



Fire Safety Competency

Webinar - 19 November 2020



The webinar will start at 14:00 CET





- You are all muted and will remain muted
- Only speakers and moderator will be unmuted
- Please submit your questions in the Q&A section in the bottom of your screen
- The moderator will group questions and then address them to the relevant speaker
- The PowerPoint presentation will be shared in due course
- Any technical issues? Chat with Ela (in the list of participants)





Speaking: Elie van Strien



@elievanstrien

- Former fire chief in Eindhoven, Rotterdam and Amsterdam.
- Advisor of the Dutch Minister of Interior for fire and disaster management from 2000 until 2005.
- He was member of the international Federation of the European Fire Officer Associations (FEU) for many years.
- Chairman of the European Fire Safety Alliance since January 2019. He is committed to putting fire safety high on the agenda of decision makers to improve fire safety for the benefit of European citizens.



@EuroFSA

• The European Fire Safety Alliance is an independent alliance and a network of fire professionals. The Alliance is a project within the Dutch Burns Foundation to reduce the risk from fire, particularly in homes.



Currently in : Gilze, The Netherlands



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Speaking: Željana Zovko



@ZovkoEU



- Member of the European Parliament for Croatia since 2016
- Former senior diplomate
- Author of the Motion for a Resolution to set up a EU Fire Safety Day



Currently in: Brussels, Belgium



Speaking: Maria da Graça Carvalho

Currently in: Brussels, Belgium



@mgracacarvalho



- Member of the European Parliament for Portugal since 2019 (and from 2009-2014)
- Graduated Mechanical Engineer at IST, Technical University of Lisbon
- Ph.D. at the Imperial College in London in the area of energy intensive industries.
- Former senior advisor of Commissioner for Research, Science and Innovation, Carlos Moedas.
- She was also Principal Adviser to President Barroso in the fields of Science, Higher Education, Innovation, Research Policy, Energy, Environment and Climate Change from 2006 to 2009.
- Full Professor at Instituto Superior Técnico (University of Lisbon).







Speaking: Krzysztof Biskup





- Vice Chair of the European Fire Safety Alliance since 2018
- Fire protection engineer, Poland
- 30 years of service as a career firefighter (former: Vice Director of the Research Institute for Fire Protection, Director of the Training Department at The National Headquarters of the State Fire Service)
- Engaged into the European Fire Safety Week, EU Fire Statistics project, European Fire Safety Action Plan and other fire safety related projects



@EuroFSA

- Independent alliance of fire professionals and prevention specialists that does not support any individual fire safety product, technology or commercial organisation
- Exists to reduce the risk from fire, especially at residential buildings we do believe that most of the European fire victims in homes are preventable
- Initiator and leader of the European Fire Safety Week, the European Fire Safety Action Plan and other projects



Krzysztof Biskup, Vice Chair of the European Fire Safety Alliance



The impact of the energy transition on fire safety and the importance to develop knowledge and competency





Energy transition - evolution or revolution?



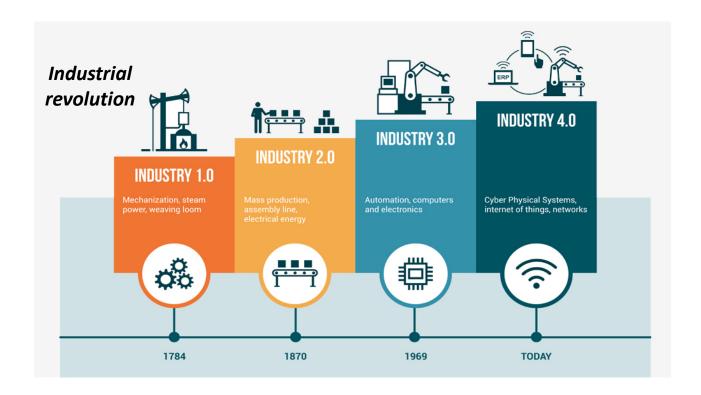
Energy transition

 \rightarrow

ambitious EU goal - making Europe climate neutral before 2050

Revolution

significant change that usually occurs over a relatively short period of time



every revolution in principle is difficult to control

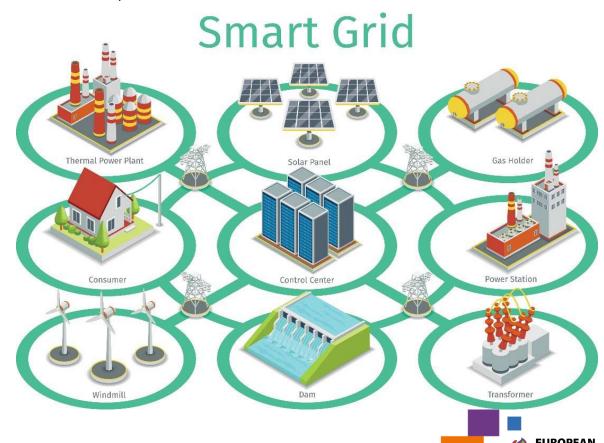




Changes driven by energy transition



- decentralization of energy generation
- increased electrification (e-mobility, solar panels, domestic batteries)
- new forms of energy and transportation
- unprecedented rate of novel materials and technologies
- new architecture of the energy system (DC grids, microgrids etc.)
- increased complexity of systems (e.g. interconnections among electrical, heating and e-mobility)
- circular economy





Impact of energy transition on fire safety of buildings



more complex buildings \rightarrow higher fire hazard and less predictable fire environment





new materials, technologies & installations

new construction systems & methods

higher use of electrical energy & appliances+installat

on-site electricity generation and storage & the transition to DC

- higher potential for cascading effect in case of major failure
- problem of keeping up with innovations and updating competences
- all layers of fire safety in building are affected

'Electrical fires account for 25-30% of all domestic fires in Europe, and increase of 5-10% in the last 10 years' The FEEDS Report, 2020

www.feedsnet.org

PREVENTION



DETECTION



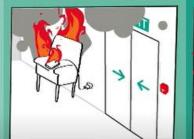
EARLY SUPPRESSION



EVACUATION



COMPARTMENTATION





STRUCTURAL

FIREFIGHTING





Fire safety is complex and requires competencies



Buildings are getting more and more complex...





buildings are responsible for approximately 40 % of energy consumption and 36 % of CO₂ emissions in the EU



Developing fire safety **knowledge and competencies** is a necessity, in particular to ensure that fire safety adequately accompanies the sustainable transformation of the building stock







Fire safety is complex and requires competencies



Ensuring the **fire safety** of buildings is a complex issue requiring **competent professionals** with clear roles and responsibilities, who are involved during the buildings' design, construction and maintenance phases.

"If you wanted to have brain surgery, you would go to a highly qualified neurosurgeon, because you know that it is an incredibly complex problem problem. (...), fire safety is also an incredibly complex problem. Therefore, it requires an equal level of competence, and we cannot ignore that by putting in place all sorts of other measures to try to cover the fact that we do not have the skills that would enable us to design buildings of that level of complexity."

Professor José Torero, University College London, Scottish Parliament, 20 November 2019





Importance to develop fire safety knowledge and competency



EUROPEAN FIRE SAFETY ACTION PLAN

10 ACTIONS THAT WILL IMPROVE FIRE SAFETY IN EUROPE



Fire safety must be inseparable part of the energy transition

There is insufficient awareness, knowledge and competency regarding the new fire hazards associated with the energy transition. The already established rise of fires associated with this development demands that fire safety is seen as an essential aspect of the energy transition and circular construction. This will prevent an increase in fire casualties in the coming years.

Action 5

Develop knowledge and competency to ensure fire safety adequately accompanies the energy transition. Address the fire risks associated with the new forms of energy and ensure regular inspections.



The Energy Performance of Buildings Directive (EPBD)



The EPBD <u>requires</u> energy experts

Art.17: independent accredited experts for energy performance certification and inspection of heating and air-conditioning systems

Art.18: independent control of energy performance certificates and inspection reports

The number of electrical fires is 24 times higher in Europe than e.g. in Japan, where inspection of electrical installations every 4 years is mandatory

The FEEDS Report, 2020

Revised EPBD (2018) mentions fire safety... but who is in charge?

New Article 2a, paragraph 7: Each Member State may use its long-term renovation strategy to address fire safety and risks related to intense seismic activity affecting energy efficiency renovations and the lifetime of buildings.

Article 7, paragraph 5: Member States shall encourage, in relation to buildings undergoing major renovation, high-efficiency alternative systems, in so far as this is technically, functionally and economically feasible, and shall address the issues of healthy indoor climate conditions, fire safety and risks related to intense seismic activity.



Fire safety competencies to accompany the energy transition





Own Initiative Report – light in the tunel?

of The European Parliament's Industry Committee, July 2020

'Maximising the Energy Efficiency potential of the EU building stock':

- 19aa. Recalls that fire safety aspects should be considered during the design, selection of materials, construction, renovation and operation of buildings in prevention, detection, early suppression, evacuation, compartmentation, structural resistance and fire-fighting, as well as the relevant competencies of professionals involved during design, construction and renovation;
- 25. Calls on the Commission to launch an EU skills and information initiative in the renovation and building sector, which includes a gender dimension, in order to engage with stakeholders in retraining, upskilling and capacity building, with a focus on employment, in particular to attract young people to work in the renovation sector; underlines that ensuring quality, compliance, and safety requires adequate competencies and skills of professionals involved during the design and construction/renovation including intermediaries, such as installers, architects or contractors; calls on Member States to develop a national strategy for improving skills





Speaking: Quentin de Hults

Currently in Brussels



@QuentindeHults

- Executive Chair of Modern Building Alliance since 2018
- Civil engineer, Belgian
- 15 years of experience in energy efficiency and sustainability of building
- 7 years in EU public affairs for BASF on construction related topics
- Engaged into the European Fire Information Exchange Platform and other fire safety related EU projects



@ModernBuildEU

- Alliance of trade associations and companies representing the plastics industry in the construction sector
- Aiming to support the EU in ensuring safe and sustainable construction
- Supporter of the European Fire Safety Alliance and of its EU Fire Safety Action Plan







- Survey of 835 architects from 8 countries (BE, DE, ES, FR, IT, NL, PL, UK)
- Are architects involving fire experts during the design of their project?
- The main reasons to involve or not to involve a fire expert?
- Who is responsible for fire safety?
- Country comparison
- Analysis in function of size of the architect office, segment (residential or non residential) and type of project (new build or renovation)

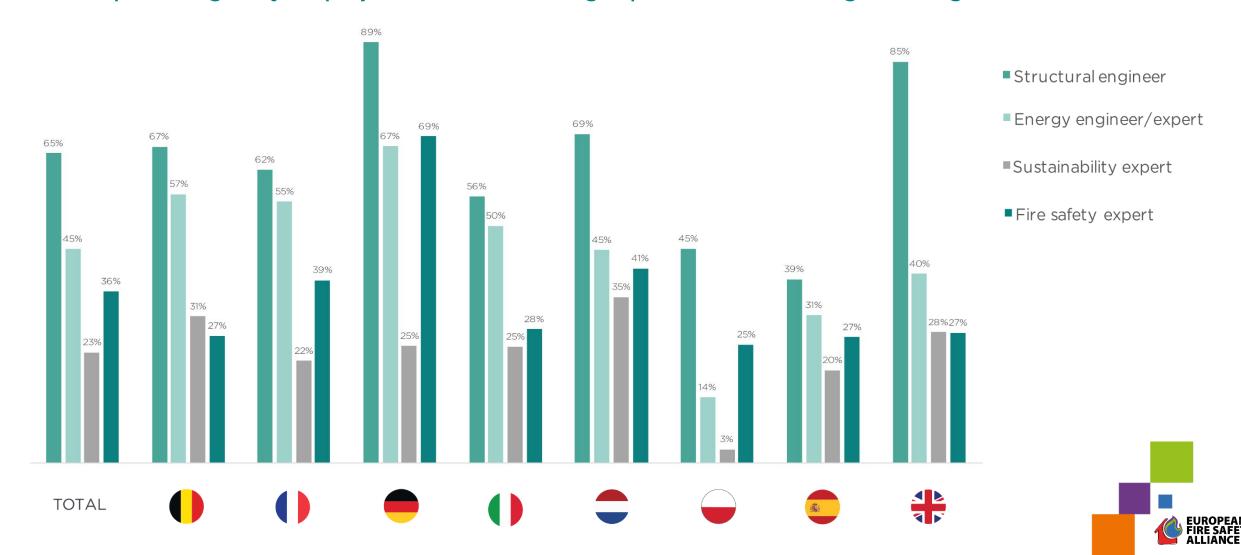








In what percentage of your projects are the following experts involved during the design?







What are the reasons NOT to involve a fire expert during building design?										
	TOTAL	0	0	•	0		-		#	
Expertise is available in house	43%	55%	42%	38%	26%	49%	25%	74%	42%	
Customers do not want to pay for it	36%	51%	30%	28%	19%	32%	38%	48%	43%	
Not required by law	34%	47%	22%	29%	39%	26%	38%	41%	37%	
There is a lack of competent fire experts	21%	29%	13%	21%	17%	21%	24%	27%	21%	

What are the reasons to involve a fire expert during building design?										
	TOTAL	0	0	•	0		•	©	시 기 기 기	
Required by law	69%	48%	71%	65%	74%	62%	82%	55%	84%	
To better meet the requested design	60%	65%	77%	19%	69%	78%	49%	47%	83%	
Expertise is not available in house	54%	45%	59%	54%	57%	58%	39%	32%	78%	
Customers demand it	44%	48%	64%	33%	37%	52%	20%	29%	66%	



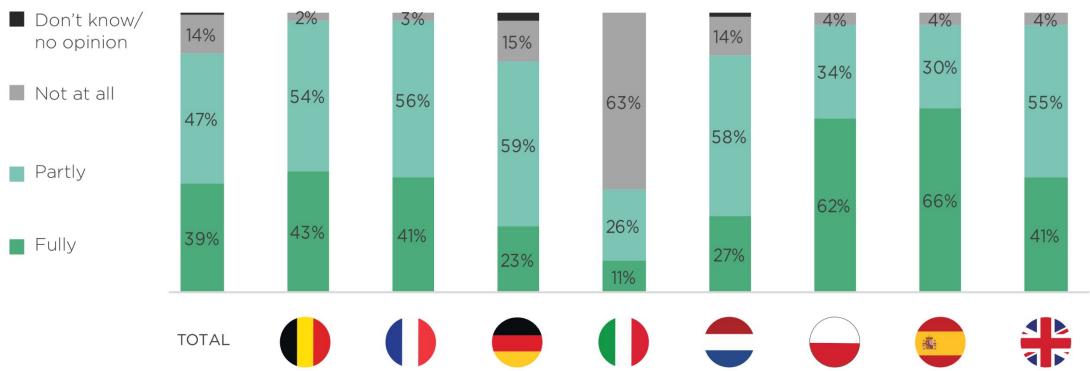








To what extent are you responsible for the fire safety of the building you design?



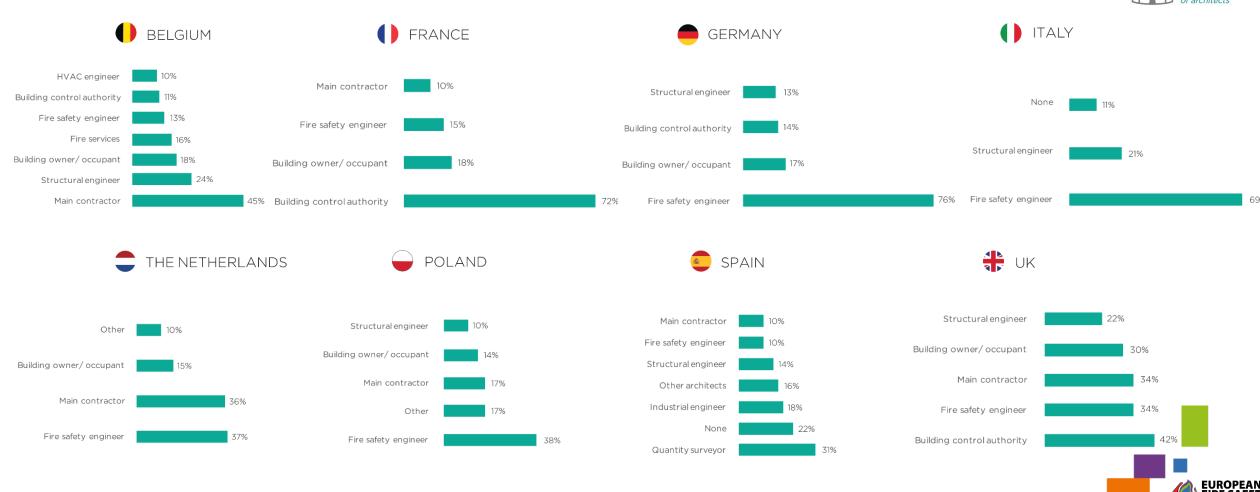






Which other parties besides yourself has any responsibility for the fire safety of the final building?









Our analysis:

- room for improvement in the level of involvement of dedicated fire experts, particularly in housing renovations, as they are currently less involved than energy experts → the need for energy experts is embedded into the EPBD, can fire experts be similarly required by regulations?
- fire safety responsibility should be clearly designated
- significant national differences → an EU analysis of the situation in each country would be relevant regarding
 - legal requirements
 - level of architects' fire safety knowledge
 - availability or recognition of fire experts
 - fire safety responsibility



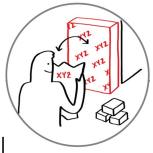




DESIGN



CONSTRUCTION



Building control authorities

Architect

Fire engineer

Quality control

OPERATION



Inspection

Maintenance

And also:

- Product testing and approval : fire testing labs
- Research and education : academics





Speaking: Maj. Karol Mojski



- Head of Fire Protection Section at the National Headquarters of the State Fire Service
- Career firefighter since 2005
- Fire safety engineer fire expert
- Member of the Polish Association of Fire Engineers and Fire Technicians (SITP)



State Fire Service, Poland

 National Headquarters of the State Fire Service is a governmental agency responsible for organisation of the National Firefighting & Rescue System and fire protection

https://www.gov.pl/web/kgpsp-en



Currently in: Warsaw, Poland





Fire experts in Poland - idea

- introduced in Poland in 1991 by the Law on Fire Protection
- fire expert can be any person holding an **engineer degree** who has appropriate knowledge and experience confirmed by a positive result of the **exam**, run by the Chief Commandant of the State Fire Service
- currently 500 practising fire experts
- fire experts are involved in all stages of building life









Fire experts are entitled to:

stating the compliance of the construction designs with fire protection requirements



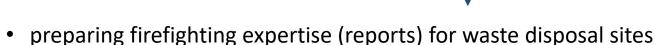
making opinions on the design of fire protection installations



preparing **technical expertise** and other **technical reports** in the field of fire protection



other fire protection activities



- agreeing the technical design of the photovoltaic installations over 6.5 kW
 - drawing up fire safety instructions
 - carrying fire audits
 - other assessments







Requirements of the involvement of the fire expert for certain type of buildings

Activities of fire expert is required for buildings that are **important** with respect to the **protection of life, health, property or environment from fire, natural disaster or other emergencies**. The main criteria:

- > type and the use of the building (e.g. hospitals, office buildings, production and storage facilities or public utility buildings)
- > height of the building (4 groups of heights)
- Fire zone size and fire load density (areas exceeding 1000 m² and objects above 500MJ/m² fire load density)
- > number of parking places in the garage (single-storey garage over 10 or every multi-storey garage)
- > objects equipped with fire installations (e.g. fire alarm systems, fixed extinguishing installations, voice alarm systems),
- > so called special object (nuclear facilities, tunnels over 100m long, objects with a risk of explosion)





Training and accreditation system for the fire expert

each fire expert is obliged to improve his/her qualifications in a 5-year reference (verification) period system



dedicated trainings accredited by the National Headquarters of the State Fire Service (NHSFS)

passing a **periodic recertification** test

gaining 20 points by participating in trainings or passing the test extends the qualifications for another
 5 years







External control system

- supervision is performed by the **National Headquarters of the State Fire Service** with the assistance of the **Regional Headquarters of the State Fire Service** (relevant for the region/area of the fire experts operation).
- in case of any irregularities or misconduct made by the fire expert the National HQ of the SFS may apply sanctions:
 - > official written warning
 - > referral to a re-examination (in the case of gross contraventions of the regulations or repeated errors of a lower weight numerous warnings)
 - > withdrawal of the right to practice the profession of an fire expert (3 years after the withdrawal one can take the exam for an fire expert again)
- **new situation we face recently with** some fire experts give up themselves and resign as they are not able to keep up with novel challenges and solutions (technological, legal, organisational etc.)







Fire experts contribution for fire safety improvement

- significant increase in the quality of services provided by fire experts observed since 2015
- wide participation of experts in training, translates into fewer objections during the acceptance of buildings by the State Fire Service before they are handed over for exploitation
- after good training fire experts are more aware and confident in making decisions, as well as in proposing and verifying fire protection solutions
- trainings enable exchange of experience between experts as well as between their supervising bodies (State Fire Service) which enables consistency in approach and understanding of fire safety requirements
- last 5 years showed a reduction in the number of cases in which the final acceptance of the building by the State Fires Service found irregularities in the field of fire protection





Recommendations to other countries

To avoid tragic fires, especially due to energy transition processes, sooner or later each country will have to include accredited fire safety professionals with clearly defined roles and responsibilities to its fire protection system

Karol Mojski





Speaking: Gary Parker



- Currently in: Nottingham, UK in lockdown
- Electrical Engineer in the UK
- Member of the Institute for Engineering Technicians, Chartered Institute
 of Building Services Engineers, Energy Institute
- Committee Member of the UK Wiring Regulations Committee, UK Emergency Lighting Committee, Temporary Electrical Installations
- 20+ years experience in electrical safety and electrical contracting



- Trade association representing the Electrotechnical sector in England,
 Wales and Northern Ireland
- Established in 1901







The importance of regular inspections

- Electrical connections, if inadequate, cause heat
- Installations have hundreds and thousands of connections
- Electrical installations degrade over time, equipment moves and cables get damaged
- Also, products can hold internal errors
- UK had a major incident with a faulty fridge freezer in Grenfell in 2017
- Regular inspections help to find these issues

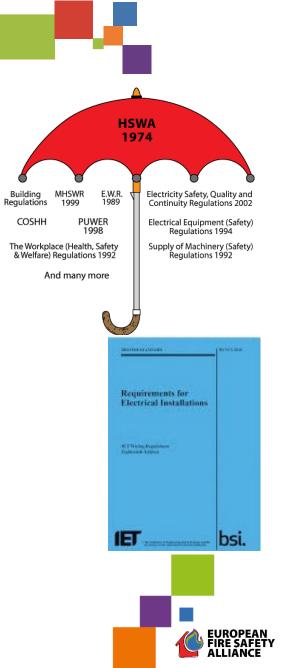






Electrical inspections in the UK

- The UK places a legal requirement on building owners to ensure their installations are safe through the Electricity at Work Regulations
- Compliance with guides, BS 7671, help to ensure compliance with legislation
- BS 7671 requires frequent Electrical Installation Condition Reports (EICRs)

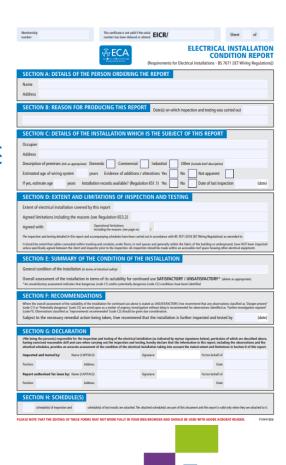




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Electrical Installation Condition Reports (EICRs)

- EICRs are reports/audits of an electrical installation
- The report is done by a skilled electrical engineer and reviews the installation from an electrical safety and fire safety point of view
- Issues are listed and graded for their severity
- The installation then is either satisfactory or unsatisfactory depending on the issues discovered

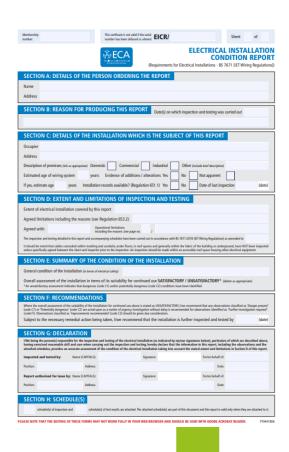






Recommendations

- Ensure that electrical installations are regularly inspected for safety
- Enshrine these requirements are in law and unambiguous
- Create a documented system
- Use skilled persons, proper materials and safe systems
- Consider product registration





Gary Parker, Technical Manager ECA

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Fire safety in design

- Tragic issues in the UK have highlighted systemic failures in the design, construction and operation of buildings
- Disasters:
 - Shepherds Court- (tumble dryer)
 - Lakanal House (TV)
 - Grenfell (Fridge-freezers)
 - Bolton student accommodation
- The Hackitt report post Grenfell will change UK construction forever, this will take time but will increase fire safety and awareness









Speaking: Amani Habbal



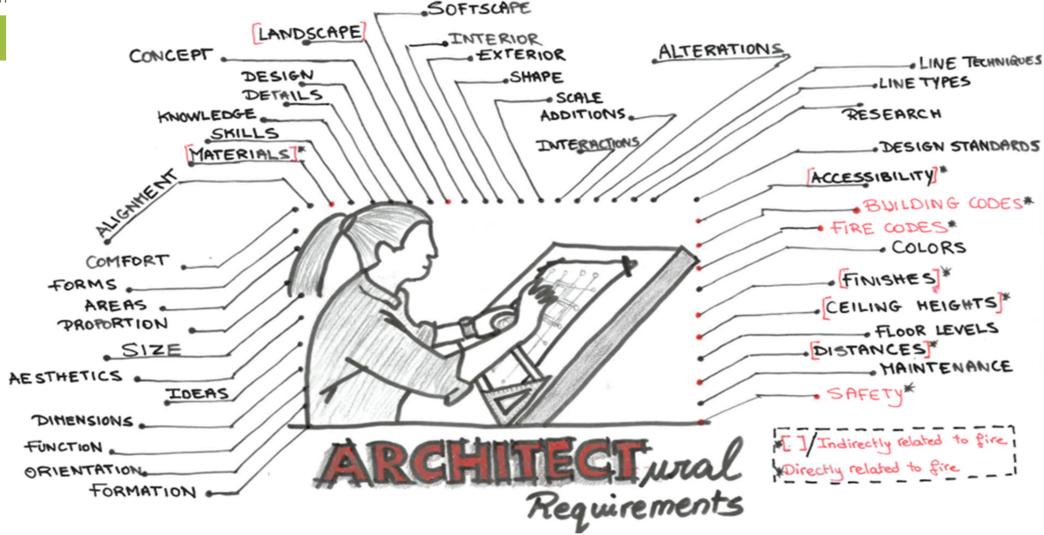


@Amanihabbal1

- BSc in Architectural Engineering from BAU in Lebanon with a multidisciplinary experience in design, education and research.
- MSc in Fire Safety from HVL in Norway in 2020
- Incoming Graduate Fire Engineer at Arup UK
- Master thesis entitled: "Architects & Fire Safety Engineers; Common Grounds | A Holistic Approach to Integrate Fire Safety Requirements within Building Design"
- Passionate about exploiting the full potential of coordination between architects and fire engineers in various design phases
- Student member at RIBA, SFPE, and NFPA







A juxtaposition of different elements should be holistically considered to ensure an effective design, which is quite a difficult achievement.



Amani Habbal, Incoming Graduate Fire Engineer at Arup UK



- Architects definitely do not have the necessary knowledge to design fire safe buildings. However, they do have the skills to be able to collaborate effectively with fire engineers.
- Fire engineers needs to recognize architects as key players for fire safety (through their architectural designs)
- Architects need to understand how their designs affect fire safety, and how to mitigate issues early on.

The better the relationship among all key players of a project, the more successful that project will turn out to be. Moreover, the earlier that collaboration commences and the more opinions each party is encouraged to participate with, will eventually lead to *safer, more aesthetically pleasing, environmentally friendly, and consequently more feasible projects*





Speaking: Jimmy Jönsson





@JVVAFIRE

- Director at JVVA Fire & Risk in Madrid, Spain
- 19 years of experience on a wide range of international fire/life safety projects
- Jimmy has specific knowledge and experience regarding:
 - Fire Engineering,
 - Performance Based Design
 - Risk Management.
- Graduated from Lund University, Sweden
- Jimmy is heavily involved in different SFPE activities; SFPE Board of Directors, SFPE Europe Council, SFPE Europe Magazine.



Currently in: Madrid, Spain



Jimmy Jönsson, Director at JVVA Fire & Risk



- Young discipline Lacking recognition for the profession
- All building design Holistic view and connection point for all disciplines

• Singular buildings - Performance-based design approach

Level of involvement vs Level of complexity



Jimmy Jönsson, Director at JVVA Fire & Risk



- Involvement during the whole life cycle of the building U-shaped curve
- Specific fire risks during the life cycle Construction, day to day activity, refurbishment

• Changes to a building – Effect on **fire safety strategy** (live document)? (change of use, change of systems, design changes/refurbishment, etc.)





Jimmy Jönsson, Director at JVVA Fire & Risk



- Education: We need educational programs specifically for Fire Engineering in all European Countries (collaboration over borders) + Continued Professional Development
- Research: New Fire Risks (sustainability objectives) + Knowledge sharing (open source & free for all)
- Competence requirements for the Profession: Practitioners must be able to show that they hold the required competency (education + experience)

 Fire Safety Practitioners: Professional ethics (work within your competency zone)



Speaking: Adamantia Athanasopoulou

Currently in: Ispra, Italy



- Scientific Officer at the Joint Research Centre (JRC) of the European Commission.
- MEng in Civil Engineering from the University of Patras, Greece and her MSc and PhD in Structural Engineering from the University of Michigan, Ann Arbor, USA.
- Expert on structural engineering and earthquake performance of reinforced concrete structures, strengthening and retrofitting for existing structures.
- 16 years of teaching experience on topics related to structural mechanics and construction project management; supporting training activities on the Eurocodes.



- Since 2005, the **JRC** is committed to assist in the implementation, harmonisation and further development of the Eurocodes.
- In 2005, the activities expanded to support the EU policies and standards for safe and sustainable construction.
- The JRC coordinates the project on the incorporation of Fire Safety Engineering in the fire regulations of the EU Member States.



Adamantia Athanasopoulou, Scientific Officer, Joint Research Centre, European Commission



Fire Safety Engineering Expert Network

- What? expert support for the development of a fire safety engineering approach to be incorporated in fire safety regulations of the EU Member States.
- Why? support the Commission's Fire Information Exchange Platform (FIEP) initiative.
- Who? standard writers, fire safety experts, academia, research institutions and representatives of firefighters.





Adamantia Athanasopoulou, Scientific Officer, Joint Research Centre, European Commission

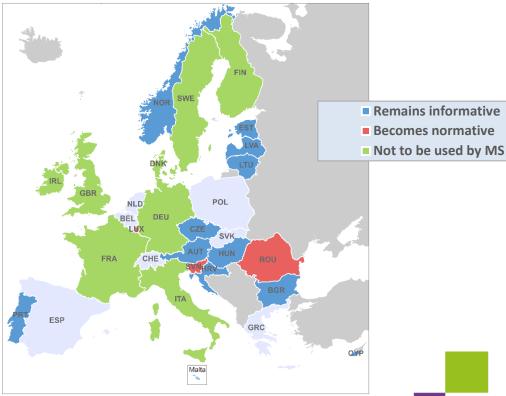


• How?

- Assess the implementation state of fire safety engineering and the standardisation needs.
- Introduce **fire engineering principles** by analogy to the EN Eurocodes.

- Provide common design rules with safety level remaining a choice of the countries.
- Support education, training and guidance.

EN 1991 Eurocode 1: Actions on structures
Part 1-2: General actions - Actions on structures
exposed to fire
Annex E "Fire Load Densities"



Source: European Commission NDPs Database (Feb. 2019)

Based on 71% of the expected data available





Adamantia Athanasopoulou, Scientific Officer, Joint Research Centre, European Commission



- Architects, civil/structural/buildings engineers, fire engineers, local and national authorities, policymakers, researchers ...
- Map roles and responsibilities of fire safety professionals for all phases of the building life cycle.
- Harmonise qualifications required to engage in fire safety engineering approach practices.





Speaking: Bart Merci



@BartMerci



@ugent

- Mechanical engineer, Belgian
- PhD in turbulent combustion (Ghent University, 2000)
- Academic at Ghent University since 2004
- Senior Full Professor
- Fire Safety Science and Engineering
- Program Director of International Master of Science in Fire Safety Engineering (https://imfse.be/) and MSc in FSE at Ghent University
- Ghent University (Belgium)
- Top-100 university worldwide
- Faculty of Engineering and Architecture



Currently in : Ghent, Belgium



Bart Merci, Senior Full Professor, Ghent University



- Education of fire safety engineers in EU: curriculum quite well developed (IAFSS, SFPE), but few institutes deliver the 'full package' worldwide.
- Strong support through Erasmus+, creating a worldwide strong network, with leadership from within EU (Ghent Lund Edinburgh, strengthened by associated partners ETH, UMD, UQ, USTC and growing).





Bart Merci, Senior Full Professor, Ghent University



- The need to educate more fire safety engineers is stronger than ever, given the worldwide fast(er) evolution in:
 - Building trends, including novel architecture and materials
 - Urbanization
 - Energy transition
 - Climate challenges
 - Sustainability issues
 - Etc.





Bart Merci, Senior Full Professor, Ghent University



• It would be valuable to consider fire safety engineering and science research and education on the priority list in the context of the EU Green Deal: FSSE is a good companion of sustainability.





Speaking: Carlos Zorrinho







Member of the European Parliament from Portugal since 2014

- Strong supporter of the European Fire Safety Alliance:
 - Signatory of <u>European Fire Safety Action Plan</u>
 - Hosted the launch of the European Fire Safety Action plan event last September



Currently in: Brussels, Belgium





Join the 100+ European Fire Safety Action Plan supporters!

The European Fire Safety Action Plan focusses with 10 actions on European fire safety of the residential environment. Based on science and the knowledge of fire safety experts, this European Fire Safety Action Plan aims to improve European Fire Safety. In a nutshell: The European Fire Safety Action Plan is the agenda for European Fire Safety for the next coming years. Join us. We'll keep you posted! (open full report).

Click to support

Thank you!



