

GASSAFETY UK

CLIENT UPDATE FOR AUGUST 2005

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NEWS FROM OUR GAS INSTALLATIONS TEAM

It's been a bit hectic recently for our gas installations colleagues at Gas Safety UK; so hectic that I've had to do some fitting myself! And some testing, and some commissioning...

Some of the projects we have been working on are of wider interest because of the safety critical systems we have installed and the range of our capabilities that these projects illustrate.

Example 1. The photograph, below, shows three single-cylinder manifolds for hydrogen and hydrogen gas mixtures service. Two of these have been installed to provide researchers with these gases at pressures of up to 100 barG. In the adjacent manifold area (not shown), four other gases are also supplied at pressures of <50 barG and <100 barG.

REGULATOR
& SAFETY
RELIEF V/V

NEEDLE V/V

SOLENOID

SMART HOSE

CYLINDER
CONNECTOR
WITH N.R. V/V



The supply pipework was installed in 1/4" o.d. stainless steel and each workstation was supplied via a series of outlet point pressure regulators for each gas/gas mixture (see photograph below).

In the event of hydrogen leakage, the gas detection system that we have installed will isolate the cylinder supply via a solenoid (located just below the high pressure needle valves on the photograph above). The solenoids are kept open by impulse nitrogen (pneumatic tubing/panel may be seen in the photograph above) and this is used for the emergency [manual] isolation system. Finally, an air-flow switch in the ducting will cause these systems to fail-safe if there is a loss of air extraction to the laboratory.



The workstation outlet points (there are 9 of these in total) are shown in photograph above. The uppermost line (1/2" o.d. stainless steel) is a return/vent line. This has been installed to allow the bursting discs from the experimental rigs (not installed) to be vented to a safe place. Each connection point consists of a manual isolation valve (closed when not in use) and a non-return valve in order to prevent back-feeding.

Technically this may all seem very straightforward. However, from a practical point of view, given the cramped and dark conditions that were experienced whilst this laboratory was being fully refurbished, it resulted in a real challenge for Steve and Martin who fitted these (and 6 other gas systems/manifolds) high pressure systems.

At the time of writing, these gas lines and manifolds have been fully tested, labelled, etc. and the rest of the laboratory re-fit is complete. We will be commissioning the system in the near future and this will allow research to commence before September 2005; in, what is quite probably, a much safer laboratory than it's predecessor.

Some of our installations are comparatively simple (see below) and are just one step forwards in a practical safety sense.

PHOTOGRAPH 3.



Photograph 3 (previous page), shows one of four recently installed carbon dioxide, 2 x single-cylinder manifolds. These were done in order to upgrade some equipment at one the MRC's laboratories. The key premise in this case was to wall-mount the gas pressure reducing regulators (to reduce damage during cylinder changeout). We have installed these in such a way that the system may be used whilst changeover is taking place and, importantly, in a manner that will not allow back-feeding of gas to atmosphere if one of the cylinders is disconnected (even if the manual valves are left open).

It is also worth noting that in this case the gas lines, down-stream of the manifolds, are only flexible plastic tubing - not Table X copper or even stainless steel. For a low-pressure, low-flow application which involves the use of a comparatively inert service gas, this can represent a relatively cheap but perfectly serviceable option.

PHOTOGRAPH 4.



Speaking of [standard] copper tube work, the photograph above (Photograph 4) shows a laboratory that has been fitted out for 4 gases (including hydrogen which is supplied from a hydrogen generator in an adjacent area). Here, 15mm o.d., Table X de-greased copper tube has been installed and joined using flux-less silver braze. Each work-station is equipped with standard laboratory gas taps. These will, in due course, be used to supply modified atmospheres to around 6 bench-mounted furnaces. As with some of the other pictures, this will look better when to floor and laboratory furniture installations have been finished!

So, that's a quick round up of what's been happening during the Summer on the installations side of things. The Autumn will, no doubt, bring a new set of challenges and opportunities but for now I'd just like to take this opportunity to thank [Big] Bob's team for all of their efforts and for the strengths that they bring day and daily to our portfolio of goods and services.



end notes...

WORK IN PROGRESS

1. We are currently trying to secure sensible and stable costs for our range of high output pressure regulators which will, we hope, keep the cost of this type of gas control equipment within sensible bounds going forwards.

2. The development of our pneumatic cylinder changeover unit (aimed principally at those using carbon dioxide, etc. for incubators) has continued and I am very hopeful that we'll have a working prototype ready in the very near future. Our aim is to make this unit as reliable and robust as possible and to make it more cost-effective than anything else on the market.

3. Liquid helium safety training has, again, been discussed recently; this time with a Department at Nottingham University. It may be, in the fullness of time, that we can offer a properly designed and practically orientated safety training course for users of liquid helium.

Best regards, David.

Author: David Bayliss, Technical Manager, Gas Safety UK. The right of the author, for the purposes of copyright protection, has been asserted.

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