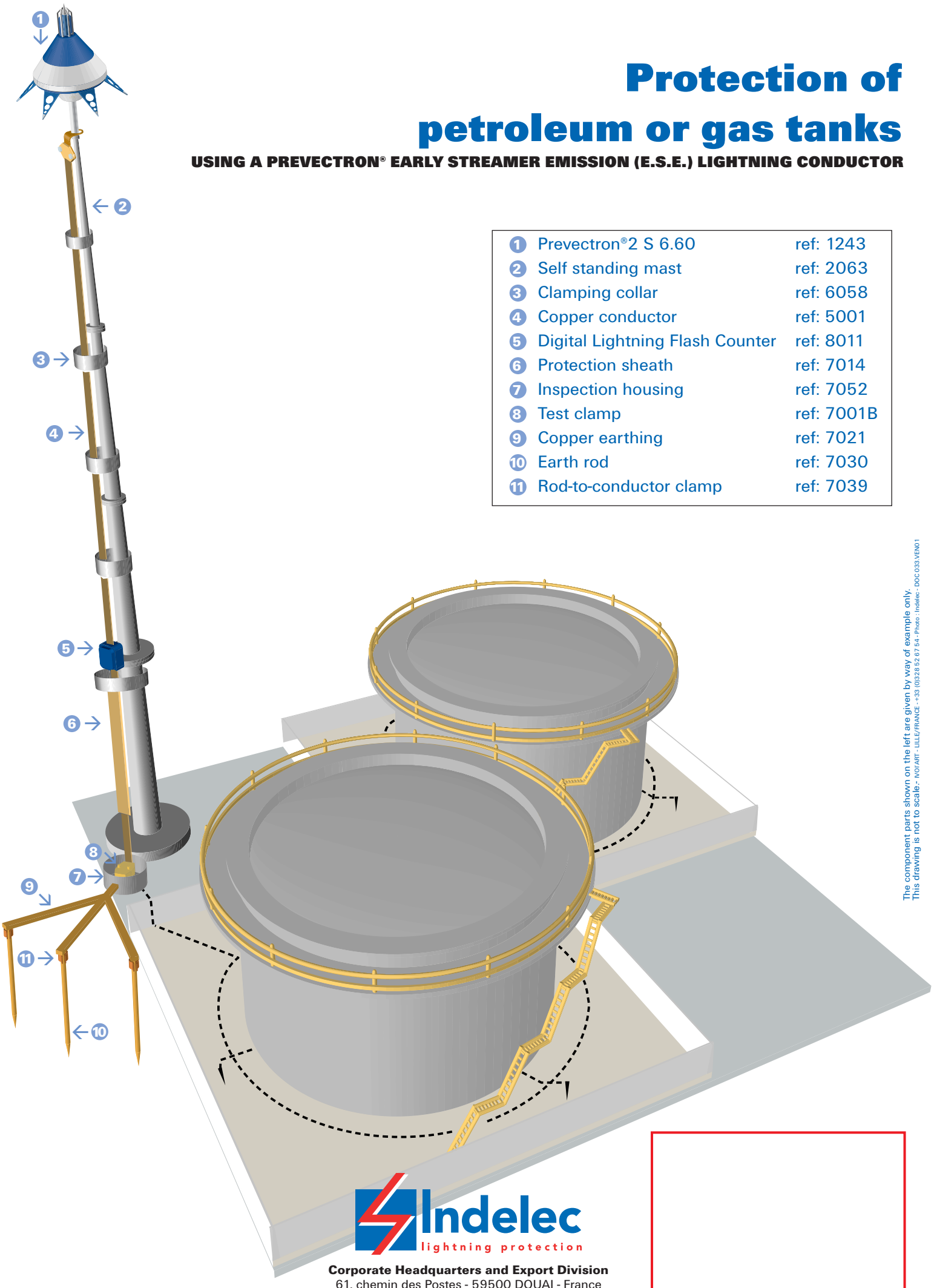
1	Prevectron®2 S 6.60	ref: 1243
2	Self standing mast	ref: 2063
3	Clamping collar	ref: 6058
4	Copper conductor	ref: 5001
5	Digital Lightning Flash Counter	ref: 8011
6	Protection sheath	ref: 7014
7	Inspection housing	ref: 7052
8	Test clamp	ref: 7001B
9	Copper earthing	ref: 7021
10	Earth rod	ref: 7030
11	Rod-to-conductor clamp	ref: 7039



The component parts shown on the left are given by way of example only.
This drawing is not to scale.- IVO/ART - LILLE/FRANCE - +33 (0)328 52 67 54 - Photo : Indelec - DOC 033.VEN01

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