



Compliance & Validation Services  
Presents a 3-Day Online Training Course on:  
**Pharmaceutical Water, Steam and  
Compressed Gas Systems**

13, 14 & 15 September 2022  
Live Online Training Course



September 2022						
Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Click on the calendar to go to the web page for this course

**Purified Water, Water For Injection (WFI), Pure Steam, Clean Steam, Compressed Air and Specialist Gases**

**General System Requirements and Design**

- Hygienic engineering considerations
- Applicable regulations and standards
- Quality requirements for utilities
- Methods for production and distribution of critical utilities (includes updates to the European Pharmacopeia, EU GMPs, including Annex 1 [Aug 2022])
- Typical equipment used, testing requirements and specifications
- Managing rousing problems associated with 'hot' systems

**Commissioning and Qualification**

- System and Component Level Impact Assessments and Quality Risk Assessments
- Testing matrices – what to test at each stage of the project lifecycle
- Risk based approach to Qualification (Annex 15, ISPE & ASTM approaches)
- Design review/qualification
- GMP compliance during construction (key, often overlooked, considerations)
- Factory Acceptance Testing (FAT) and Site Acceptance Testing (SAT)
- Mechanical completion, pre-commissioning and commissioning
- Use of vendors testing documentation/data for qualification purposes (leveraging)
- Installation and operational qualification (verification of build and function)
- Successful plant handover and subsequent performance qualification
- On-going monitoring, performance reviews and risk management

## Course Summary - Pharmaceutical Water, Steam and Compressed Gas Systems - 13, 14 & 15 September 2022 - Live Online Training Course

This pharmaceutical training course covers current and best practice in the areas of design, construction and commissioning / qualification of critical utility systems. It includes generation and distribution systems for purified water, water for preparation of extracts and water for injection (WFI), clean steam, pure steam, compressed air and process gases.

The course provides an insight into the underlying hygienic design principles/requirements/guidance involved in the specification, construction and completion of these systems. Testing requirements (qualification and routine) are also covered. It also provides information on suitable system design solutions and configuration, together with a detailed systematic approach to the key stages (including planning) involved in the project life-cycle. Typical examples of operational issues and recommended actions/precautions that can be taken, are also covered by this course. The course will be fully updated to reflect requirements from the latest pharmacopoeias and EMA regulatory guidelines, including Annex 1 and the Q & A's for the production of water for injection using non-distillation methods.

The course will be presented by industry experts who collectively have worked in all areas of critical utility system design, commissioning and qualification. Their hands-on experience will provide current industry best practice and up-to-date regulatory authority information.

### Presenters



**Mike James, Director, Compliance & Validation Services Limited.:**

Mike has nearly 30 years experience in the pharmaceutical industry, working in a variety of compliance and validation roles. His experience includes preparation and delivery of national/client-based validation training courses, hands-on validation work, validation project management and regulatory compliance consultancy. Previously, Mike spent four years as the Site Validation Manager for GlaxoSmithKline (GSK) at Speke, where he was responsible for all site validation activities, including the development and maintenance of the Site Validation Programme. Before moving to the pharmaceutical industry he spent 15 years as an industry chemist.



**John Welbourn, Director, Compliance & Validation Services Limited: A**

validation professional with over 30 years experience in the pharmaceutical industry. John has been responsible for the management and execution of validation projects for many major pharmaceutical companies. He has broad experience in the qualification of production equipment, utilities, computerised systems, and thermal mapping to support storage conditions. He has presented at conferences in the UK, Europe and the US and has authored several articles on various aspects of validation. John has contributed to The University of Manchester's, Pharmaceutical Engineering Advanced Training (PEAT) Course and Dublin Institute of Technology's (DIT) MSc. course in Pharmaceutical Process Validation.



**Richard Ryrie:** Richard has over 25 years' experience of working in the Biopharmaceutical Manufacturing Industry and has a wealth of knowledge/expertise in process engineering related to process and utility systems, including automation. His experience extends to the commissioning and qualification of facilities, utilities and process equipment. A process engineer by profession, he attained an MSc. in Pharmaceutical Engineering in 2001.

### Who Should Attend

This course will benefit anyone who is involved in the management, use, design, commissioning/qualification and operation/use of critical utility systems. This will include, production managers/supervisors, operators, technical support personnel, engineers, quality assurance and validation personnel. On leaving the course attendees will: have with a broad and detailed understanding of the design, construction and commissioning/qualification of critical utility systems; be able to apply and share their new knowledge; improve their individual effectiveness; and look back on a valuable experience.

### Online System & Course Fees

We use the industry leading GotoWebinar®, LogMeIn, Inc. platform for our online training courses. It's intuitive and simple to use, however we do recommend that you check your system's compatibility using the 'CHECK SYTEM COMPATIBILITY' link provided below (we use 'standard webinar'). To find out more about how our online training process works, from booking through to the end of the course, please click on the 'HOW IT WORKS' link provided below.

[CHECK SYSTEM COMPATIBILITY](#)

Course fees are **£1,495.00 (GBP)** per attendee.  
(See Page 4 for further details on fees/bookings)

[HOW IT WORKS](#)



# Pharmaceutical Water, Steam and Compressed Gas Systems - Live Online Training Course - Programme

Start Time: 08:00 London/Dublin; 09:00 Berlin/Amsterdam - Please join the course at least 5 minutes before the start.

Day 1 (Tuesday 13 September 2022)	Day 2 (Wednesday 14 September 2022)	Day 3 (Thursday 15 September 2022)
<b>Start: 08:00 London/Dublin; 09:00 Berlin/Amsterdam</b>	<b>Start: 08:00 London/Dublin; 09:00 Berlin/Amsterdam</b>	<b>Start: 08:00 London/Dublin; 09:00 Berlin/Amsterdam</b>
<b>Introduction to Pharmaceutical Utilities</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Types of utility systems and what they are used for</li> <li>Systems within the scope of the course and those not included</li> <li>Basic structure and purpose of the course</li> </ul>	<b>Water Storage and Distribution Systems</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Types of systems (hot and cold)</li> <li>Approaches to sanitisation (continuous and periodic)</li> <li>Loop velocities and their importance</li> <li>Typical equipment configurations</li> <li>Points of use (key design requirements) and testing</li> <li>Usage considerations</li> <li>Key equipment design features</li> <li>Regulations, guidelines and standards</li> </ul>	<b>IQ/OQ (Verification Activities)</b> <i>[Mike James]:</i> <ul style="list-style-type: none"> <li>Pre-requisites (what must be in place/complete before starting)</li> <li>Key activities involved</li> <li>Instrument calibration and alarm/interlock testing</li> <li>Functional testing and quality checks (basing testing on level of risk)</li> <li>Sampling considerations</li> </ul>
<b>Introduction to Hygienic Engineering of Utilities</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Basic design principles and definition</li> <li>Surfaces finishes</li> <li>Piping and fittings</li> <li>Welding – Best Practices</li> <li>Materials of construction (MOC)</li> <li>Current industry guidelines</li> </ul>	<b>Key Preparation and Planning Activities</b> <i>[Mike James]:</i> <ul style="list-style-type: none"> <li>Commissioning and qualification strategy</li> <li>User requirement specification (URS)</li> <li>System definition, system impact and component level impact assessments, including ASTM approach to identifying critical aspects</li> <li>Quality Risk Assessments (QRA) – aligning scope and depth of testing to system complexity, risk and novelty</li> <li>Supporting documentation and procedures</li> </ul>	<b>Plant Handover &amp; Performance Qualification (PQ)</b> <i>[Richard Rylie]:</i> <ul style="list-style-type: none"> <li>Sequence of events involved</li> <li>Key PQ activities</li> <li>Verifications, e.g. operator training</li> <li>Sampling and evaluation programme and ongoing performance monitoring/review</li> <li>Real-life examples of sampling/monitoring plans</li> <li>Managing deviations and ongoing risk management</li> </ul>
<b>Introduction to Pharmaceutical Water</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Why is it so important?</li> <li>Types of water, quality requirements (chemical and microbiological) and uses</li> <li>How do you determine which grade of water is required?</li> </ul>	<b>Design Review/Design Qualification</b> <i>[Richard Rylie]:</i> <ul style="list-style-type: none"> <li>When to carry it out</li> <li>Key elements                             <ul style="list-style-type: none"> <li>Vendor assessments and vendor audits</li> <li>CGMP review of the design</li> <li>Specification qualification (ensuring design/functional specifications meet the user requirements)</li> <li>Compilation of key design documentation into a design dossier</li> </ul> </li> </ul>	<b>Pure Steam and Clean Steam</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Steam types, steam quality requirements and applications</li> <li>Regulations, standards and guidance</li> <li>Strategies for production and distribution</li> <li>Equipment used and key design considerations</li> <li>Testing requirements (when, where and how to test)</li> </ul>
<b>Pre-treatment Methods for Water Generation</b> <i>[Mike James]:</i> <ul style="list-style-type: none"> <li>Why do we need pre-treatment?</li> <li>Typical feed water contaminants</li> <li>Processes used for removal of contaminants, e.g. pre-filtration, organic matter removal (activated carbon), water softening</li> <li>Types of equipment used, materials of construction and how the equipment may be configured</li> </ul>	<b>Factory Acceptance Testing (FAT)</b> <i>[Richard Rylie]:</i> <ul style="list-style-type: none"> <li>What do we gain by performing testing at the vendor's site?</li> <li>Differences between FAT and Site Acceptance Testing (SAT)</li> <li>Activities, working with vendors and documentation requirements</li> <li>FAT execution and close-out (+ handling discrepancies)</li> <li>FAT, SAT and qualification integration (avoiding testing duplication)</li> </ul>	<b>Compressed Air and Specialist Gases</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Air and gas quality requirements</li> <li>Components of the generation systems</li> <li>Configuration of distribution systems</li> <li>Types of system employed</li> <li>Testing/qualification requirements</li> </ul>
<b>Generation of Purified Water and Water For Injection</b> <i>[Mike James]:</i> <ul style="list-style-type: none"> <li>Types of processes and equipment involved</li> <li>Different approaches/strategies for generation</li> <li>Purification processes involved, e.g. Ion Exchange, Reverse Osmosis and Continuous Electro-deionisation.</li> <li>Equipment configuration and requirements for generating WFI by non-distillation methods in Europe</li> <li>Materials used for construction</li> <li>Regulations, guidelines and standards</li> </ul>	<b>GMP Compliance During Construction</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Consequences of poor practice</li> <li>Control and storage of materials - Key 'watch-outs'</li> <li>Good fabrication practices</li> <li>Construction testing and documentation involved</li> <li>Auditing construction practices</li> <li>System handover for commissioning</li> </ul>	<b>Course Closure</b> <i>[All]</i> <ul style="list-style-type: none"> <li>Final questions and answers</li> <li>Course evaluation form completion</li> <li>Certificates</li> </ul>
<b>Water For Injection (WFI)</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Where/when is it used and regulations, standards and guidance</li> <li>Production processes/methods employed, e.g. multi-effect stills and vapour compression</li> <li>Equipment systems used and design considerations such as materials of construction</li> </ul>	<b>Mechanical Completion, Pre-Commissioning and Commissioning</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>Construction completion process</li> <li>Mechanical completion process, construction testing and system handover for commissioning</li> <li>Stages and activities involved, including typical commissioning tests and documentation</li> </ul>	
<b>Rouging</b> <i>[John Welbourn]:</i> <ul style="list-style-type: none"> <li>What is it, what types are there and what is it made of?</li> <li>Parameters affecting rouge formation</li> <li>Control measures and treatments/removal</li> </ul>		
<b>Finish: 16:00 London/Dublin; 17:00 Berlin/Amsterdam</b>	<b>Finish: 16:00 London/Dublin; 17:00 Berlin/Amsterdam</b>	<b>Finish: 16:00 London/Dublin; 17:00 Berlin/Amsterdam</b>

**How to book on this course:**

- The simplest and quickest way is to book online. Please visit/return to our web-site, find the online course you are interested in and follow the simple instructions (link included below), or
- Print out this page, complete the form below by hand and return by fax, email or post.

[\*\*CLICK HERE TO BOOK ONLINE\*\*](#)

Fax: +44 (0)1625 800833

Tel: +44 (0)1625 500833 or +44 (0)1270 760882

E-mail: [info@candvs.com](mailto:info@candvs.com)

**Alternative Booking Form (‘\*’ indicates required fields) Booking Terms & Conditions**

<b>*Booking Contact Name:</b>		
<b>*Booking Contact E-mail Address:</b>		
<b>*Booking Contact Telephone Number:</b>		
<b>*Company Name &amp; Address:</b>		
<b>*Billing Address</b> <i>(Only complete if different to Company Address)</i>		
<b>*Attendee Information:</b>	<b>Attendee Name(s):</b>	<b>Attendee Email Address:</b>
<b>Company VAT Number (or Sales Tax Number) – *EU Countries Only</b>		
<b>*Method of payment, e.g. card or invoice payment</b>	NOTE: For card payments by telephone, please ensure you have entered your telephone number above and we will contact you. Alternatively, call +44 (0)1625 500833 to make your payment.	
<b>Payment Reference (if available)</b>	NOTE: For invoice payments we will need a valid purchase order number to fully confirm the booking.	
<b>* Total Fees Due</b> <b>£1,495 [GBP]</b> per attendee	NOTE: If your finance centre or attendees are based in the United Kingdom (UK), or attendees are booking as private individuals (non-company), the course fee will be subject to an additional 20% UK VAT charge ( <b>£1,794</b> per attendee including UK VAT). For EU Countries where finance centres and attendees are NOT based in the UK, VAT will be ZERO RATED under the reverse charge rule. For non-EU countries and non-EU attendees, VAT is not applicable.	

**Booking Confirmation**  
Bookings will only be confirmed upon payment by credit card, or in the case of invoice payment (bank transfer), upon receipt of a valid purchase reference number.

**Cancellation by Attendees**  
Cancellation refunds will depend on how long before the course start date the cancellation is received. The following refund structure will apply:

- More than 7 days will qualify for a refund of the course fee paid after the deduction of actual expenses incurred by CVS in connection with the course that the attendee has registered for and there shall be no future liability on the part of either party.
- No refund will be given for cancellations received with less than 7 days' notice.
- Substitutions for registered attendees from the same company will be accepted without notice, but for administration purposes, we kindly ask you to let us know as soon as you can.

**Cancellation by CVS**  
CVS does not issue refunds for attendees unless:

- We have cancelled a course.
- We have changed the time or date of a course.

If we do cancel or reschedule an event, CVS is not responsible for any costs incurred by attendees. Only the course fee will be refunded. Please be assured that we are not in the habit of cancelling events. We only cancel events in exceptional circumstances.

**Speaker/Presenter Changes**  
We reserve the right to change a speaker without notice.

**Course Attendees**  
If you click 'yes' to 'include my name/company' on the attendees list', when completing the online booking form, your name and company will be included on the list and distributed to all the participants.  
Before you commit to booking onto a webinar, we expect you to check your system compatibility with the GoToWebinar® platform using the links provided.

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**Liability**  
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