

THE MATRIX – An essential tool for fire engineers doing specifications, review and acceptance of water mist systems.

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Luciano Nigro¹ is a chemical engineer graduated at Padua University, in Italy, in 1975. After many years in fire protection business, as design and consultant for fire safety but also as contractor for fire protection system installation, in 2001 Luciano Nigro joined Marioff Oy opening the Italian subsidiary of the company and running it for almost 10 years, getting a full range of experiences in the water mist technology. Luciano Nigro joined the IWMA in the early 2000 and is a member of the board of the association since 2012. He is currently the technical manager of Jensen Hughes Italy with offices in Milan, Italy. Among his activities for the water mist advancement and diffusion there is the direct participation in the preparation of the 14972-standardization project that will innovate the water mist business for the next decades.

Abstract

(background): in the fire protection community the knowledge of water mist systems has grown considerably in the last few years; it is not the same for the complex process that allows the decision that a specific hazard or occupancy can be affectively protected with a water mist system, and which one is suitable for the application. Indeed, the process is quite different from all the other fire protection systems available on the market and the fire engineers are very often not enough familiar with that process to feel themselves safe enough to specify a water mist solution instead of a more traditional and accepted one. The same applies to persons involved in the review of water mist projects as well as in the acceptance of installed systems. *(objectives)* In order to help all the engineers involved in these tasks, a few years ago IWMA members decided to invest some resources, especially in terms of worktime, to offer to help the fire protection community in the specification of water mist systems with the necessary awareness. The first step was the collection of all the fire test protocols that have been developed by anyone recognized organization operating in the study of fire protection systems and in the fire test of fire suppression systems. As it is known, water mist systems

can only be designed following the results of a full-scale fire test and a fire test is recognized by the fire protection community only when there is a fire test protocol prepared by a recognized organization behind it. The collection of all the fire test protocols for water mist applications was then commissioned to IFAB, that was selected for the project among some proposals received by different organizations, and the document prepared in 2014 freely available on the IWMA web site.

But this was not considered enough, because it was a list of protocols among which the experts only had easy access and comprehension; it was then decided to launch another project, more familiar with the fire engineer approach, it is to say a project starting from the hazard and/or the occupancy to be protected. The MATRIX was then proposed and developed directly by the board members and the Scientific Council in detail, and published in 2020 with the commitment of updating it as frequently as necessary because the number of hazards/occupancies that can be protected is changing year after year as soon as the water mist technology evolves and the water mist companies develop new methodologies for the best protection against fire.

The MATRIX is now published and available from the IWMA web site, divided in two sections, one for the Marine applications and one for the Land ones. In the current version the MATRIX is showing which are the protocols to be used for the protection of a specific hazard or occupancy, and whether they are supported by an approval body or are published for the use by anyone available fire test organization, not issuing approvals but only test reports.

In the next future it is aimed to further develop the MATRIX with the direct link to the companies holding approvals for each applications but this poses some additional problems that have not yet been resolved completely.

KEYWORDS: water mist system specification; water mist fire test protocols; water mist approvals.