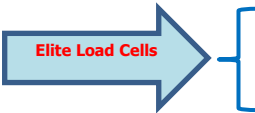
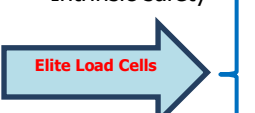



## ELECTRICAL PROTECTION CONCEPTS USED FOR ASSESSING HAZARDOUS AREA EQUIPMENT

Protection Code		Protection Concept	Suitable for Zones		Method of Protection	Does it Require Safety Barriers?	IEC Standard
Gas	Dust		Gas	Dust			
Ex d		Flameproof	1	X	The enclosure can withstand an internal explosion without bursting, but internal explosions are still possible. The fuel can enter the enclosure	No	60079-1
	Ex ta	 Enclosure	X	20	The enclosure is sealed to prevent ingress of dust, and has a surface temperature below the self ignition value of the dust. The enclosure is not necessarily gas tight and so is not suitable for dusts which emit flammable gasses on heating.	No	60079-31
	Ex tb		X	21			
	Ex tc		X	22			
Ex pxb	Ex pD	Pressurised enclosure	1	21	The enclosure is maintained at higher than atmospheric pressure, using an inert gas. The fuel is not able to enter the enclosure.	No	60079-13
Ex pyb	Ex pD		1	21			
Ex pzb	Ex pD		2	21			
Ex q		Powder filled	1	X	The circuitry is fully immersed in a non-conductive powder. The fuel is able to enter the enclosure.	No	60079-5
Ex o		Oil filled	1	X	The circuitry is fully immersed in a non-conductive oil. The fuel is able to enter the enclosure but does not mix with the oil.	No	60079-6
Ex e		Increased safety	1	X	Safety measures are used as to reduce the probability of an internal source of ignition (spark, hot surface, etc.,) in normal operation, though they may occur during malfunctions. The fuel is able to enter the enclosure.	No	60079-7
Ex ia		 Intrinsic safety	0	X	During normal operation and specified fault conditions the circuitry cannot discharge sufficient energy into a spark or thermal event causing ignition of the fuel. The fuel is able to enter the enclosure.	Yes	60079-11
Ex ib			1	X			
Ex ic			2	X			
Ex nA		 Non-sparking	2	X	A type of protection applied to an electrical apparatus such that, in normal operation, it is not capable of igniting a surrounding explosive atmosphere, and a fault capable of causing ignition is not likely to occur.	No	60079-15
Ex nR		Restricted breathing	2	X		No	
Ex nL		Energy limited	2	X		No	
Ex nC		Enclosed break	2	X	Enclosed break, non-incendive component, hermetically sealed device or sealed device	No	
Ex ma	Ex ma	Encapsulation	0	20	The enclosure is filled with a resin or polymer. The fuel is not able to enter the enclosure.	No	60079-18
Ex mb	Ex mb		1	21			
Ex mc	Ex mc		2	22			

Elite load cells have been assessed against the protection concepts of intrinsic safety (ia), protection with tight enclosure (tb) and non-sparking (nA).