

Analyzer Special

From Expo Technologies



Hazardous Area Solutions for Gas & Liquid Analyzers

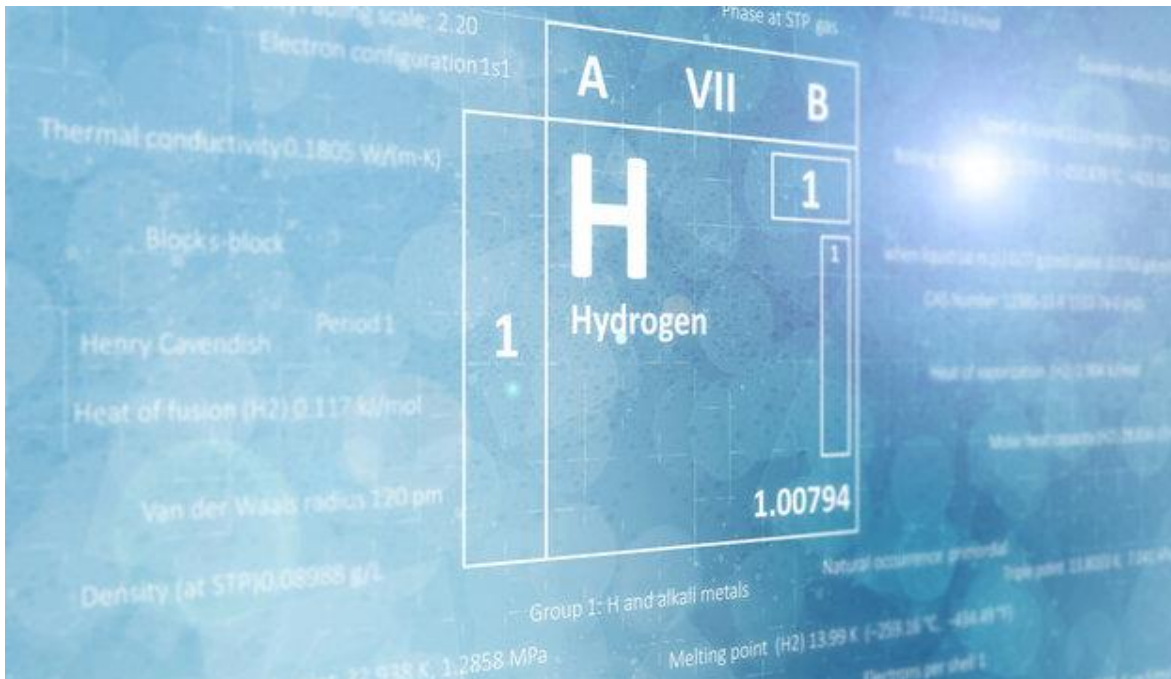
Welcome to this analyzer special from Expo Technologies

Whether you are an analyzer manufacturer developing a certified version of an existing system, or an end-user with a safe area analyzer to install in a hazardous area, then Expo can help you find the right solution. Our Ex p (purge & pressurization) knowhow has helped to solve even the most challenging cases.

In this newsletter we consider 3 key questions you should ask when considering an analyzer project:

- [What are the properties of the sample being measured?](#)
 - [What are my protection options?](#)
 - [How straightforward is the certification process?](#)
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What are the properties of the sample being measured?



Is the sample flammable or non-flammable? Hazardous area protection techniques largely focus on keeping electrical equipment and flammable gases & vapors apart. So introducing a flammable material (the sample) back into the protected equipment (the analyzer) adds an extra layer of complexity to the solution. In hazardous area codes and standards, this system would be classified as having an “Internal Source of Release” (ISOR).

Of course, if the sample isn't flammable, then things are potentially simpler.

If you'd like to find out more about how Expo developed a solution in a challenging ISOR case, then take a look at this [case study](#).

What are my protection options?

HazLoc Hand Chart

Protection Method	Ex Code	Standard IEC / EN / BS / ANSI/ISA	Gas				Dust									
			ATEX Category	IEC / EN / ATEX / BS Zone	UK / USA Zone	USA (NEC 500) Zone	ATEX EPL	ATEX Category	USA (NEC 500) FM & UL	Canada (CEC) CSA	Gas	Dust				
Intrinsic Safety	ia	60079-11	1G	Zone 0	Ga	Zone 20	Da	1D	Intrinsic Safety	IS	FM3610/UL913 UL698A	C22.2 No. 157	Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2 Class III, Div 1 Class III, Div 2		
	ib		2G	Zone 1	Gb	Zone 21	Db	2D								
	ic		3G	Zone 2	Gc	Zone 22	Dc	3D								
Flameproof	da	60079-1	1G	Zone 0	Ga	Zone 20	Da	1D	Explosion-proof Dust Ignition-proof	XP	ANSI/UL1203 FM3615 FM3616	C22.2 No. 30	Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2		
	db		2G	Zone 1	Gb	Zone 21	Db	2D								
	dc		3G	Zone 2	Gc	Zone 22	Dc	3D								
Protection by Enclosure	ta	60079-31		Zone 0	Ga	Zone 20	Da	1D	Dust-tight			C22.2 No. 25	Class II, Div 2 Class III, Div 1 Class III, Div 2			
	tb			Zone 1	Gb	Zone 21	Db	2D								
	tc			Zone 2	Gc	Zone 22	Dc	3D								
Pressurization	pnb	60079-2	2G	Zone 1	Gb	Zone 21	Db	2D	Purged and Pressurized	Type X Type Y Type Z	NFPA 496 FM3620	C22.2 No. 60079-2	Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2 Class III, Div 1 Class III, Div 2		
	pyb		2G	Zone 1	Gb	Zone 21	Db	2D								
	pcb		3G	Zone 2	Gc	Zone 22	Dc	3D								
Increased Safety	eb	60079-7	2G	Zone 1	Gb	Zone 21	Db	2D	Oil Immersion				Class I, Div 2			
	ec		3G	Zone 2	Gc	Zone 22	Dc	3D								
	ma		1G	Zone 0	Ga	Zone 20	Da	1D								
Encapsulation	mb	60079-18	2G	Zone 1	Gb	Zone 21	Db	2D	Non-incendive Hermetically Sealed	NI		C22.2 No. 213	Class I, Div 2	Class II, Div 2 Class III, Div 1 Class III, Div 2		
	mc		3G	Zone 2	Gc	Zone 22	Dc	3D								
	ob		2G	Zone 1	Gb	Zone 21	Db	2D								
Liquid Immersion	oc	60079-6	2G	Zone 1	Gb	Zone 21	Db	2D	Pressurised Room		FM3611 NFPA 495		Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2 Class III, Div 1 Class III, Div 2		
	qc		3G	Zone 2	Gc	Zone 22	Dc	3D								
	q		60079-5	2G	Zone 1	Gb	Zone 21	Db							2D	
Hermetically Sealed / Non-Incendive Restricted Breathing	nC	60079-15	3G	Zone 2	Gc	Zone 22	Dc	3D	Optical System	op sh			Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2		
	nR		3G	Zone 2	Gc	Zone 22	Dc	3D								
	px		2G	Zone 1	Gb	Zone 21	Db	2D								
Pressurised Room	py	60079-13	2G	Zone 1	Gb	Zone 21	Db	2D	Optical Radiation	op is			Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2		
	pz		3G	Zone 2	Gc	Zone 22	Dc	3D								
	pv		3G	Zone 2	Gc	Zone 22	Dc	3D								
Optical Radiation	op sh	60079-28	1G	Zone 0	Ga	Zone 20	Da	1D	Optical Radiation	op pr			Class I, Div 1 Class I, Div 2	Class II, Div 1 Class II, Div 2		
	op is		1G	Zone 0	Ga	Zone 20	Da	1D								
	op pr		2G	Zone 1	Gb	Zone 21	Db	2D								
Special Protection	sa	60079-33	1G	Zone 0	Ga	Zone 20	Da	1D	Non-electrical Equipment - Basic Meth- od and Requirements	h	ISO 80079-36					
	sb		2G	Zone 1	Gb	Zone 21	Db	2D								
	sc		3G	Zone 2	Gc	Zone 22	Dc	3D								
Non-electrical Equipment - Basic Meth- od and Requirements	sa	60079-33	1G	Zone 0	Ga	Zone 20	Da	1D	Reference Standards:							
	sb		2G	Zone 1	Gb	Zone 21	Db	2D								
	sc		3G	Zone 2	Gc	Zone 22	Dc	3D								
Reference Standards:												NEC500	C22.2 No. 0			
Explosive Atmospheres, General Requirements												IEC / EN / BS / ANSI/ISA 60079-0				
Classification of Hazardous Areas												IEC / EN / BS / ANSI/ISA 60079-10-1/2				
Electrical Installations												IEC / EN / BS 60079-14, NEC 505 to 509, ANSI/UL 2225	NEC500			
Inspection & Maintenance												IEC / EN / BS 60079-17, NEC 505 to 509, ANSI/UL 2225	NEC 501 to 504, ANSI/UL 2225	C22.2 No. 174		
												NEC 501 to 504				

Zones

Divisions

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Not all protection methods are suitable for analyzers, and the range of recognised protection methods is not the same across all jurisdictions. For instance, while Increased Safety (Ex eb/ec) is recognised under ATEX & IECEx (as well as many other related standards), it is not recognised in the United States.

For analyzers, the choice typically comes down to Flameproof/Explosion-proof (Ex d / XP) or Purge & Pressurization (Ex p / Type X, Y, Z). Purge and Pressurization is generally preferred for analyzer projects due to lower cost, increased flexibility, and easier maintenance.

Read our [white paper](#) if you'd like to learn more about protecting electrical equipment by Purge & Pressurization.

How straightforward is the certification process?



If the sample is not flammable, then Expo can take care of certification by applying our populated enclosure certificates to the finished project. We carry out the final inspection and issue your certificate. A Notified Body does not need to be involved. This is a quick and low cost method.

Flammable samples fall outside the scope of our certificates, so a Notified Body will be involved. For continuity, we find it most effective if we manage the overall process, providing the required level of technical consultancy, bridging between the end-user and the Notified Body.

Read more about our system consultancy services [here](#).

Your next project?

Read more case studies, and find out how Expo can help with your next analyzer project [here](#).

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