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ROLA CENTRUM NAUKOWEGO POŻARNICTWA W LITEWSKIM SYSTEMIE OCHRONY PRZECIWPOŻAROWEJ

THE ROLE OF FIRE RESEARCH CENTRE IN THE LITHUANIAN FIRE SAFETY SYSTEM

It has passed two years after Lithuania became a Member State of European Union. At this time national businessmen, whose all or part of their business is related with fire equipment, had understood advantages of united European market and accommodated to the new conditions, concerned with this membership. Without doubt, one of the main common freedoms of European Economic Area is free movement of goods. This freedom together with non-discrimination and competition eligibility to the business society gives huge opportunities to develop their profession. Huge, but not endless. It is concerned with the attitude, which says that free movement of goods trades in European Union market realizable with reference to the product's conformity assessment requirements set in "New Approach" directives. Fire and Rescue Department under the Ministry of Interior Fire Research Centre (hereafter – FRC) consists of such divisions: Certification Service (hereafter – FRC CS), Fire Testing, Chemical and Radiation Research Division (hereafter – FRC FTD) and Fire Examination Division (hereafter – FRC FED). We would like to give to you short review about FRC institution's activities, attestation of conformity (certification) system of fire equipment, fire protection and fire safety products (hereafter – fire equipment) applied in our country and fire testing methods and facilities.

Law of the Republic of Lithuania on Product Safety says, that safe manufactured good shall mean any product which, under normal conditions prescribed by the manufacturer or reasonably foreseeable conditions of use, including duration, does not present any risk or only the minimum risks for the safety and health of persons which is not greater than the

risk provided for in legal acts and is considered as acceptable and consistent with a high level of consumer protection, taking into account the following points in particular:

- 1) the characteristics of the manufactured good, including its composition, packaging, instructions for assembly, use and maintenance;
- 2) the effect on other manufactured goods, where it is reasonably foreseeable that it will be used with other manufactured goods;
- 3) the presentation of the manufactured good, the labelling on the manufactured good or its packaging, instructions for its use and disposal and any other indication or information provided by the producer;
- 4) the categories of consumers at serious risk when using the manufactured good, in particular children.

FRC executes attestation of conformity of the fire equipment since October of 2001. There were have occurred a lot of essential changes, referred to the Lithuanian Republic's entry to the European Union, new technical specification and requirements related to the attestation of conformity institutions, and finally influence of the human factor. There are 4 employers in FRC CS at the moment.

The Government of Lithuanian Republic has authorized The Ministry of the Interior to establish legal acts, which sets obligatory safety requirements to the fire equipment products. Realizing the principle of subsidiary, directly to execute attestation of conformity of fire equipment is delegated to FRC. At the moment attestation of conformity of fire equipment executes three employee of FRC CS (there were issued 351 fire equipment Certificate of Conformity till the 1st of September, 2006; 31 of them – voluntary certificates.).

The scope of obligatory attestation of conformity carried out by the FRC CS includes portable and mobile fire extinguishers, fire blankets, fire hoses, pillar and underground fire hydrants, fire dampers and fire ducts, fire protective coatings, fire extinguishing medium, non-harmonised devices of fire detection and fire alarm systems and fixed fire-fighting systems, fire safety materials, fire safety signs. Obligatory certification product's scope isn't wide, and is related to several factors:

- there are no sufficient technical specifications that establishes safety requirements to the product;
- competence of testing laboratories and testing equipment to establish new indexes of equipment is insufficient.

FRC CS carries out attestation of conformity of fire equipment by technical examination of characteristics of the product to be certified (technical characteristics) whether they really meet the requirements specified in European Norm or for some products in national technical specifications for the product, assessment of factory production control system, continuous surveillance, assessment and approval of factory production control system and if necessary audit-testing of samples taken at the factory, on the market or on the construction site.

The result of FRC fire equipment attestation of conformity activity is Certificate of Conformity, which means written guarantee, that particular product meets the requirements applied to him.

Product certification mark GĶAŽ-01 denotes certified product for distinguishing it from other products, whose conformity was not evaluated by FRC.

Only those manufacturers and providers, that have signed the Conformity Surveillance Contract, have right to use this mark.

Product certification mark GĶAŽ-01 means that marked production complies with the requirements of applied technical specification.

Attestation of conformity of fire equipment procedure is selected according to:

- the importance of the part played by the product with respect to the essential requirements, in particular those relating to health and safety;
- the nature and type (group) of the product (family);
- the effects of the variability of the product's characteristics on its serviceability;
- the susceptibility to the defects in the product manufacture.

It is also should be noted, that the main institution which evaluates conformity of construction products in Lithuania is Certification Centre of Building Products, while FRC, considering the features of these products, i.e. that must be assure essential requirement "Safety in case of fire" (that in the event of an outbreak of fire the load-bearing capacity of the construction can be assumed for a specified period of time, all risks of fire are limited, the spread of fire and smoke within the works is limited, the spread of the fire to neighbouring construction works is limited, occupants can leave the works safely or be rescued by other means, appropriate alarm and fire-fighting systems smoothly operated, the safety of rescue teams is taken into consideration) and competence of employees, assesses conformity only the part of constructions products: fire protecting coatings, fire dampers and fire ducts as well as some components of fire detection and fire alarm system's and fixed fire-fighting system's still non-harmonized. The usage of the construction products in Lithuania is regulated

by Building organizational management regulation (hereafter – Regulation) “Construction products. Conformity attestation and “CE” marking”, legalizing regulation of Council Directive 89/106/EEC of 21st December 1988 on the approximation of laws, regulations and administrative provision of the Member States relating to the construction products. This Regulation lays down the general requirements for the attestation of conformity of construction products and CE marking thereof, defines the essential requirements applicable to a construction works by means of assessing the conformity and fitness for use of construction products. This Regulation is binding on all bodies that according to the laws of the Republic of Lithuania or Government resolutions are entitled to carry out conformity attestation of construction products, perform construction work, produce and sell construction products, design construction works, draft and approve normative documents that are or will be subject to essential requirements. Suppliers shall take all necessary measures to ensure that construction products which are intended for use in construction works may be placed on the market only if they are fit for their intended use, they have such characteristics that construction works in which they are to be incorporated in a permanent manner, assembled, applied or installed, can satisfy the essential requirements when and where such works are subject to existing legislation containing such requirements. The supplier shall be responsible for the attestation that a construction product which is placed on the market is in fit for its intended use and is in conformity with the requirements of technical specifications.

Fire Research Centre has presented to the country’s authorized institutions an application to become Notified Product Certification Body (the truth is that the scope will include only hose systems at the beginning). This is determined by the small number of national producers who could be the main target customers of this service. Of course, if we will acquire status of Notified Product Certification Body, scope become wider in the future.

At this moment 12 specialists of FRC FTD work in the fire testing field. In general the fire testing specialists carry out the reaction to fire tests of construction products according Europe Union classification system. Also the FRC FTD carries out tests of fire extinguishers, fire blankets, fire extinguishing medium, toys, pyrotechnics and other fire hazard research tests of materials. The number of fire tests grows up to 9 % every year.

FRC FTD carries out the classification of the fire protective products according the LST EN 13501 standards series using test data from fire tests performed in other fire testing laboratories. Furthermore the FRC FTD issues the reaction to fire and resistance to fire assessment reports using the principles of direct and extended application.

The FRC FTD Division has the additional function after the reorganization of civil defence system in Lithuania. We examine the technical stage of the ionize radiation dose measurement equipment and the respiratory protective equipment.

All testing equipment has been moved to the Valčiūnai village, located about 20 kilometres from Vilnius. In the future there is a plan to build the new testing and administration buildings there. FRC Fire Testing Laboratory gets new testing equipment continually and increases the fire testing scope. The main attention focused on the fire resistance tests according requirements of the standard LST EN 1363-1:2000, also tests of fire extinguishers, fire blankets and fire extinguishing mediums.

The fire resistance tests are new kind of tests for our laboratory. The need of this activity is based on the requests of national manufacturers to develop and test the products, the requests of certification bodies to carry out fire resistance tests for conformity assessment aims and the possibility to increase the competence of the FRC personnel. We are planning to get fire resistance testing equipment for vertically mounted constructions in the first stage. The exposure area according to the project should be 3 × 3 m.

The fire testing scope was increased by the two new methods in recent two years. The laboratory have started to carry out the new test for reaction to fire of roofs in case of external fire exposure according the standard LST L ENV 1187:2004 „Test methods for external fire exposure to roofs“ from March 2006. And from July 2006 we carry out the fire tests of the critical heat flow density according standard LST EN ISO 9239-1:2002 „Reaction to fire tests for floorings – Part 1: Determination of the burning behaviour using a radiant heat source“. FRC mainly uses the fire tests methods indicated in European Norms and national standards. It should be mentioned that the enterprisers do not discern any difference between the national technical specification of Europe countries (DIN, BS, NF) and the technical specification of European Union (EN, hEN). We have some difficulties to proof that the EI30 according standard EN 13501-2:2004 is not equal to standard F30 according DIN 4102-2.

FRC Fire Testing Laboratory is going to be the notified test laboratory in the first quarter of 2007. The intended scope of notification is taken in the table below.

Decision	Product	AoC System	Technical specification
99/91/EC	Thermal insulation	3	LST EN 13162:2003 “Thermal insulation products for buildings. Factory made

	products		<p>mineral wool (MW) products. Specification "</p> <p>LST EN 13163:2003 "Thermal insulation products for buildings. Factory made products of expanded polystyrene (EPS). Specification "</p> <p>LST EN 13164:2002 "Thermal insulation products for buildings. Factory made products of extruded polystyrene foam (XPS). Specification "</p> <p>LST EN 13165:2002 "Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products. Specification "</p> <p>LST EN 13166:2002 "Thermal insulation products for buildings. Factory made products of phenol foam (PF). Specification "</p>
95/467/EC	Gypsum products	3	<p>LST EN 12859:2002 "Gypsum blocks. Definitions, requirements and test methods "</p> <p>LST EN 12860+AC: 2002 "Gypsum based adhesives for gypsum blocks. Definitions, requirements and test methods "</p>
97/462/EC	Wood-based panels	3	LST EN 13986:2003 "Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking "

In Lithuania there are sufficiently many problems at the fire equipment market surveillance too in nowadays. Lithuanian market surveillance authorities ascertain that a construction product declared to be in conformity with the terms of this Regulation does not comply with the requirements thereof or the conformity marking has been affixed to in an incorrect manner, market surveillance authorities must oblige the manufacturer (supplier) to eliminate non-conformities and indicate the procedure for the elimination thereof. Where

non-conformities persist, market surveillance authorities shall take all appropriate measures to prohibit the placing of such products on the market or restrict free movement thereof. This function is authorized to the State Non Food Products Inspectorate under the Ministry of Economy of the Republic of Lithuania (hereafter – SNFPI). However, due to the lack of employees at SNFPI and insufficiency of market surveillance fire equipment and construction products, there were noticed, that sometimes still uncertified products, which already must be marked by “CE” sign or at least must have certificate of conformity, are installed.

The fire examination and determination of fire reasons always is one of the main tasks on fire research.

Four employees of FRC FED execute fire examinations and determination of fire reasons (three of them have forensic expert’s qualification, one of the specialists has prepared and at the end of 2006 he plans to defend a thesis “Prediction of fire origin referred to combustibility properties of construction products” for a doctor degree). Specialists of FRC ED carry out these examinations:

- fire examinations, after which fire origin place and technical fire causes are determinate;
- examinations of charcoal wood, after which intensity of coaled wood’s combustion process is determinate (combustion process time and temperature);
- building materials and other products combustibility examination, index of fire spread, temperatures of flammability and spontaneous flammability of solid materials with organic additions, soft furniture’s and textile product’s flammability’s from smoldering cigarette and match flame analogue assessment, points of flammable liquid’s flammability temperatures and spontaneous flammability temperatures are determinate.

Only after determination of fire reasons about materials, products, equipment and aggregates safety for people’s health and life can be made proper conclusions. The results of fire origin research helps deeply to analyze products (materials) used at buildings, to correct normative documents requirements and safety requirements to the equipment and aggregates. Because there is no formulated united fire examination conception, still there is no fire research standard. So in Lithuania, like in all Member State of EU are used different modules of fire research. This problem could be solved in cooperation with fire research specialists. At this time science experience and scientific engineering methods are used more frequently in fire examination. In our country for the research of the exhibits, which were taken in the place of fire origin, determination of wood charcoal electric resistance method is used.

FRC FED specialists, those who are forensic experts and are listed in forensic expert's of Republic of Lithuania, carries out forensic expertise. If it is necessary, our specialists can perform object's investigation, to supply specialist's conclusion and other, not forensic expertise.

Thereby, FRC in it's casual activity sought and will seek to fulfill the requirements of availability of personnel and the necessary means and equipment, technical competence and professional integrity of personnel, impartiality, in carrying out the tests, preparing the reports, issuing the certificates and performing the licensing surveillance of staff and technical personnel, maintenance of professional secrecy by personnel will be ensured. These all things, in our opinion, let us to secure fire safety, as a part of general safety, at the indispensable level.