

Mechanical connectors used inside MV accessories: A system approach.

Dario **QUAGGIA** (1), Stéphane **TOGNALI** (2), Gérard **LENCOT** (3)

- 1 Prysmian S.p.A. V.le Sarca, 222 (F.307-HQ) Milano-Italy,
dario.quaggia@prysmiangroup.com
- 2 Prysmian S.p.A ,
stephane.tognali@prysmiangroup.com
- 3 Prysmian S.p.A Champs sur Marne -Marne la Vallée France,
Gerard.lencot@prysmiangroup.com

The so called Mechanical Connectors (MC), mainly using the shear-bolt technology, are now widely used inside the Medium Voltage Accessories to connect the cable conductors.

The major advantages of these devices for the end user are the wide “range-taking” (i.e. one MC is suitable for covering a range of cable conductors) and the “tool-free” solution (i.e. no heavy tools are necessary on site for the connectors application). Consequently, an important reduction of inventories and number of models is also possible.

For the above reasons MC become very popular and well accepted by the jointers, as well as the purchasing and logistics managers.

In parallel Cold Shrink (CS) accessories have demonstrated their reliability in many years of service, as well as their ability to cope with different types of cables and network configurations.

CS accessories, with their wide range-taking, have the same advantages of MC in terms of jointing simplification, reduction of inventories and reduction of number of models.

This is why assemblies “MC+CS” are thoroughly used by mainly utilities around the world.

However, the large number of suppliers of MC showing a very variable level of quality and design is posing a problem of choice and selection for the manufacturer of accessories, and consequently for the end user.

Indeed, despite the fact that the connector itself had passed severe individual tests (IEC 1238) it was found many shortcomings during the Accessories type tests using some types of MC.

Problems coming from MC had not been identified during the specific tests of the connectors, but occurred both using CS accessories and traditional single-size accessories.

This is why it is so important to consider the couple “connectors + accessories” as a system.

In this paper, after brief historical review of the technology and the advantages of the MC we will show how the behavior of MC is different as an independent device and inside an accessory, and also when MC is submitted to other stresses than those usually tested in the stand-alone connector specification, which is often the case on the field.

We will demonstrate the technical risk to use an improper MC, showing the results of tests in different configurations and explain why it is preferable for all the supply chain to leave the choice -and the responsibility- of the MC to the accessories manufacturer.

Legend: MC= Mechanical Connectors; CS = Cold Shrink technology

Key words

Mechanical Connectors; Cold-Shrink; Medium Voltage Accessories