



Manufacturing

Manufacturing activities are carried out in our factory directly or through our Italian Sub-Suppliers/Partners. All steel components are hot dip galvanized according to International Standards in **Salvi Galvanizing Plant** where both standard and heavy thicknesses can be applied.

Salvi can also provide stainless steel and ductile iron components for special applications. Moreover steel alloy components could be supplied for installation in very low temperature areas. All bolts and nuts could be supplied in galvanized steel or stainless steel with metric, whitworth and UNC thread.



Steel Forging factory



Pressure die casting factory



Galvanizing Plant

Packing and shipping department



Salvi Packing Department can arrange for :

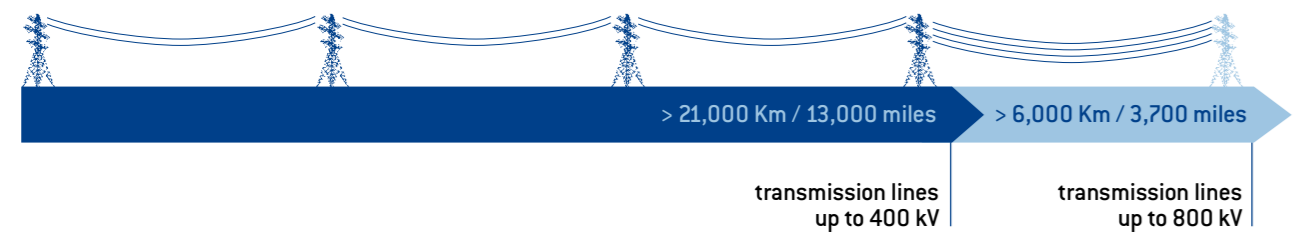
- **standard packing system:** pieces of same or similar type in the same cases or crates
- **packing per tower:** various components necessary for one complete tower are packed in one or several cases clearly identified for relevant tower type.

Hardware and Fittings

Salvi has been participating, since its establishment in 1920, to the construction of a large number of high voltage transmission lines all over the world. It is impossible to outline 95 years of activity in a few words, therefore we have focused below the main highlights over last 5 years.

The above result was achieved thanks to an annual production capacity of about 5,000 ton of hardware, fittings and accessories [ANIE Reference].

Hardware and Fittings



The right way for Fitting Systems

Hardware

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Hardware

Salvi is a Company specialized in designing, manufacturing and testing products for High and Extra High Voltage Overhead Transmission Lines:

- Hardware, fittings and Accessories for Phase Conductors, Shield Wires and OPGW Cables for OHTL from **11kV up to 1,200kV** and for both **AC and DC Systems**.
- Damping Systems (Spacer Dampers and Vibration Dampers defined through a specific dedicated study)
- Guy wire anchor devices

The Company was established in 1920 as a private company and in 2002 joined SICAME, an international group including more than 60 companies operating in over 25 countries and selling worldwide.

Salvi is successfully active worldwide and it keeps increasing its presence on various markets and consequently its turnover.



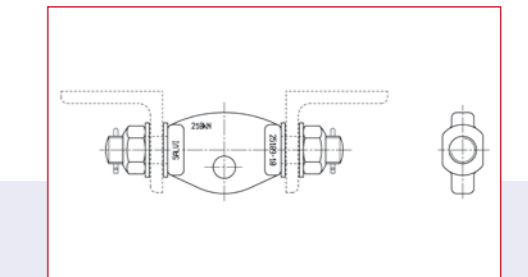
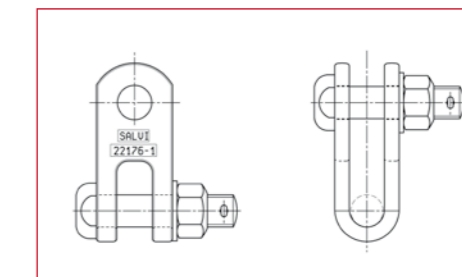
Engineering Department

Salvi Engineering Department is formed by highly professional staff that carefully examine each Project in order to select the proper components necessary for the prescribed insulator assemblies and conductor/shieldwire accessories.

In addition to the Project Technical Specifications and International Standards, also all other factors leading to a tailored design are taken into consideration:

- Environmental conditions such as temperature, wind, pollution etc.
- Tower electrical clearance requirements
- Type of attachment to tower crossarms and to tower peak

Special arrangements and/or special components are also designed when standard products are not suitable to satisfy the customer requirements.



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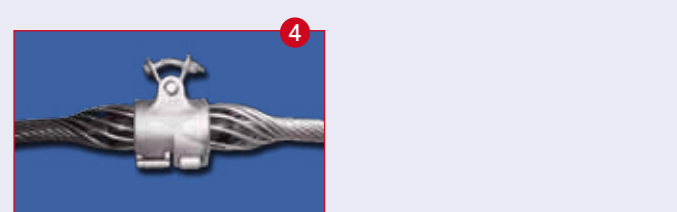
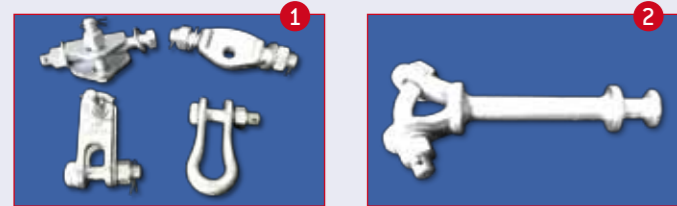
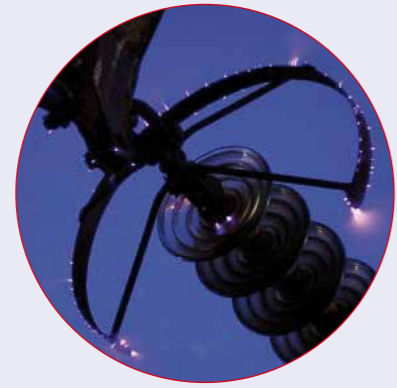
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In order to offer the most complete, technically compliant and customized solution, Salvi always takes into consideration the following parameters and electrical phenomena:

Design parameters

- Geometry information of each assembly
- Special requirements in terms of material
- Different attachments to tower (1)
- Hot line maintenance capabilities (2)
- Use of Corona Rings and relative characteristics (3)
- Type of preferred suspension clamps (4)
- Type of preferred conductor terminals
- Electrical clearances
- Standard or high temperature conductor
- Environmental conditions affecting type of galvanizing (standard or heavy)
- Electrical and Mechanical performances requirements
- Type of transmission line: AC or DC Power Supply



Main Electrical Phenomena

Corona effect: We are always very careful in drawing the shape of various components in order to get corona free insulator strings and to this purpose suitable corona protection devices, if needed, are also designed to minimize:

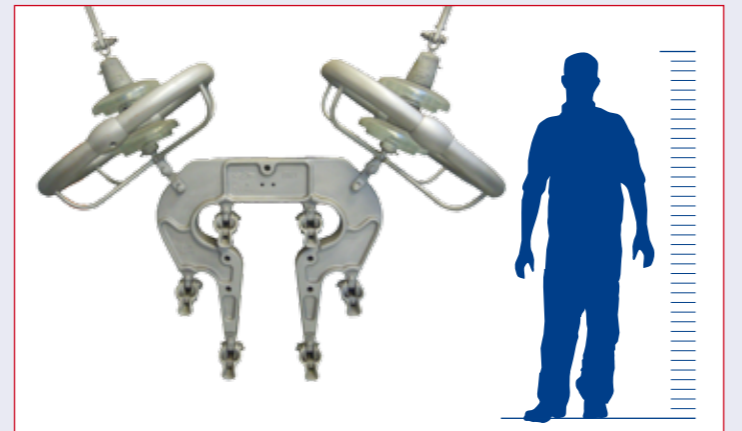
- audible noises and colored sparking that on the long run could damage hardware and insulators
- power losses
- radio frequency noises

RIV effect: Radio Interference is associated with the pulsating modes of corona discharges and, if not controlled, radio frequency noise causes serious electromagnetic interference to communications systems in the vicinity. This effect therefore is a consequence of corona effect that being properly controlled by Salvi design, as stated above, also radio interferences, if any, are negligible.

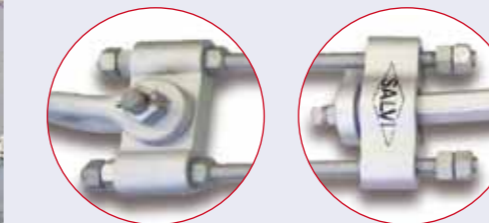
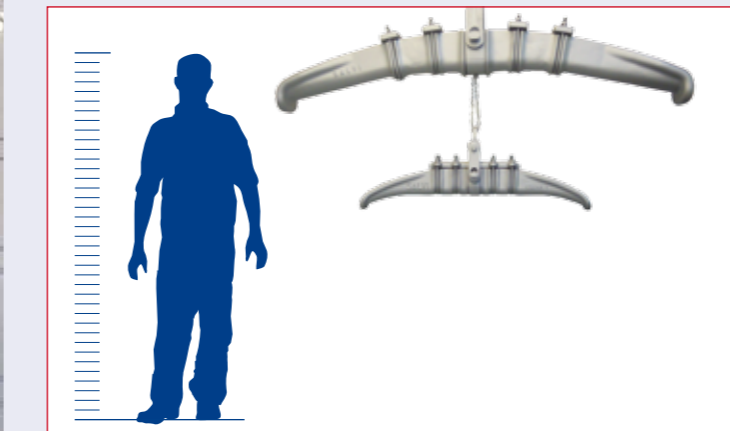
Short Circuit Currents: We are always paying great attention to the short circuit values prescribed by Project Specifications and/or International Standards. This value in fact will be the base for determining the size of components at both ends of the insulator strings.



Special ductile cast iron yoke for 765 kV six bundle Transmission Line in USA



Special suspension clamps for conductor and ground wire installed on a long river crossing span (about 2 km) in Nigeria

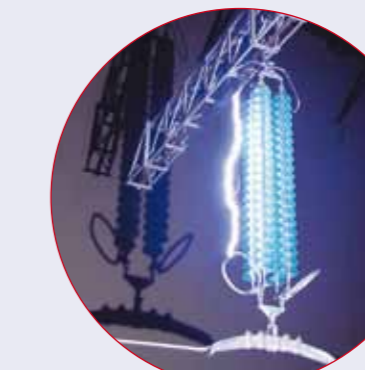
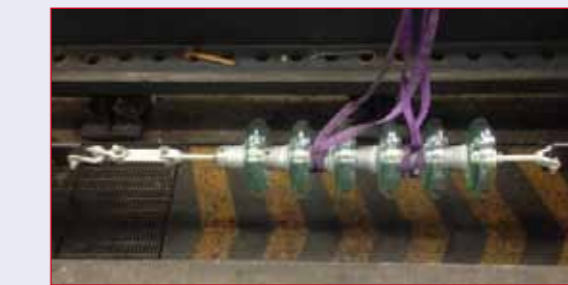


Tests and Laboratories

Our Laboratory is assisting both design activities and product verification. In the design stage it is supporting the Technical Department in its activity of Research and Development while in the product verification stage all Quality Control mechanical verifications and tests are carried out including batch acceptance tests.

Components mechanical tests are performed in Salvi Laboratory that is fully equipped for all kind of destructive and non-destructive tests.

Full Scale Mechanical Tests: Salvi is also capable to carry out full scale mechanical tests in independent and accredited laboratories so to verify the real mechanical behavior of the full strings.



Electrical tests on complete strings: RIV and Corona, Power Arc and Short Circuit are carried out in independent laboratories according to International Standards and prescriptions of Project Technical Specifications.



All photos reproduced in this brochure are relating to power lines equipped with Salvi hardware and fittings