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FIRE PROTECTION

A competency profile to discover!

Are you familiar with the competency profile associated with fire protection? Published in the Ordre's Guide to Professional Practice¹, this most enlightening tool is intended for engineers whose practice deals directly or indirectly with designing automatic water sprinkler systems. There are six competency profiles in all. This article as well as those that will follow in the coming months will address these profiles in turn.

FIRE PROTECTION, A FIELD THAT REMAINS MISUNDERSTOOD

We are a far cry from the time when sprinkler systems were designed based on the number of water outlets! Nevertheless, despite the fact that fire protection has tremendously and rapidly evolved over the past thirty years, engineers do not hold their rightful place in the field.

These days, designing an automatic water sprinkler system is complex work which draws on advanced knowledge, such as fluid mechanics, and requires detailed sketches, specifications and calculations. That being the case, all of these activities, if not carried out properly, could have serious repercussions on people's lives, health and property. Each of these activities is part of the engineer's exclusive field of practice.

In spite of this evidence, the Ordre still often sees important deficiencies in the designs of such systems. For the past ten years or so, the Ordre has worked in collaboration with those mandated to address this issue. On many occasions, it reiterated that designing and developing these systems indeed fell within the purview of the engineer's field of practice. In 2004, the Ordre also published a document intended for its members entitled Process for designing automatic sprinkler systems² (unofficial translation of Processus de conception des systèmes de gicleurs automatiques).

This forty-page document defines the main steps for designing automatic water sprinkler systems. "The Process paves the way" notes Claude Lizotte, senior advisor for the monitoring of unlawful practice. He adds: "The new competency profile in fire protection completes the manual as it spells out the Ordre's expectations with respect to engineers. In other words, it indicates what one must be able to do in order to carry out the work."

Martin Ouellette, F.P.T., Eng. and Jacques Bêty, Eng., who both collaborated in drafting the profile, go on by saying that: "In addition to situating the engineer's level of competency, this tool raises the engineer's awareness with regard to the technical magnitude within the fire

protection industry's and demonstrates the importance of such work as well as the responsibilities arising therefrom."

SYSTEM DESIGN AND PERFORMANCE SPECIFICATIONS

The competency profile in fire prevention is comprised of two sections:

- an inventory of required competencies, namely a list of general and technical competencies which are necessary to practise in the field;
- detailed descriptions of certain technical competencies, namely those that are considered critical to the client's investment and public safety.

While referring to these lists, engineers who wish to assess their competencies can answer two questions: Am I doing the right things? Am I doing them properly? "In order to come up with this competency profile, we took into consideration the National Fire Protection Association standard NFPA 13, market requirements and, of course, our own experience in the matter. Since we are well aware of the shortcomings often encountered with respect to documents produced in relation to fire protection, we were able to put the emphasis on the necessary corrective measures", points out Mr. Bêty.

It bears reminding that the profile indicates the competencies required for both types of mandates engineers are called upon to carry out in fire protection: designing and preparing plans for complete networks and producing performance specifications. Why the distinction?

The reason is that throughout the years, some felt, wrongfully so, that performance specifications were an overall description of general requirements. "It is wrong to think that performance specifications require less precision and lower skills than signed and sealed design plans".

Engineers responsible for performance specifications must not only master the same basic criteria associated with designing a complete sprinkler system, but comprehensive knowledge as well in order to adequately identify the risks that may apply or be present in each building", notes Jacques Bêty.

In fact, the competency profile teaches us that when it comes to fire protection, each engineer must be able to analyze the project site, identify the building's architectural and structural characteristics, and establish design criteria, whether he or she is asked to produce performance specifications or design a sprinkler system. Each of these three common competencies is detailed in a way to provide a complete outline of what it entails. For example, the competency "Analyze the project site" includes, among

many others, the underlying competency “Determining whether a fire pump is needed”.

“Based on hydrostatic testing results and design criteria he established, the engineer must be able to verify whether a fire pump is required and determine its characteristics. These findings often occur too late in the process of carrying out a project, which could cause additional problems and higher costs. Thus, it is important that the engineer identifies the need for a fire pump and its characteristics from the outset of his mandate and that he indicate these details in his design or performance specifications. This often entails complex hydraulic calculations”, explains Martin Ouellette.

Another example: “Office buildings should not be protected in the same way as industrial buildings. Even though risk control methods are constantly evaluated and sometimes revised or refined by organizations such as Factory Mutual, we must determine those nuances which are specific to the project so as to apply the adequate and optimal solutions available,” notes Mr. Ouellette. “Consequently, design criteria must clearly appear on performance specifications; this is not currently always the case.”

Furthermore, the competencies required to carry out performance specifications and for designing systems are different in certain respects. Contrary to performance specifications, designing a sprinkler system includes preparing plans relating to networks. “Even today, it still happens that sealed plans have to be completed by another engineer. The profile establishes everything that must be included in a proper plan. This is truly a document worth referring to!”, deems the engineer specialized in fire protection.

A PRIORITY FOR THE ORDRE: BETTER TRAINING IN FIRE PROTECTION

For the second consecutive year, the Ordre added fire protection as a priority to the Engineering Practice General Monitoring Program’s agenda. As such, inspectors visit more engineers whose practice deals directly or indirectly with fire protection.

«With the profile, we designed assessment checklists which allow us to evaluate the competencies of the engineers we are visiting. We complete the checklist along with the member; he or she can quickly recognize his or her shortcomings and, moreover, often sees this joint project as a very positive exercise”, says Germain Lavallée, Eng., an inspector for the Ordre.

Members whose skills are deemed insufficient by the inspector are invited to improve their training.

Similarly, engineers who realize that they lack certain skills while reading the competency profile relating to fire protection can seek better training on their own. The

École polytechnique’s Centre for Continuing Education already offers the Certificate in advanced fire prevention technologies (unofficial translation of Certificat en technologies avancées en prévention des incendies) which includes such courses as:

- Ti020 Applied hydraulics (Hydraulique appliquée);
- Ti310 Automatic water sprinklers (Extincteurs automatiques à eau);
- Ti330 Fire safety in high buildings (Sécurité incendie dans les bâtiments de grande hauteur).

Finally, let us mention that given the need for training in this field, the Ordre will soon look into the courses currently offered as part of professional development and, if necessary, will design new courses tailored for engineering.

1. For the Guide to Professional Practice: visit www.gpp.oiq.qc.ca. Competency profiles can be found in the section entitled “Professional development”.
2. For the Process for designing automatic sprinkler systems³ (unofficial translation of Processus de conception des systèmes de gicleurs automatiques): visit a competency profile – Fire protection

WHY COMPETENCY PROFILES?

For the past few years, the Ordre has been working to fill the gaps observed in certain fields of engineering. Particularly, it has instructed expert committees to draft profiles listing those competencies required to practise in such areas.

“The competency profile presents key tasks that engineers must be able to accomplish in a given field (technical know-how). It is a tool which perfectly describes the goal one must reach. Engineers who wish to improve their skills, as well as employers and people from the academic world alike can benefit from this tool. It can also help several stakeholders in the industry understand trade practices”, comments Claude Lizotte, senior advisor for the monitoring of unlawful practice.

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