RAM 100 DEL SURESTE S.A. DE C.V.
ISO 9001:2008 CERTIFIED
(NMX-CC-9001-IMNC-2008)

RAMFILL®

STEEL REINFORCEMENT SLEEVES

REPAIR SYSTEMS FOR PIPELINES IN OPERATION

RAM 100 INTERNATIONAL, LLC

RAMFILL-RS

REINFORCEMENT OF WELD DEFICIENCIES

RAMFILL-RS is a boiler-type repair sleeve for reinforcement of weld deficiencies. Its pyramidal design and a convex bent in the center to properly fit the existing weld to be repaired is a Patented Product in Mexico (Patent # MX/a/2011/005026). Its geometric shape improves the mechanical stress resistance of the sleeve. It is manufactured without welds, with specifications, diameter, and wall thickness, as requested by each project.

Each halve of the **RAMFILL-RS** sleeve is manufactured with two bevel sections along the longitudinal ends, to prevent welding product to reach the pipeline as well as to maintain the annular space free of welding gases.

RAMFILL-RS repair sleeves are a patented RAM-100 product that was developed in response to the demand for a fast, safe, and permanent solution to repair weld deficiencies such as:

- Overall external and/or internal corrosion
- Incomplete penetration
- Lack of fusion
- Burnt areas with slag inclusions
- Porosity, Gas bubbles
- Undercutting

Once installed, the **RAMFILL-RS** repair sleeve restores safety of operation to the pipeline in the area where the welding is reinforced by restoring the stress resistance to equal or higher values of the original conditions of the pipeline.

When required for repairs on gas pipelines, depending on market availability or when requested by the client, the **RAMFILL-RS** repair sleeves can be manufactured from API piping instead of carbon-steel plates.

The typical length of the **RAMFILL-RS** reinforcement steel sleeves is of 0.25 m (1 ft.) but can be modified when requested by the client for a special design or condition of the pipeline or flaw to be repaired and reinforced. When required, a modification to the design can be manufactured to locate the bent of the sleeve strategically to fit existing welds of the pipeline to be repaired.

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The installation kit includes RAM-100 Epoxy resin to saturate the annular space formed between the pipe and the sleeve, creating an incompressible element that acts as a transmitter of stress from the pipeline to the sleeve. This incompressible resin is for manual application and it can be provided in a semi-liquid state for pressure injection, as requested by the client.

RAMFILL-RS steel reinforcement sleeves allow for complete traceability as they are delivered marked with the serial and production order numbers engraved in the outer face of each half of the repair sleeve.

When requested by the client, a certification of the materials and production process can be issued by a world class and recognized certifying body, member of the IACS (International Association of Classification Society).

RAMFILL-RS repair systems are manufactured under the following international standards:

- *ANSI/ASME BPV Code for Boiler and Pressure Vessel*
- *ANSI/AWS D1.1/D1.1M:2010 Structural Welding Code – Steel – Edition 2010 (sections: 5.24-Weld profiles, 6.9-Visual inspection, and table 6.1-Welding of pipelines and related facilities, Nineteenth Edition, September 1999, Errata 2001 (section 9.7, table 4))*
- *ASME PCC-2 – 2011 Repair of Pressure Equipment and Piping*

RAMFILL® steel reinforcement sleeves are considered a permanent and definite repair system for pipelines according to the following *PEMEX* standards:

- *NRF-030-PEMEX-2009 – Standards for Design, Construction, Inspection and Maintenance of Pipelines for the Recollection and Transmission of Hydrocarbons.*
- *NOM-027-SESH-2010 – Management of Pipeline Integrity for Pipelines for the Collection and Transportation of Hydrocarbons.*

Contact us to obtain a quote, for additional details, or specific questions regarding **RAMFILL®** steel reinforcement sleeves

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