



“Gheorghe Asachi” Technical University of Iasi, Romania



MAXIMUM SURFACE TEMPERATURE AS A SAFETY PARAMETER FOR BELT CONVEYORS USED UNDERGROUND

Leonard Andrei Lupu*, Mihaela Părăian, Adrian Jurca

National Institute for Research and Development for Mining Safety and Explosion Proof Protection, 32-34 General Vasile Milea Street, 332047 Petroșani, Romania

Abstract

The belt conveyors used in environments with potentially explosive atmospheres, as well as all its components must be submitted to an official risk analysis, well documented, that may identify and list all potential ignition sources in the equipment and the measures to be applied in order to prevent them from becoming effective.

The protection concepts have in view firstly employing such belt conveyor that can ensure protection by preventing intrinsic ignition sources, completed if case, with additional protective devices and specific maintenance/use instructions according to the foreseen scope. The conveyor belts have the tendency to generate heat, flames or to glow when are submitted to friction on the drum, due to a conveyor malfunction (belt blockage). Since these can represent ignition sources, it is necessary to adopt adequate protective measures that have to have in view both conveyor belt's features and using secondary safety devices.

Development of new protection concepts in order to prevent explosions when using conveyor belts underground led to a classification of belts in three classes (A, B, C). One of the safety parameters that is very important is the maximum surface temperature developed in the friction process between the drum and the conveyor belt, related to the class where it belongs.

In order to satisfy these requirements, in the laboratory had been determined, through experimental laboratory tests, the maximum surface temperature for one type of conveyor belt intended for use in underground mining.

Key words: belt conveyor, explosive atmospheres, maximum surface temperature

Received: February, 2012; Revised final: June, 2012; Accepted: July, 2012

* Author to whom all correspondence should be addressed: e-mail: leonard.lupu@insemex.ro; Phone: + 40 254541621; Fax: + 40 254546277