Welcome Note

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Introduction to Water-Based Fire Suppression Systems in Poland

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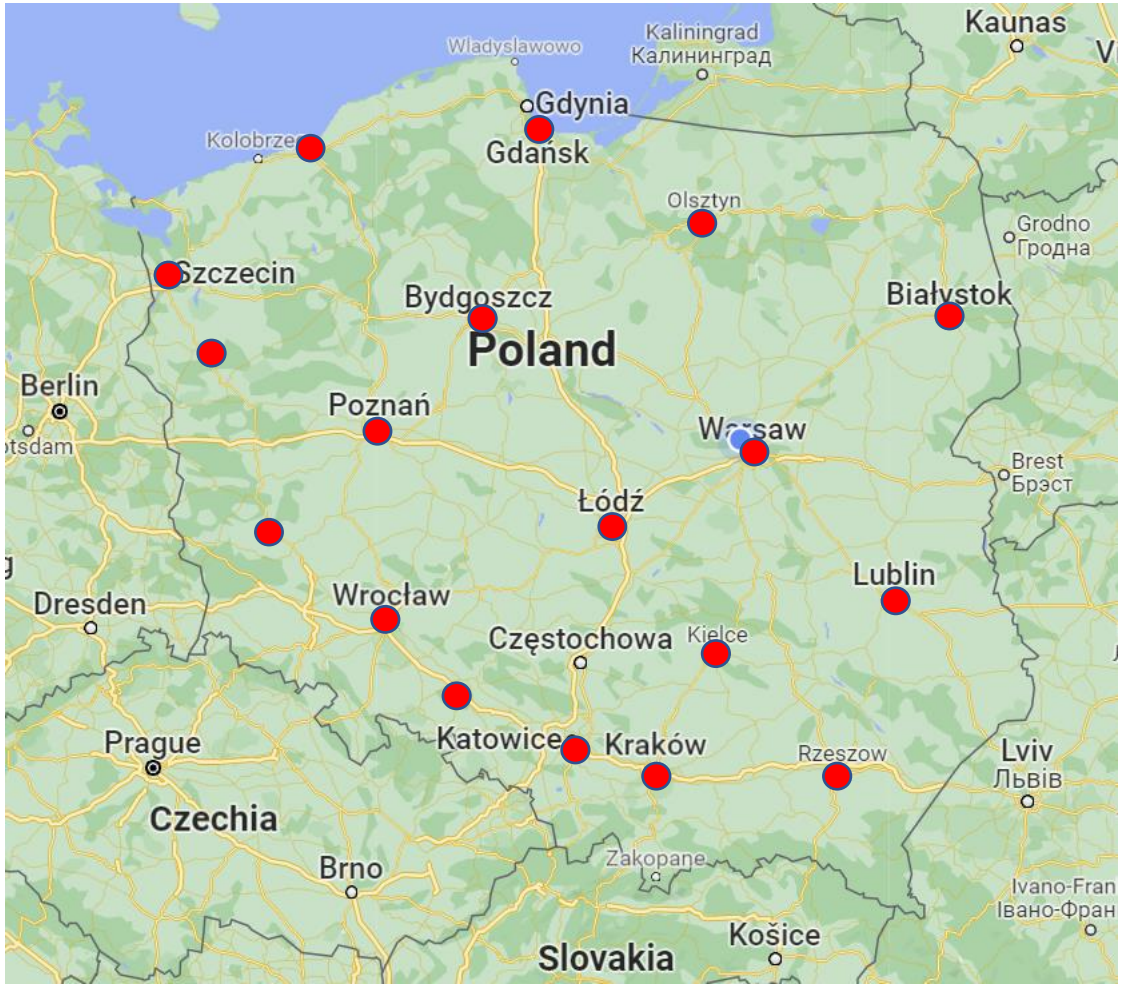
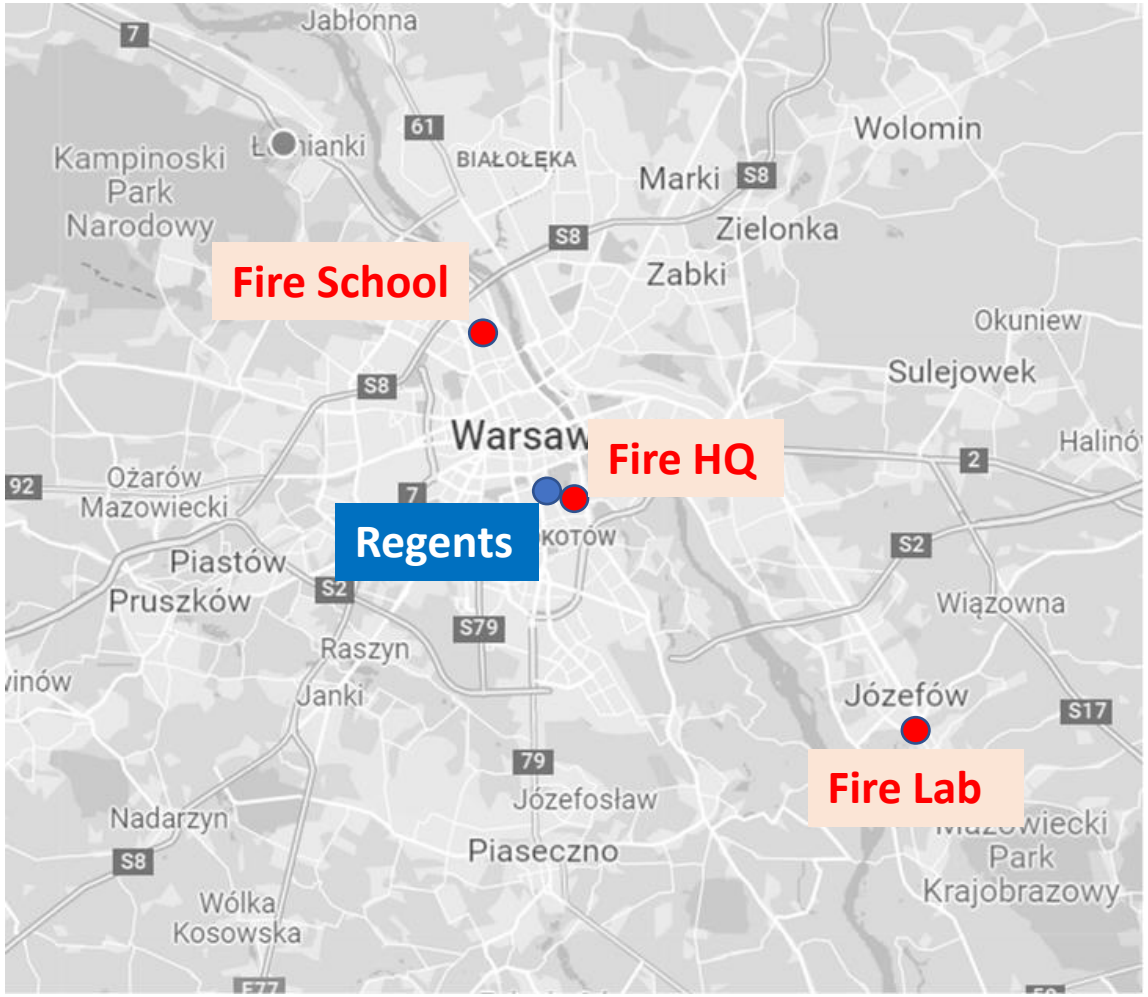
Polish Fire Suppression Systems Foundation

20th International Water Mist Conference IWMC 2021, Warsaw 27-28.10.2021

Welcome to Poland and Warsaw

Welcome to Polish State Fire Brigade





Fire HQ (KGPSP)

Cert Lab (CNBOP)

The Main School of Fire Service (SGSP)

Polish SFPE Chapter (SIBP)

- Conferences / events
- Publications / translations
- Network of licensed fire experts
- Regulatory consultations
- Collaboration with other European SFPE Chapters

Plan

Polish water mist landscape

- Successes
- Challenges
- Future

Polish Fire Suppression Systems Foundation (POLIG)

- Goals
- Activity
- Opportunities

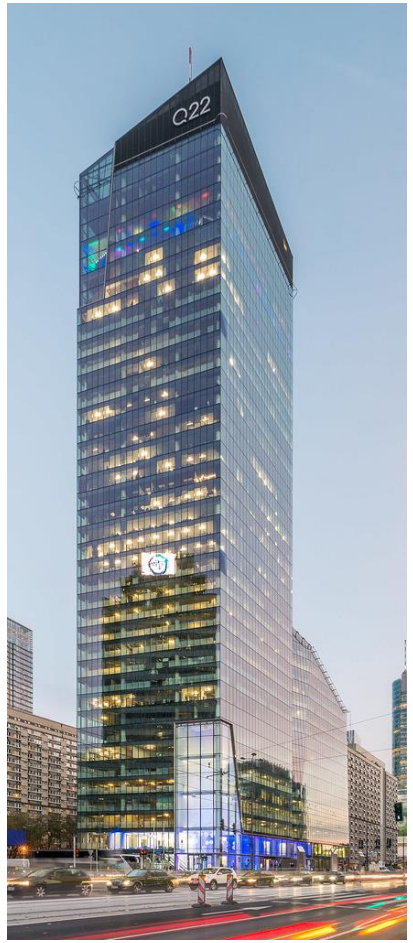
Water mist in Polish high rise buildings

VARSO PLACE

WARSAW SPIRE

MENNICA TOWER

SKYLINER



Q22

KTW

Water mist in Polish tall buildings

Benefits

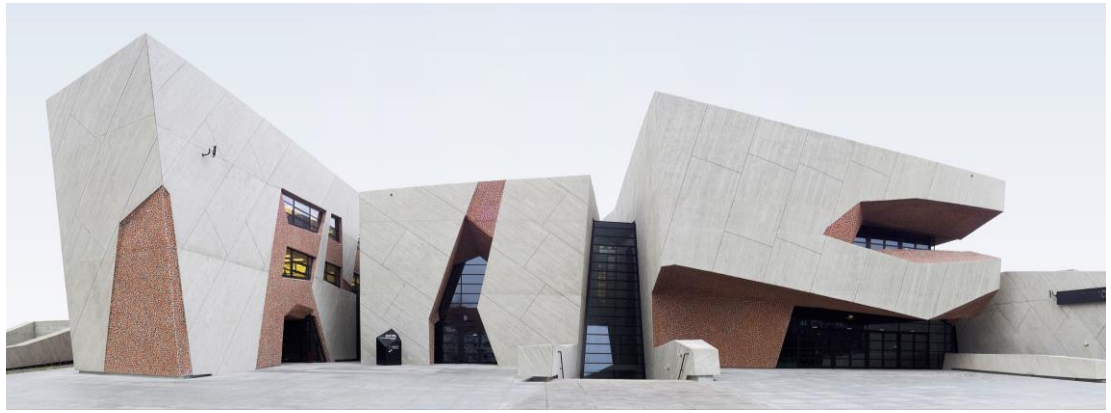
- Less water, smaller water supply needed
- Small pump room serving full building height
- Pipework – small in size, simple, needs less space
- Small losses from water release
- Better interaction with electricity
- More forgiving regarding spacing, distances
- Good for smaller rooms, concealed spaces

Issues sometimes reported

- Not so easy to modify office spaces
- Not so easy to fully protect mixed use
- Water quality, maintenance (hard water)
- Insurance
- Availability of installers
- Difficulty to achieve some fire protection goals: e.g. protection of openings (horizontal, vertical), open stair cases, lift shafts, tall spaces…
- Universality of components
- Escape and firefighting – visibility, egress signs, interraction with smoke ventilation systems
- Poland - necessity to prove „sprinkler equivalence” in terms of the structural fire impact (CFD)
- Doubts regarding effective protection of open spaces

Water mist applications in other Polish buildings

- Museums, archives and libraries
- Data Centers
- Power plants, foundry, waste recycling…
- Industrial technical attics
- Historical buildings, churches



Baltic Fire Laboratory

- One of the biggest lab for fire suppression systems (25 x 25 x 14m)
- Testing IMO, ISO, EU, FM
- Great for research and demonstration
- Training center for designers
- Collaboration with national insurer (PZU Lab)

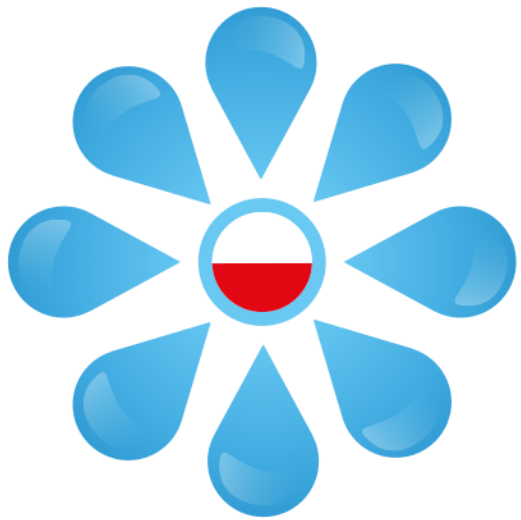
Challenge – certification / acceptance processes

	Negative	Positive
Authorities **State Fire Brigade** **Certification bodies**	• Gaps in submitted documentation • Inadequate test for a given application • Misunderstandings, miscommunication • Proactive approach is necessary	• Polish regs are good for water mist (>2015) • Key role of the licensed fire expert

Water mist providers
Designers / installers
Licensed fire experts
	• Slow process
	• Insufficient manpower
	• Unknown timeframe
	• No automatic acceptance of EU certification
	• Confusion, especially with less known labs and test protocols
	• Polish certification (KOT) often done to avoid „troubles”
	• EN 14972-1 still lacks many component test protocols
		• Improving recognition of FM/IMO/VDS/UL
		• EN 14972-1
		  • brings hope for less friction
		  • many fire test protocols

Challenge – knowledge

- Systems designed in close collaboration dealer-manufacturer
- Detailed knowledge hard to access
- National experience grows with
  - EN 14972-1 with easy to access fire test protocols
  - Number of delivered systems
  - Availability of translated documentation and standards
  - Training programs for designers/installers



Polish Fire Suppression Systems Foundation

Goals

Popularizing reliable knowledge

- benefits of using Water-Based Fire Suppression Systems (WBFSS) and examples of successes
- WBFSS technology - principles of operation, design, commissioning, maintenance, etc.
- causes of large fire losses
- domestic and foreign statistics on fires and losses
- the social and economic consequences of major fires
- environmental losses as a result of major fires

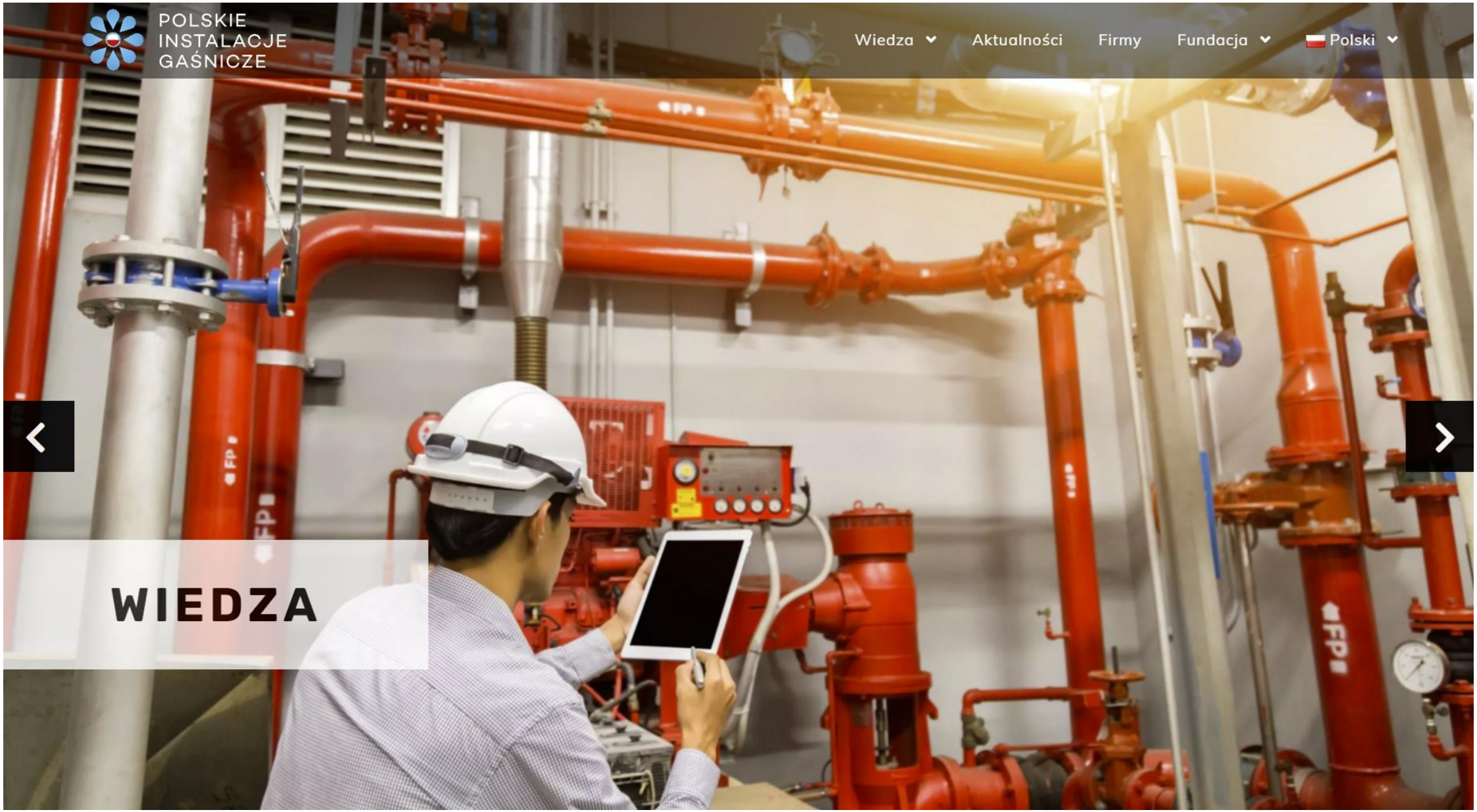
Supporting

- education about WBFSS among fire brigades, architects, designers, appraisers, insurers, facility managers, investors, etc.
- rational development of regulatory frameworks in the area of WBFSS
- research and scientific studies in the field of preventing large fire losses
- development of WBFSS as an effective way to prevent large fire losses and to raise awareness of it in relevant communities
- high-quality design and installation services for WBFSS, as well as their certification and inspection.
- the idea and the need for independent audit and insurance services as a related system to prevent large fire losses

Support / Collaboration

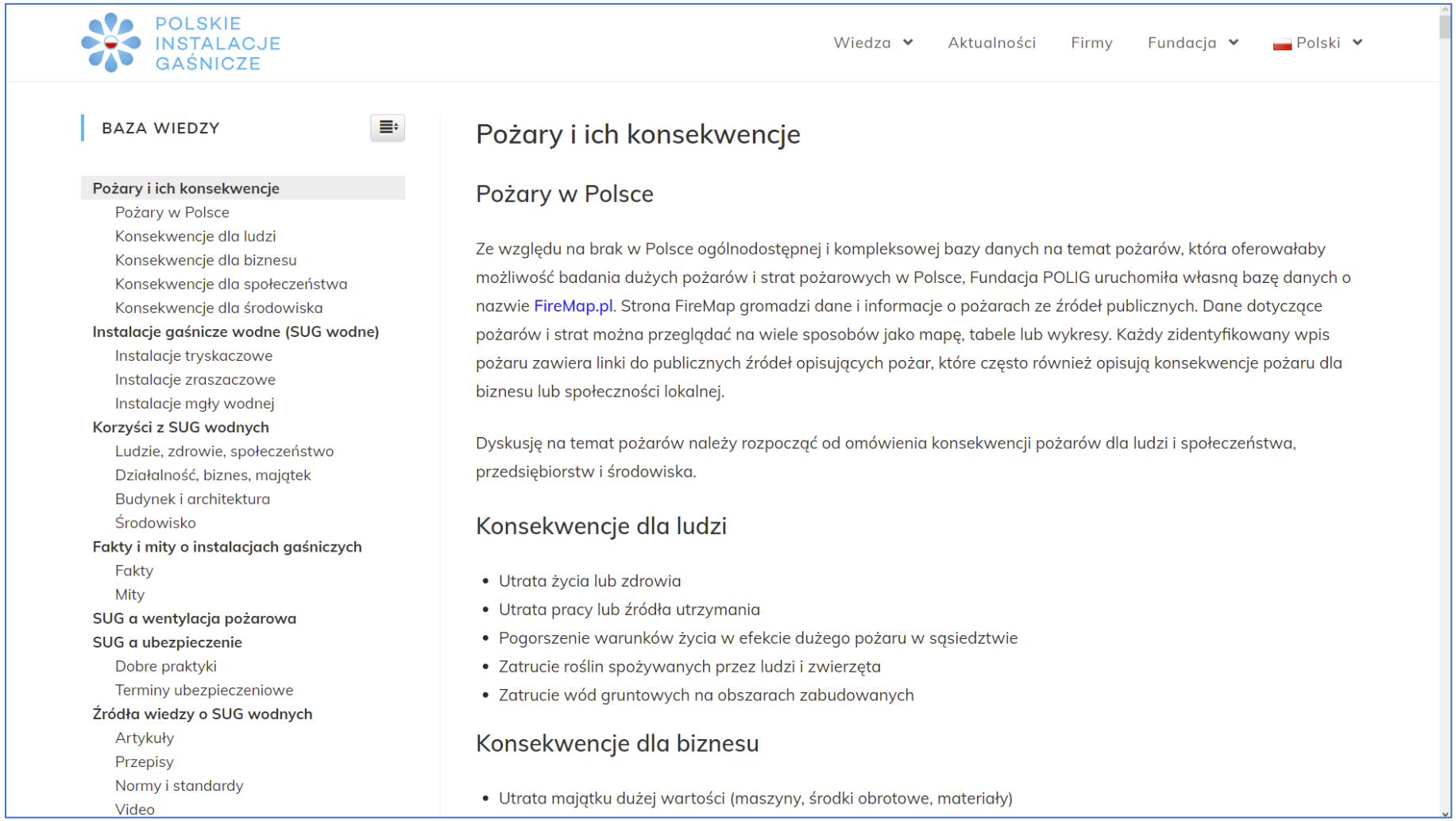
Activity

- SUPFIRE Conferences
- Polish Normalization Committee
- Polish fire database FireMap.pl on large fires and fire losses in Poland
- Qualifications for designers and installers of suppression systems
- Technical studies
  - fire protection rules for industrial and storage buildings in Europe and USA
  - codified benefits from using suppression systems in Europe and USA
  - reliability of fire suppression systems in Poland
  - weaknesses of the Polish rules for fire protection of buildings
- Publication of technical articles in relevant Polish technical magazines & journals
- Translation of standards (e.g. EN 12845)
- Collaboration with Polish Insurance Chamber
- Scholarship program



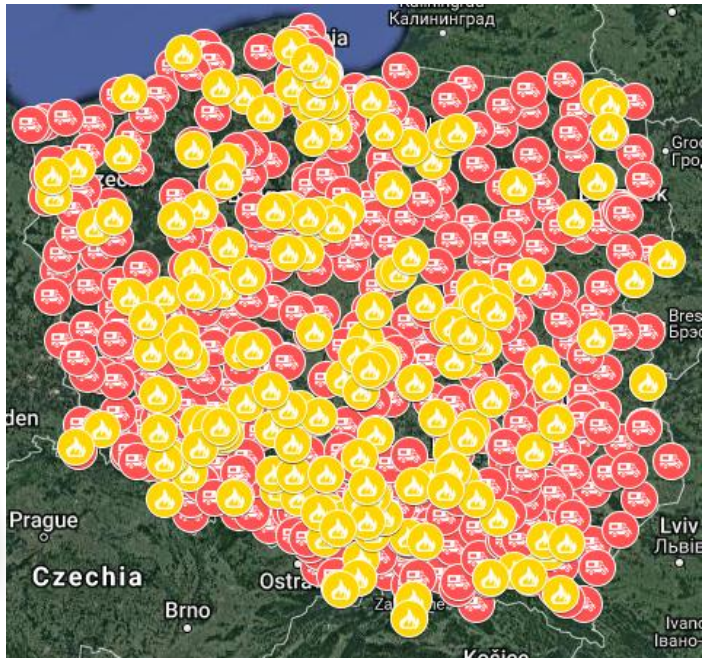
WIEDZA

Knowledge Base

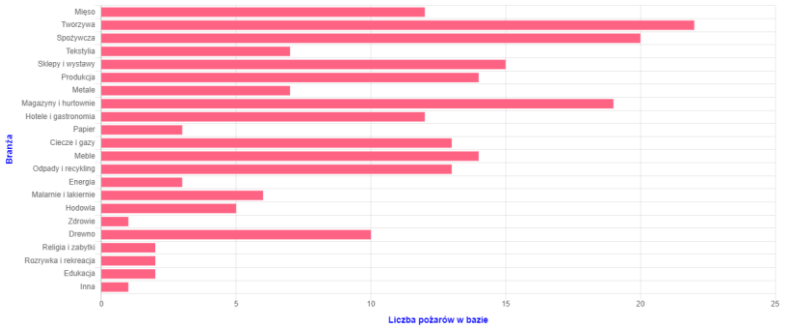


Qualifications

FireMap.pl -> FireMap.eu



Miejscowość	Data	Nazwa	KZ	Branża	Powierzchnia	Dystans do JRG [km]	Straty [mln PLN]	Konsekwencje
Łyse	2009-06-29	JBB	PM	Mięso	20000	28	1000	1500 miejsc pracy
Toruń	2008-02-27	Drosed	PM	Mięso	12000	2.9	100	600 miejsc pracy. Zakładu nie odbudowano
Wólka Kosowska	2011-05-10	Hala	PM	Tekstylia	18000	13.7	100	
Kutno	2014-12-09	Fuji Seal Poland	PM	Tworzywa	22000	6.6	100	
Łódź	2015-07-27	Coko-Werk	PM	Tworzywa	6700	1.7	100	
Świerczynek	2017-01-01	Olewnik	PM	Mięso		31.1	100	800 miejsc pracy, wstrzymanie produkcji
Lubań	2012-07-08	Imka	PM	Papier	20000	2.5	80	
Chełstówek	2015-08-13	Ilpea	PM	Tworzywa	11000	19.4	80	650 miejsc pracy
Gdańsk	2012-01-19	HTEP Sunreef Yachts	PM	Produkcja	1600	1.8	60	Przerwa w produkcji



SUPFIRE Conferences

Scholarship program

Polish Insurance Chamber

Application map

Factors

EFFECTIVENESS "S"		COST "C"		USAGE/DESIGN "UP"	
S1	System ineffective	E1	Cost of suppression agent	UP1	Water damage
S2	Activation delayed by ventilation	E2	Cost of arming the system after release	UP2	Piping dimensions
S3	Activation delayed	E3	Cost of suppression agent testing	UP3	Design flexibility
S4	Cooling gas near ceiling	E4	Cost of obligatory system testing	UP4	Hydraulic losses
S5	Improving evacuation	E5	Cost of the system	UP5	Available pressure
S6	Improving visibility	E6	Guaranteed power supply	UP6	Standard guidance
S7	Reducing temperature	E7	Intermediate tanks	UP7	Intermediate tanks
S8	Protecting structure	E8	Weight of the system	UP8	Universal standards
S9	Application test results available	E9	Space needed in vertical shafts	UP9	Space needed in vertical shafts
S10	Protecting concealed spaces	E10	Space needed under ceiling	UP10	Space needed under ceiling
S11	Protecting large open spaces	E11	Flexible installation	UP11	System limitations
S12	Protecting electrical devices	E12	Material / fabrication	UP12	Materials / fabrication
S13	Sealed room required	E13	Number of release points	UP13	Number of release points
S14	Effective with oil and fat fires	E14	zasięg działania / rozstaw	UP14	coverage / spacing
S15	Effective by pre-wettening materials/devices	E15	Pump drive type	UP15	Additional certification
S16	effective on materials reacting with water	E16	Intermediate pump sets / rooms	UP16	Intermediate pump sets / rooms
S17	Reducing oxygen level	E17	Area of pump/gas room	UP17	Area of pump/gas room
S18	system deactivation protection	E18	Possible use with hydrants	UP18	Amount of water typically released
				UP19	Unusual applications
				UP20	Ease of use in existing buildings (office, museum, historical etc.)
				UP21	Operation possible with ventilation
				UP22	Possible code departure using CFD simulation
				UP23	Resistance to vandalism

Applications

	Type of building/application	Sprinklers	Water mist	Gas	Foam	Factors to consider
1	Office	X	X			S4, S5, S7, S9, E5, E6, E8, E9, E10, E11, E14, E17, UP1, UP3, UP9, UP14, UP15, UP17, UP18, UP20, UP22
2	High-rise (office, hotel)	X	X			S4, S5, S7, S9, E5, E6, E7, E8, E9, E10, E11, E14, E16, E17, UP1, UP2, UP3, UP4, UP5, UP7, UP9, UP10, UP14, UP15, UP16, UP17, UP18, UP20, UP22
3	Hotel	X	X			S4, S5, S7, S9, E5, E6, E8, E9, E10, E11, E14, E17, UP1, UP3, UP9, UP14, UP15, UP17, UP18, UP20, UP22
4	Library	X	X			S5, S9, S10, S15, E5, E11, E14, UP1, UP14, UP15, UP18, UP20
5	School	X	X			S4, S5, S6, S7, E5, UP14, UP15
6	Hospital	X	X			S4, S5, S6, S7, S10, S12, S15, E5, E8, E9, E10, E11, E12, UP1, UP2, UP3, UP4, UP9, UP10, UP12, UP19
7	Museum	X	X			S2, S3, S5, S7, S15, E11, E12, E14, E17, UP1, UP3, UP10, UP12, UP14, UP15, UP19, UP20
8	Cinema	X	X			S4, S5, S6, S7, E5, UP14, UP15
9	Theater	X	X			S4, S5, S6, S7, E5, UP14, UP15
10	Prison	X	X			S1, S18, E2, E5, UP11, UP19, UP23
11	Laboratory	X	X	X		S1, S3, S10, S12, S13, S15, S16, E9, E11, E12, UP1, UP11, UP12, UP18, UP19
12	Railway stations	X	X			S7, S8, S11, E5, UP1, UP11, UP14, UP23
13	Historical / religion buildings	X	X	X		S3, S7, S8, S10, S11, S15, E5, E8, E10, E11, E13, E14, UP1, UP3, UP11, UP14, UP15, UP20, UP23
14	Archive	X	X	X		S3, S7, S9, S10, S15, E5, E14, E17, UP1, UP11, UP12, UP14, UP15, UP17, UP18
15	Data centers		X	X		S1, S2, S3, S7, S9, S10, S12, S13, S15, E5, E6, E9, E12, E14, E17, UP1, UP3, UP6, UP11, UP15, UP17, UP18, UP19, UP21
16	Small data centers		X	X		S3, S10, S12, S13, S15, E1, E2, E3, E4, E5, E13, E17, UP1, UP11, UP15, UP17
17	High bay storage	X				Only sprinklers
18	Flammable liquids / aerosols				X	Instalacja tryskaczowo-pianowa lub pianowa
19	Production / factory	X	X			S4, S5, S8, S12, S14, S15, E1, E2, E5, E11, UP1, UP11, UP15, UP18, UP19, UP21
20	Power stations & energy sector	X	X	X	X	S1, S3, S8, S9, S10, S11, S12, S13, S14, S15, S16, E1, E5, E14, UP1, UP4, UP5, UP8, UP11, UP12, UP14, UP15, UP19
21	Rafinerie i Petrochemie	X			X	S1, S3, S8, S9, S10, S11, S12, S13, S14, S15, S16, E1, E5, E14, UP1, UP4, UP5, UP8, UP11, UP12, UP14, UP15, UP19
22	Tanks – petroleum products				X	Only foam
23	Car parks	X	X			S1, S2, S3, S4, S5, S6, S7, S9, E5, E10, E14, UP10, UP11, UP12, UP14, UP15
24	Underground car parks	X	X			S1, S2, S3, S4, S5, S6, S7, S9, E5, E10, E14, UP10, UP11, UP12, UP14, UP15
25	Car parks with jet fan venilation	X				S1, S2, S3, S4, S5, S6, S7, S9, E5, E10, E14, UP10, UP11, UP12, UP14, UP15
26	Car parks with duct ventilation	X	X			S4, S5, S6, S7, S9, E5, E10, E14, UP10, UP11, UP12, UP14, UP15
27	Automatic car parks	X	X		X	S1, S2, S3, S4, S5, S6, S7, S9, E5, E10, E14, UP10, UP11, UP12, UP14, UP15
28	Road and railway tunnels	X	X			S1, S2, S4, S5, S6, S7, S9, S11, E1, E5, E12, E14, E15, UP11, UP12, UP15, UP19
29	Railway rolling stock		X	X		S9, S10, S11, S12, S13, S14, E5, E11, E12, UP1, UP12, UP15, UP19
30	Air Hangars		X		X	S9, S11, E1, E5, E13, UP12, UP 13, UP15

Fire Protection Quarterly – 20 years of service

Summary

- Water mist technology is getting more and more popular in Poland
- Future is very optimistic with new EN 14972-1
- There are some challenges - certification/acceptance, access to knowledge
- The need for unbiased guidance for the fire community on the selection of the best system in given circumstances
- POLIG can help with some of these challenges in Poland

Thank you !!!

Have a great IWMC 2021 !!!

Enjoy Poland and Warsaw !!!