

Short-circuit Analysis Of Cable Gland

Nitin Pandey¹, Hamza Saiger¹, Ishant Jain¹

¹Raychem Innovation Center, Vadodara, India

Abstract

Cable gland is a strain relieving device, designed to attach and secure the end of an electrical cable to the equipment. In the event of short-circuit, large current shall pass through cable's armour to the ground, keeping cable gland and equipment safe. Current weight of industrial single seal cast integral earth lug (CIEL) cable gland is reduced by altering the wall thickness and cross section area of earth tag, in the design. Short-circuit analysis of Cable gland is performed using COMSOL Multiphysics® as per IEC 62444 standard. By incorporating MEF (Magnetic & Electric Field) module, a decaying short-circuit wave is applied having maximum initial peak at 10 milli-second to obtain the induced electromagnetic force. Further, the obtained Lorentz forces are given as body load using COMSOL Multiphysics® Structural Mechanics Module to find out the induced stresses in the gland. Hence, the cost of cable gland is reduced by optimizing its weight with the FOS (Factor of Safety) greater than 2.