



NEWSLETTER OF THE COMMISSIONING SPECIALISTS ASSOCIATION

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**SPIROTECH UK LIMITED**

## EFFECTIVE WET SYSTEM AIR REMOVAL FOR COMMISSIONING PURPOSES

Virtually everyone has had bad experiences when trying to commission both heating and cooling systems with not being able to achieve repeatable balanced readings from commissioning valve sets. The real enemy is air not being effectively removed from the system, but generally the root cause of the problem is not always fully appreciated.

### THE COMMISSIONING PROBLEM

The areas where problems generally occur are across commissioning valve sets, low flow conditions at control valves, TRVs, etc., and in many instances full or partial cavitation on pump inlets.

In other words, wherever there is a relatively high pressure drop within the system. Any air that is still held in solution can be released at the point of pressure drop due to the venturi effect. The flow is very low and any resultant air released will adhere to a solid surface in the downstream lower pressure/flow. This air will gradually build up and create a variance from previous readings. Therefore air removal devices require careful consideration.

### BASIC TYPES OF AIR REMOVAL DEVICES

Until 20 years ago there were only 2 basic methods of air removal in the UK:-

**Automatic Air Vents [AAVs]** are required to automatically fill and drain a system which is virtually all they accomplish. Air entrainment [micro bubbles] in the mass flow path of the system water by-passes connections to AAVs.

**Air Separators** generally allow the larger air bubbles to be vented out of the system due to slower velocity through the unit. However, air entrainment in the mass flow path of the water through the body of the unit does not allow the micro bubbles to rise and vent from the system.

*Cont'd on Pages 3 & 4 ...*

## NEW MEMBERS

*Since the last issue*

**Corporate** – ReefTech Services LLC, Dubai.

**Individual** – Christopher Holton, Dale Milne, Fin Elward, Ian Powell, Arthur Collins, Robert Stone, Andrew Lynn, Samuel Tomlinson-Read, Martin Williamson, Musole Kazhila, Adam Gambardella, Michael Jackson Dharmaraj, John Quinn, Adam Mills, Volodymyr Franyuk.

**Individual Associate** – Andrew MacDonald, Dougie Cruickshank, Colin McMillan, Graham Sutherland, Balakisten Naidoo, Shane Milligan.

*We would like to welcome the above new members to the Association*



# Jules' News



I hope you have all enjoyed the Olympics as much as Michelle and I (especially Michelle!). We are so proud of Team GB for such a great medal haul!

I have dedicated my section of this issue of *Index* to Individual membership & Training as Michelle and I still receive many queries regarding DLCs, NVQ 3, Grade 4 Exam and Individual membership even though all the relevant information is on our website, so I hope this issue will be informative. We are in the process of designing a whole new CSA website which will be more “user friendly” and easier to navigate and hope to have this “up and running” in the next couple of months!

## GRADE 4 EXAM – RESULTS OF 19 MAY 2012 EXAM

Congratulations to those listed below who passed the Grade 4 Exam:

JASON YATES • CHRIS THOMASON • NEIL FARNWORTH • ALEX DERRICK • THOMAS DUNN • ADRIAN SIMS

The Grade 4 exam consists of a 2 hour Technical exam and 1 hour Theory exam and is held twice yearly in May and October at various venues. The Training Sub-Committee Chairman (Paul Brown) who produces both Technical & Theory exam papers and also marks the completed papers noted that statistics show that more students appear to pass the Grade 4 exam who have previously completed and passed a Distance Learning Course (DLCs) A, B and C.

**The Next Grade 4 Exam will be held on Saturday 27 October 2012** and costs £50.00. Anyone wishing to take this exam should e-mail the CSA office (e-mail: [office@csa.org.uk](mailto:office@csa.org.uk)) as soon as possible and we will e-mail you a “mock” paper which only gives an example of the type of questions you are expected to answer. There are approximately 25 questions on the actual papers.

We always endeavour to make sure you take the exam locally in your area and we require 2 weeks cancellation notice or you will be charged the full amount.

## Distance Learning Course (DLC) TEST RESULTS

Congratulations to those listed below who have recently passed their DLC B test:

**Chris Ecknoff, Paul Malthouse.**

If you would like to enrol on a DLC Course – complete the appropriate enrolment form from the CSA website and send/ e-mail it to the CSA office with payment and Michelle will send the course out to you with course procedure and details of your allocated tutor.

If you enrol on one of our Distance Learning Courses and also apply for Individual membership at the same time you can receive the first year's Individual membership free! All you need to do is download an Individual membership application form from our website [www.csa.org.uk](http://www.csa.org.uk) membership section and e-mail it to me at the CSA office with your current CV and a photograph. This is then sent to our Assessment panel for approval and grading – see page 5 for more details on applying for individual membership.

## NVQ LEVEL 3 – INSTALLATION & COMMISSIONING

We currently have 5 students taking the on-line CSA NVQ Level 3 in “Installation & Commissioning” – This is a nationally recognised qualification in the UK and throughout Europe.

The NVQ 3 has also been adapted with the help of the CSA to utilise and enhance much of the work undertaken in DLCs A, B & C and the projects undertaken during the normal course of the commissioning engineer's day-to-day work. It therefore becomes a natural extension of the DLC courses. The recommended entry level for the NVQ 3 is CSA Grade 3 or 4.

Based upon a Grade 3 or 4, recent successful candidates felt that the time needed is approximately 50/60 hours to complete the course; with a little over one hour per week devoted to the NVQ you will complete in 12 months. This is a small time period for a qualification that is recognised nationally and throughout European countries. The Training Sub-Committee concludes that the NVQ 3 does not affect your Individual Membership Grade and students should also take the DLCs.

The cost for members is £1,275.00 and non-members £1,375.00, so if you have been thinking of taking the NVQ 3 but have not enrolled yet, don't hesitate, enrol now. For further information go to our website [www.csa.org.uk](http://www.csa.org.uk) to download an Information sheet and Enrolment form – don't delay!

*Julie Parker - CSA Secretary*

# EFFECTIVE WET SYSTEM AIR REMOVAL FOR COMMISSIONING PURPOSES

(Continued from front page)

AAVs and Air Separators cannot and did not eliminate air problems which still persisted because they do not create the correct environment for complete air removal.

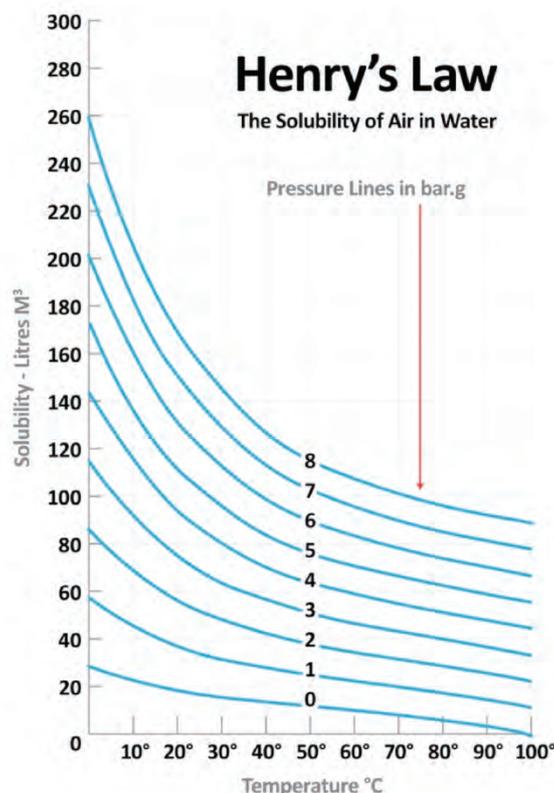
Therefore a full understanding of the characteristics of water [a natural element] needs to be fully explained so that laws of physics can be implemented to solve these problems.

## ADVANCED AIR REMOVAL USING HENRYS LAW OF ABSORPTION OF GASSES IN LIQUIDS

In 1803, William Henry formulated the Laws of Physics relating to air/gas absorption in liquids, in our case air in water. 2 major factors emerge from this law:-

- a) The amount of air held in suspension in water is directly proportional to the temperature – Increasing temperature releases air – **Deaeration**
- b) The amount of air held in suspension in water is directly proportional to the pressure – decreasing pressure releases air – **Degasification**

Henry produced a graph which indicates how much air is in solution in water at specific pressure/temperature points. For further details please refer to **CSA Technical Memorandum 5 [TM5 EFFICIENT CONTROL OF SYSTEM WATER QUALITY]**.



## DEAERATION

This has been established in the UK for over 20 years and has proved extremely effective in air removal for basic heating and cooling systems. However, while 'free air' is effectively removed, gasses are still held in suspension [absorbed] in the system water. Where higher pressure drops are experienced within a system intermittent problems can be experienced by releasing the absorbed air due to this pressure reduction, especially when commissioning.

# EFFECTIVE WET SYSTEM AIR REMOVAL FOR COMMISSIONING PURPOSES

(Continued from page3)

## DEGASIFICATION

As detailed in CSA TM5, Degasification removes air in a system by vacuum creation, so almost 100% of gasses are removed, both free air and air ‘held in solution’.

When these pressure drops are experienced during commissioning, the Degasser has created a system water that cannot release further gasses and therefore commissioning can proceed unhindered.

## BENEFITS OF DEGASIFICATION

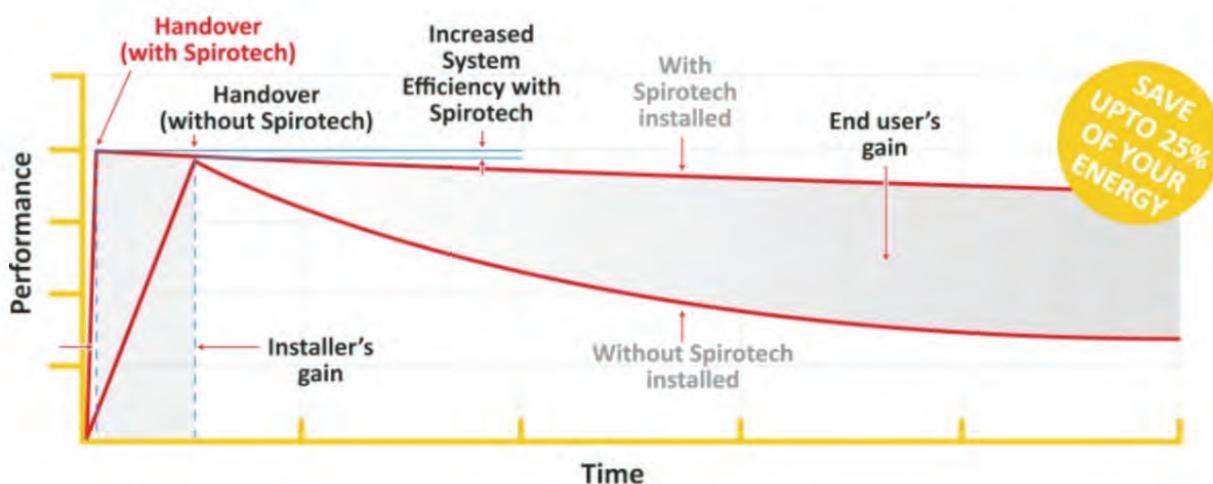
Installers generally will not install anything that is not specified, and while that fact is appreciated, when commissioning delays are experienced, money is thrown away trying to ‘chase air out of the system’. A more objective approach is required.

Delays on site will cost the installer many days in time and expense of his site and office labour, the commissioning engineer labour and costs incurred by extending the site establishment charges, which when combined are excessive.

A Degasser is generally less than the cost of a single day’s delay charges.

Please also refer to CSA TM5 for countless other benefits of Degasification, such as reduced energy, reduced maintenance costs and increased life of the system.

## Overall affect of Spirotech on a system lifespan



*Bryan Barlow,  
Technical Consultant – Spirotech UK Ltd*

For a copy of the NEW CSA Technical Memorandum TM5 entitled “Efficient Control of System Water Quality” authored by Bryan Barlow of Spirotech UK Ltd, please e-mail the CSA at [office@csa.org.uk](mailto:office@csa.org.uk).

# CHAIRMAN'S RANT

I hope you are all enjoying the Summer, even though the weather has been pretty dismal! It seems to reflect the current mood of the country although I have noticed an improvement in recent weeks; there appears to be a few more opportunities around which I sincerely hope will be corroborated by our Corporate Membership.

Julie and Michelle continue to work tirelessly in the office both on membership and training and I am fully aware what a task the new website has been, thank you very much ladies! Another monumental task is the production of the new commissioning engineers compendium. The technical committee, chaired by John Coppin, have worked gallantly on this, but, at the time of writing they would appreciate some technical input on the BEMS section, so if you feel you have the necessary expertise and are willing to give some time freely, please contact Julie or Michelle at the office.

Finally the Olympics and for me, the Olympic Village is a showcase of what British construction and knowhow has to offer. Let's not split hairs about the provenance of some of the contractors; I am fully aware that many of our membership have been involved in what has turned out to be an extremely successful project, my own company amongst them. Constantly seeing that skyline on TV makes you proud to be part of the British construction industry. Go TEAM GB!

*Neil F. White*  
*Managing Director, Crosscount Ltd & Chairman of the CSA*

## CSA INDIVIDUAL MEMBERSHIP

THIS IS THE ONLY CATEGORY OF MEMBERSHIP WHERE YOU ARE GRADED.

Individual membership is aimed at those field engineers who are actively involved in the commissioning process. These may be from the mechanical, electrical or controls fields. All Individual members of the CSA will have an up-to-date ID Card and Membership Certificate.

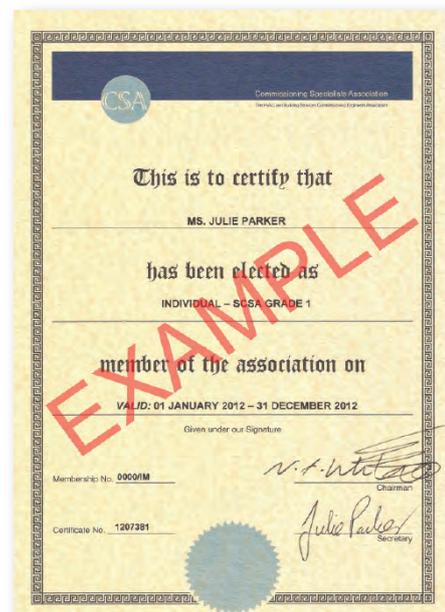
Applying for Individual membership - Please note: make sure you always download the latest application form from the CSA website as they are regularly being updated. All APPLICATION forms must be FULLY COMPLETED (do not leave any sections of the application unanswered as these will be rejected by the Assessment Panel which slows down the approval procedure). Please supply an electronic photograph of yourself when applying for Individual membership to ensure you receive your ID card.

This is then passed to our Assessment Panel for approval and grading. Once approved, you will receive your membership pack which contains a membership ID card with your name, photograph, membership number and grade. You will also receive a Certificate of membership which again, gives your membership number and grade. The membership certificates will change each year to identify current members of the CSA and an example of the latest certificate will always be on our website. Don't forget if you enroll on a DLC at the same time, you receive your Individual membership free for the first year!

Example of Individual Membership ID Card



Example of Individual Membership Certificate



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## Insurance for CSA Members



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