



Warning on Use of Explosive Power Tool in Hazardous Areas

Tony Martin, Manager Physical Testing Branch, TestSafe Australia

On the basis of testing of an explosive power tool system at TestSafe Australia, the New South Wales Director of Mine Safety Operations, Rob Regan, has issued a formal Safety Alert (Report No: SA 04 11).

At the request of a client, a series of tests were carried out on an explosive power tool to determine its suitability for use in underground coal mining. The first series of tests related to a correctly assembled and loaded tool being subjected to a large number of tests in a small flameproof testing chamber, which was filled, with a mixture of 7.5% ethylene in air by volume. Three different power levels of explosive cartridges were used and these represented the normal range of charges used for this tool. There were no ignitions of the explosive gas mixture with this tool in its normal serviceable condition.

A second series of tests was requested by the client to determine what might happen if the piston was not refitted to the tool after servicing and the tool was put into service in a potentially explosive gas environment. Testing was undertaken with the piston removed and the tool installed into the same flameproof chamber but with one edge of the tool nose not touching the target surface (open to the gas environment). The tool was operated with no fasteners fitted. Operation of the tool caused ignition of the ethylene gas mixture.

Given that it is highly likely that other explosive powered tool systems currently approved for use in hazardous areas such as underground mining would similarly fail this “non-standard” test, the NSW Director of Mine Safety Operations has recommended that all mines review and upgrade systems to ensure that these powder-actuated tools are not operated with the piston removed and without a nail in the “guide”.



Power Tool being tested in Flameproof Testing Chamber