Development of a portable Cutting Fire Extinguisher for industrial, maritime and civil use

Giancarlo Franchini and Luca Ortoncelli

WaterJetting Consultant (Genova-Italy) giancarlofranchini39@gmail.com

Cristanini spa, Rivoli Veronese (Verona-Italy) cristanini@cristanini.it

ABSTRACT

In the last decades several systems were proposed on the Water Mist (WM) market to combine this technology with cutting performances as first attack fire extinguisher in closed and difficult to reach areas. Main purposes of these applications were addressed to the requirements of industrial, civil and maritime structures where the complexity of compartments and hazardous environment could create problems of access and of intervention by fire brigade.

However, being the cutting technique used by these units of the Abrasive Suspended Water Jetting (ASWJ) type, where abrasive grit and high pressure (HP) water flow together in the hose up to the nozzle, it leaves space to innovations on safety and performances.

Safety is limited by the fact that abrasive carried in suspension flows with HP water inside rubber hoses promoting wear to their inner surface and therefore exposing people to potential risk of dangerous jetting in case of hose failure or lack of communication with remote control.

Additionally, with a single nozzle used up to now, also safety can be challenged being short distance jet dangerous for people involved in the fire and less efficient from WM standpoint.

These factors have therefore prompted a new development to solve not only previous problems, but also introduce drastic benefits to size and weight of the HP unit, portability, and on-board installation with virtually no requirement for special maintenance care.

This new system, easy to handle and use, is based on a diesel driven HP unit delivering 22l/min@350bar connected by a standard WJ hose to a special hand lance fitted with two separate barrels and two quick-coupling nozzles one for Cutting and one for WM jetting.

The Abrasive Entrained Water Jet (AEWJ) method utilized is simply generated by the vacuum Venturi principle acting on a easy-fit cartridge full of abrasive screwed on the lance and controlled by relevant trigger without requirement for remote control.

Tests carried out at company premises and at Italian Navy Training Center were duplicated by FPA (Portsmounth-UK) assessing the validity of this new approach aimed to achieve improved performances, better portability and higher safety levels over similar state-of-art equipments.

Keywords: water mist, cutting fire extinguisher, safety.