ACRODYNE
Actuation and Control

BI-MONTHLY ACTUATION AND CONTROL SOLUTIONS NEWSLETTER

TECHTORQUE

VOLUME SIX ISSUE TWO

News

Welcome to the second issue of Techtorque for 2009. Your feedback about our newsletters as well as your suggestions for any particular products or applications that you would like to read about is always welcome. With your input, we will do our best to provide you with informative and relevant reading matter. Please email your comments and requests to our Sales and Marketing Manager, Chris Hoare, at choare@acrodyne.com.au

Check this out for size

YTC have just released a new and incredibly compact YT2700 Electro-pneumatic "Fail Freeze" positioner. "Fail Freeze" positioners are becoming an ever increasing preference due to the characteristic of holding last position in the event of supply air or signal failure.

The YT2700 exhibits extremely low air consumption thus reducing ongoing operating costs.Housed in an IP67 aluminium diecast polyester coated enclosure it features an easy to read LCD display. In addition to this it has the SMART features you would expect such as PD control , 4-20Ma feedback , Auto Calibration and HART protocol. The YT2700 comes in both Rotary and Linear which adapts well to smaller size control valves.

Amalga - Crushing the competition

Here is an example of a crush test done on one of our 16 inch inside diameter x .250 inch wall fiberglass/epoxy tubes.

- *First picture shows a deflection of 3 inches with the force of 900 lbs.*
- *Second picture shows a deflection of 7 inches with the force of 1600 lbs.*
- *Third picture shows a deflection of 11 inches with the force of 2300 lbs.*

Tube failed at 2400 lbs of compressive force.

ACI designs and engineers fiberglass/epoxy cores as a light weight, corrosion resistant and lower cost direct replacement for steel, aluminum and brass.

Amalga barrel cores are also used as a direct replacement for cardboard cores because of its high strength, tight tolerances, non contamination to product, non conductive and longer re-usable life cycle.

Amalga fiberglass/epoxy tubing is also dent and shatter resistant.

Water Industry Engineers and Operators conference

Acrodyne will once again participating at the Water Industry Engineers and Operators conference that will take place at Caloundra QLD in June and Bendigo VIC in September. It is a must see conference for plumbers, council staff, consultants, mining industry environment, wastewater industry employees etc. If you're attending the Caloundra conference come and say hello to Chris and Andrew on stand 79.

WATER INDUSTRY ENGINEERS & OPERATORS CONFERENCES

MEET THE EXPERTS THAT KNOW ABOUT WATER AND WASTEWATER OPERATIONS

CALOUNDRA, QUEENSLAND 17-18 JUNE 2009
BENDIGO, VICTORIA 2-3 SEPTEMBER 2009

For more information or to join the Water Industry Operators Association of Australia visit: www.wioa.org.au

CAUTION CAUTION

The explosion risk in hazardous areas

Hazardous areas are places in industrial facilities where a potentially flammable atmosphere may exist. Such atmospheres usually contain a gas or a vapour but they can also contain dust or fibre.

The ignition triangle

For there to be fire or explosion in a hazardous area there would need to be:

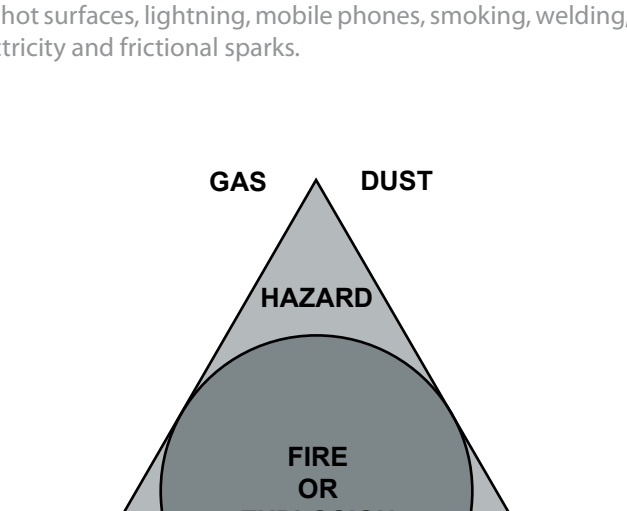
A hazard which could be a flammable dust or gas
An oxidiser which could be either air or pure oxygen
A source of ignition which could either be heat or a spark.

If these three elements are present at the same time and in the right proportions then there will be a fire or an explosion.

The safest way to prevent a fire or explosion is to remove the source of the hazard.
However if this cannot be done then the process engineer has to ensure that a source of ignition does not reach the hazard if an oxidiser is present. Alternatively the engineer can ensure that there is no oxidiser present however this is often harder to achieve.

Air is the usual oxidizer as air contains approximately 21% oxygen. If the atmosphere is oxygen enriched i.e. greater than 21% special precautions will need to be taken.

Examples of sources of ignition include: Motors, switches, solenoids, any hot surfaces, lightning, mobile phones, smoking, welding, static electricity and frictional sparks.



THE IGNITION TRIANGLE

Upper and lower explosive limits

Not all concentrations of flammable gases (vapours) will explode. Explosions can only take place between the upper (UEL) and lower (LEL) explosive limits of a particular gas. (Sometimes also known as the upper and lower flammable limits).

Above the UEL the mixture of substance and air is too rich in fuel (deficient in oxygen) to burn. Below the LEL the mixture of substance and air lacks sufficient fuel (substance) to burn.
For example the LEL of methane (the main component of natural gas) in air is 5%.
Unfortunately, gas/air mixtures are seldom uniform so it is likely that if any amount of combustible gas is detected then at some location the concentration may be explosive.

Minimum ignition energy

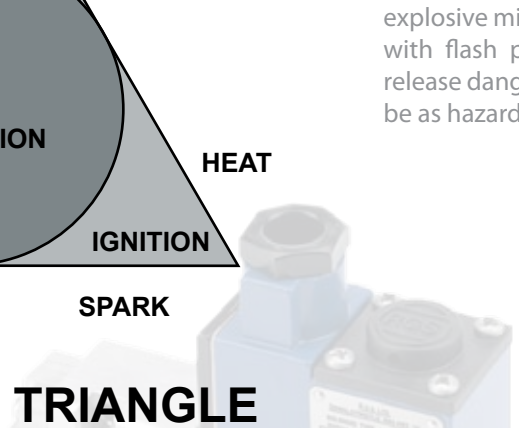
The lowest energy that will ignite a mixture of the substance and air at some point between the LEL and UEL is defined as the minimum ignition energy (MIE). Hydrogen has the lowest MIE of all gasses (20 micro Joules).

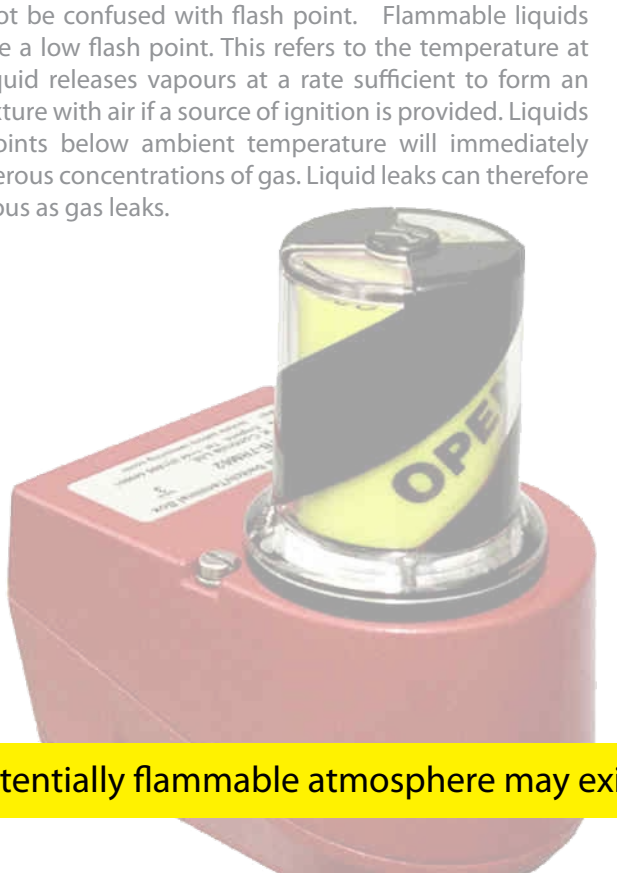
Auto ignition temperature

The mixture of the substance and air between the LEL and UEL can also be ignited by exposure to a high surface temperature without any source of external ignition (e.g. spark or flame). This is known as the auto ignition temperature (AIT) or spontaneous ignition temperature (SIT). A low MIE does not imply a low AIT. The AIT of hydrogen is quite high at 560 degrees C.

Flash Point

AIT should not be confused with flash point. Flammable liquids normally have a low flash point. This refers to the temperature at which the liquid releases vapours at a rate sufficient to form an explosive mixture with air if a source of ignition is provided. Liquids with flash points below ambient temperature will immediately release dangerous concentrations of gas. Liquid leaks can therefore be as hazardous as gas leaks.





"Hazardous areas are places in industrial facilities where a potentially flammable atmosphere may exis

CAUTION CAUTION

Vapour density

When monitoring for the presence of gases or vapours, it is important to understand vapour density which provides valuable clues as to where a potentially flammable atmosphere may exist. This defines if a vapour is heavier or lighter than air. Air has a vapour density (also known as relative vapour density) of 1. Assuming that air currents are negligible, it can be said that gases and vapours with densities less than 1.0, such as methane, will tend to rise from the point of escape and subsequently disperse into the atmosphere or accumulate in spaces under roof structures of buildings. Heavier than air gases such as propane tend to fall from the point of escape, perhaps to floor level where some mixing with air occurs thus creating pockets of mixtures, some explosive, others not. If there are sub-floor spaces such as drain channels, pipe and cable ways and storage pits then these heavier than air gases tend to accumulate there. A suitable source of ignition in such areas will more often than not result in explosion and fire.

Flammable dusts

Many materials produce flammable dust clouds that can explode if ignited. Sugar, carbon, grain, certain metals and approximately 85% of all organic powders behave in this way. Anything that can burn and which exists in a fine powdered form is a risk. Obvious examples of safe powders are sand and cement. Flammability data is much less commonly available for dusts compared to gases and vapours because factors such as particle size can affect the figures so much.

The main risk of ignition of dust hazards is from hot surfaces. Dusts may settle on surfaces and the build up can give rise to a concentration that could be ignited.

Layers of combustible material will burn relatively slowly owing to the limited surface area exposed to the oxygen in the air but if you have the same solid in the form of a fine powder and you suspend it in air as a dust cloud the result will be quite different. In this case the surface area exposed to the air is much larger, and if ignition occurs, the whole of the cloud may burn very rapidly. This results in a rapid release of heat and gaseous products and in the case of a contained dust cloud will cause the pressure to rise to levels which most industrial plant is not designed to withstand.

Although a cloud of flammable dust in air may explode violently, not all mixtures will do so. The concentration of dust and air must be within the upper (UEL) and lower (LEL) explosive limit of the dust in question.

Minimum ignition temperature

Measurements of the LEL of many materials are available. Typically a figure below 40g/m3 is unlikely to support combustion. Upper explosive limits are difficult to measure accurately and are of little practical use. As the risk of ignition is from hot surfaces rather than directly from ignition energy (spark or arc) ignition sensitivity is defined by the minimum ignition temperature (MIT). The gas equivalent of MIT is the AIT. The most violent explosions usually result from dust/air mixtures that are fuel rich. This means that the oxygen available in the air cannot burn all the dust and glowing, partly burnt, material frequently remains after the explosion. This can reignite if more air becomes available. The shape and size of the dust particles, and other factors, strongly affects the force of the explosion and the explosive limits. Explosions are likely to be weak if the mean particle size of the dust exceeds 200 microns or the moisture content is quite high (say above 15%).

Primary and secondary explosions

When a dust cloud ignites in an enclosed volume it results in a very rapid rise in pressure within the container e.g. a silo or closed room. The container may not be strong enough to withstand the pressure from the explosion and it will fail in a sudden and uncontrolled manner. Anyone close to an exploding vessel or inside a room where an explosion occurs is likely to be killed or seriously injured. The plant or building will only survive if the design or other protective measures deliberately allows for the high pressures.

Where an item of plant fails, or an explosion vent opens as a result of a dust explosion, a fireball and shockwave will emerge. The fireball is usually much larger than the vessel from which it came, and is likely to spread burning particles a substantial distance. A person engulfed in such a fireball is likely to receive serious burn injuries.

Dust clouds are formed by dust falling into an area or being raised by blasts of air. Dust is heavier than air and therefore it will eventually settle however an explosion within a piece of plant could stir up these dust deposits to create a secondary explosion that is generally more destructive than the primary explosion.

ist"

For more informative articles like this one simply head to the below link

http://www.k-controls.co.uk/TechBulletins/Training.htm

Internal News

New factory - Warehouse

As the world financial crisis grips the economy forcing most business' to tighten their belts, we at Acrodyne are rejecting the gloom to strengthen our position in the market place and to offer our customers the highest possible levels of satisfaction and service.

We recently took occupancy of factory 6 to house our stock leaving room for growth and expansion of our workshop that has struggled for space over the last few months.

We are proudly an Australian run and owned company and the efforts for all companies and individuals to keep profits within the country will be of great importance for future generations.

Factory 14
- Reception
- Administration
- Internal Sales
- Excess stock

Factory 6
- Bulk storage
- Customer parking

Factory 7
- External Sales
- Training room
- Amalga production
- Dispatch and deliveries*

**please remember to mark factory 7 on all delivery instructions when sending us goods.*

Factory 8
- Limitorque testing and repairs
- Service division
- Workshop
- Machining centre

CHARACTER FIRST!

Importance of Decisiveness

"The ability to recognise key factors and finalise difficult decisions"

Why is decisiveness important?
Decisiveness enables us to make quick decisions without fear or procrastination.

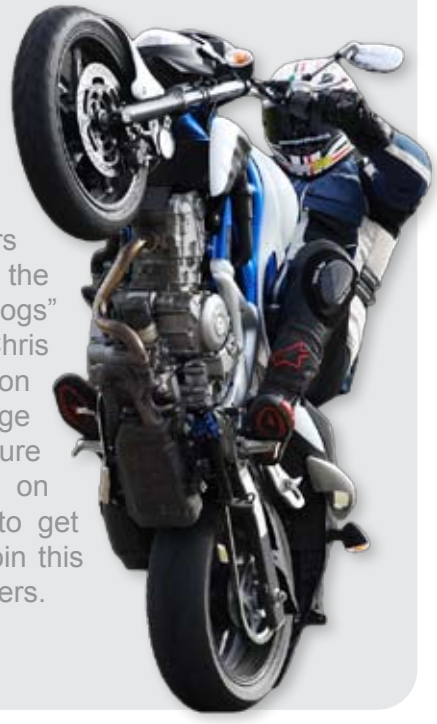
5 Keys to Building Decisiveness:

- "Gather accurate information" – Develop the habit of gathering information and retaining trusted advisors.
- "Keep a clear perspective" – Learn to separate and weigh facts, goals, feelings, interests and opinions.
- "Make the right choice" – Make decisions based on sound morals, wise priorities and accurate information.
- "Follow through" – Demonstrate your commitment to a decision by investing the necessary time resources and effort.
- "Weather criticism" – Acknowledge mistakes when necessary and learn what you can from critics.

For more information regarding Character First contact Philip Greenwood at People and Culture on (03) 9018 7971 or 0411 131 449

www.peopleandculture.com.au

Acrodyne Angels



Acrodyne's motorcycle club has now risen to 4 after our Purchasing Officer Jon Bayly and Warehouse Manager Alex Grunwald recently obtained their learners permits. They join the leader of the "mild hogs" Marketing Manager Chris Hoare and Production Technician George Kamfonas. The pressure now has been placed on two more employees to get learners permits and join this exclusive band of brothers.