



INTRODUCTION TO THE IMG CABLE COUPLER SYSTEM



This new line of medium voltage Cable Coupler System is typically used in surface and underground mining operations to distribute power to mobile, electric equipment. However, applications for these types of connectors existing in other industries such as micro tunneling, mobile conveyors systems, sea ports, ship yards and such.

While maintaining standards and compatibility with other products available on the current market, various design improvements and new features have been integrated into the new IMG Cable Coupler Systems. During the development phase, IMG focused on three most important aspects of any mining equipment's design: compatibility, durability, reliability and safety.

COMPATIBILITY

Cable Coupler Systems comprise of a significant investment to any mining operation, therefore, compatibility with an already existing site system is key in reducing costs of upgrading. IMG Couplers were designed to inter-couple with similar products that are already in use in many major mines around the world. This new, improved system can be phased into an existing system without causing production interruption and costly downtime.

DURABILITY

In the harsh environments of the mining industry, durability is very important. IMG maintained a standard of sand cast aluminum bodies to provide a rigid yet light weight product. A new grip feature was added to the bell body to improve equipment handling. For increased resilience in the harsh, corrosive underground conditions, the 1.1kV IMG Cable Couplers are also available in a bronze version.

All phase insulators in the IMG Couplers are made from rigid, thermo-set resin impregnated with fibreglass not only ensures increased durability, but also provides improved heat resistance while maintaining high insulation properties. Thermo-set material is far less susceptible to manufacturing defects, specifically the forming of air-pockets/gaps in the insulator during the manufacturing process, therefore significantly decreasing the insulator failure rate. Another failure typically seen in similar coupler systems available on the market is the susceptibility to increased/decreased temperatures - either environmental or those caused by corona. Thermo-set's molecular properties decrease this type of failure because once this material is catalyzed, it cannot be reversed or reformed. Meaning, that once the insulator is formed, it cannot be remolded or reshaped with any temperature.

All hardware is made from Stainless Steel and/or Brass components to provide durability and minimal maintenance.

RELIABILITY

Due to high costs of downtime, reliability of mining equipment is of utmost importance. With this in mind, IMG focused on improving on current market product options that resulted in the following new features:

- 1) New method of Wire Termination ensures a secure contact & connection between wires and pin/socket contacts.
- 2) Stainless Steel Spring Band on female sockets ensures a secure and lasting connection between contacts.
- 3) New Phase Insulator material (as per above) and manufacturing process has been incorporated to decrease insulator failures. In addition, should an unlikely failure occur and insulator requires replacing, the new 3-Separate-Insulator design provides both time & cost savings.
- 4) New Cable Entrance (Strain-Relief) design comprising of Cable Entrance Clamp, silicon Cable Gland and Cable Compression Ring was designed to securely clamp cable to coupler thus providing a tight and moisture-resistant seal. In addition, the 3-Point clamp securing action causes an inward moving force that eliminates physical strain on interior contacts/components by pushing the cable towards the contacts thus maintaining a secure wire-to-contact connection.
- 5) New silicon Stress Control Termination Kit has been designed and introduced in the IMG Cable Coupler System to provide air-free termination, thus reducing insulator damage due to corona. These kits are designed to be reusable, and therefore, are cost efficient. They install with great ease and thus reduce termination time, which again is a great cost-saving feature.

SAFETY

Increasing industry safety policies and standards are our main focus designing equipment for the mining and other related industries. As a result, we have developed several, first-of-its-kind features that drastically increase equipment operation and personnel safety.

- 1) Available on the most of our cable coupler systems, is an optional safety feature that detects and indicates live voltage presence in the cable coupler. This LED Live Line Indication System provides an operator with visible indication of an energized coupler*. The IMG LLIS is intrinsically safe and does not require secondary source of power. The use of LED lamp and double redundancy circuit ensures minimal failure.
- 2) An innovative, dual Key-Interlock System option is also available on the most of the IMG Cable Couplers and that provides an additional safety step to prevent disconnection of live components and equipment. The first, industry standard key-interlock is available on the Equipment-Mount Couplers and prevents the coupler from being connected to a Cable-Mount coupler while out of commission. The second, new and improved Key-Interlock System, is designed to prevent the un-coupling of the Equipment-Mount Coupler from the Cable-Mount Coupler and/or its Cover without authorized key-access. This system a) reduces the chances of an unauthorized operator from un-coupling the unit and b) this design is such that the access key corresponds to the power source (switch house) and the unit cannot be un-coupled without the corresponding power source being disconnected from load.

* The Live-Line indicating system is to be used as an additional (last) indicator of live line detection, but is NOT to replace other safety procedures in place prior to disconnecting the coupler system.