

BOC Healthcare Consultancy Services

Are you managing the risks?



Medical Engineering Services.

The same exact standard of quality that made us the medical gas experts is now the platform for an outstanding portfolio of services. We call it BOC Medical Engineering Services. And it is our offering of reliability and peace of mind to our partners within healthcare around the world.

The BOC Medical Engineering Services are designed to help your hospital provide the highest levels of patient safety. To us this means establishing outstanding quality in the complete chain of events for gases – from the production facility to services that ensure fail proof delivery, installation and maintenance of medical gases. In other words, the complete array of services that take care of your gas installation needs. So that you can concentrate on what you do best – taking care of patients.

[It's our way of being outstanding in a supporting role...](#)

Medical Engineering Services

One partner with the experience and knowledge to deliver a broad spectrum of engineering services. We will support you in saving precious resources while facilitating compliance with medical gas standards and regulations.

Consultancy Services

At least 60% of patients are administered medical gases during their stay in hospital. Your staff will handle and administer medical gases everyday – frequently when time is short. That means that everyone needs to understand and carry out their responsibilities to avoid potential danger.

A moment of carelessness, an overlooked precaution or simple mistake can lead to an accident, injury and loss. Unless your hospital has the procedures, regular training and facilities in place to manage medical gases safely, the safety of patients, staff and visitors could be at risk.

HTM 02-01 is not retrospective unless staff or patient safety is compromised. How can you assess the level of risk unless a compliance audit has been carried out, the risk identified and quantified. Even if the non-compliance is minor, you should still prepare a plan to bring the MGPS up to standard.

Compliance with HTM 02-01 is your responsibility – but where can you find the expertise, time and resources to ensure you meet the demands of guidance and best practice?

At BOC we have the solutions...

Comprehensive Audit

Seeing the risks you face

We will make a detailed assessment of how medical gases are managed in your hospital. This involves surveying equipment and conducting interviews with your staff, covering all of the areas referred to in HTM 02-01, BOC standard operating procedures and best practice. The audit will include identification of potential risks and shortcomings in the following areas:

- Plant capacity and condition
- Distribution systems
- Emergency preparedness
- Manual handling
- Management systems and documentation preventative maintenance effectiveness
- Training needs analysis
- Cylinder storage and signage
- Level of patient risk
- Provision of equipment and emergency back-up

What the assessment covers

Consultancy services

Areas of the hospital	Operational Policies	Emergency Procedures	Piped System	Cylinder	Staff	As-Fitted Drawing	Training	Supply
Bulk Supply	●	●	●		●	●	●	●
Medical Air Plants	●	●	●		●	●	●	
Vacuum Plants	●	●	●		●	●	●	
Manifolds	●	●	●	●	●	●	●	●
AGSS	●	●	●			●		
Main Cylinder Storage	●	●		●	●		●	●
Wards and departments	●	●	●	●	●	●	●	●

Risk Assessments

Developing Solutions

Identifying the risks in your hospital is not enough. They need to be documented, prioritised, and incorporated into your hospital's risk register.

We are able to provide an impartial and pragmatic view of risk in your systems, using our experience with supplying medical gases to the NHS since 1948. We apply tried and tested risk analysis methodology using our national database to ensure consistency and we provide the hospital with a solid foundation upon which to build.

The next step is to start reducing the level of risk to as low as reasonably practical.

Common risks identified by comparison to HTM 02-01 and best practice

- No nurse/DMO/DNO training
- Inadequate product/prohibition/warning signage and emergency notices
- Medical gas drawings incomplete/out of date
- Operational policy incomplete/out of date
- Inadequate storage/segregation
- No knowledge of standards/compliance shortfall

- No cylinder management program in place
- No designated storage points at ward level
- Indistinct MGPS specifications
- No indication of plant and system flowrate capacities/demand characteristics
- No H&SAWA/COSHH assessments on medical gas systems or procedures
- AP(MGPS) not authorised

You may recognise some of these non conformities. BOC Healthcare can provide you with expert, impartial and qualified guidance and ensure that they are prioritised accurately.

Managing Medical Gas Solutions







Operational Policy

As medical gases are classified as a medicine the control and distribution needs to be managed in accordance with the recommendations of HTM 02-01. This requires that a policy is developed specific to the hospital in question advising the relevant stakeholders of their duties and responsibilities, and based on the comprehensive compliance survey detailed earlier.

The policy should be detailed enough to enable the extraction of best practice procedures and information.

Elements would include but not be limited to:

- System description overview and operation
- Management responsibilities.
- Stakeholder's defined and accepted responsibilities
- Training requirements
- Operation of the permit to work system
- Normal and emergency operational procedures
- Specifications (where available)
- Plant and manifold log-sheets

As-Fitted Drawings

Drawings representing medical gas pipeline systems are the primary tool of the AP(MGPS) in the management of the medical gas systems. The drawings and associated detail must be able to be relied upon as lives could be put at risk if errors are left undetected.

Accuracy therefore is a prerequisite of any such undertaking and validation of the drawings should be carried out to prove the drawings are a true representation of the installed systems.

The drawing detail would include:

- Main distribution pipe work with branches to, and internally within, wards and departments
- Direction of flow and pipe work sizing together with location where pipework changes size
- Controls and warning equipment – valves, pressure reducing sets and alarm systems (excludes wiring runs)
- Terminal unit details
- Valve chart detailing: valve number, key number and area served where identified
- Current ward and department names and functions
- Plant schematics

The drawings would be a true representation of your medical gas services, scaled accurately to overlay your existing architectural drawings and detail the position of equipment and run of pipework.

The valve chart is an essential element of the drawings as it is a link between the drawing and the physical element. The valve chart also details the date of verification of the valve in question and provides sufficient information to enable valve and AVSU labels to be manufactured.

All drawings will be completed so as to make importation into our unique Information Management System seamless.



Specification and Design

Maintenance Specification

Medical gas systems are subject to PPM usually carried out by specialist contractors in accordance with the recommendations of HTM 02-01. This requires that a specification is developed specific to the hospital in question advising the contractor of their duties and responsibilities.

The PPM specification should be detailed enough to enable all chosen contractors to price and carry out the maintenance required by your system ensuring best practice and procedures.

Elements would include but not be limited to:

- MGPS installed plant
- Product specification
- General work procedures
- Schedule of maintenance services required
- In depth contractor questionnaire to ensure compliance with the various standards and benchmarking

Cylinder Store Specification and Design

Medical gas cylinders should be stored in accordance with the recommendations of HTM 02-01. This requires that a specification is developed specific to the hospital in question advising the contractor of the store requirements for the safe storage of medical gas cylinders.

This could involve carrying out a site survey to determine optimum stock levels and designing the available space with the correct racking and storage systems.

Provision of Authorised Person

An AP(MGPS) is required by HTM02-01 to provide functional and technical management of the medical gas systems where the gases are carried and distributed within a pipeline system.

The provision of an AP(MGPS) therefore needs to be by someone fully experienced and qualified to undertake duties that are required.

In this instance BOC Medical can provide two different types of Authorised Person:

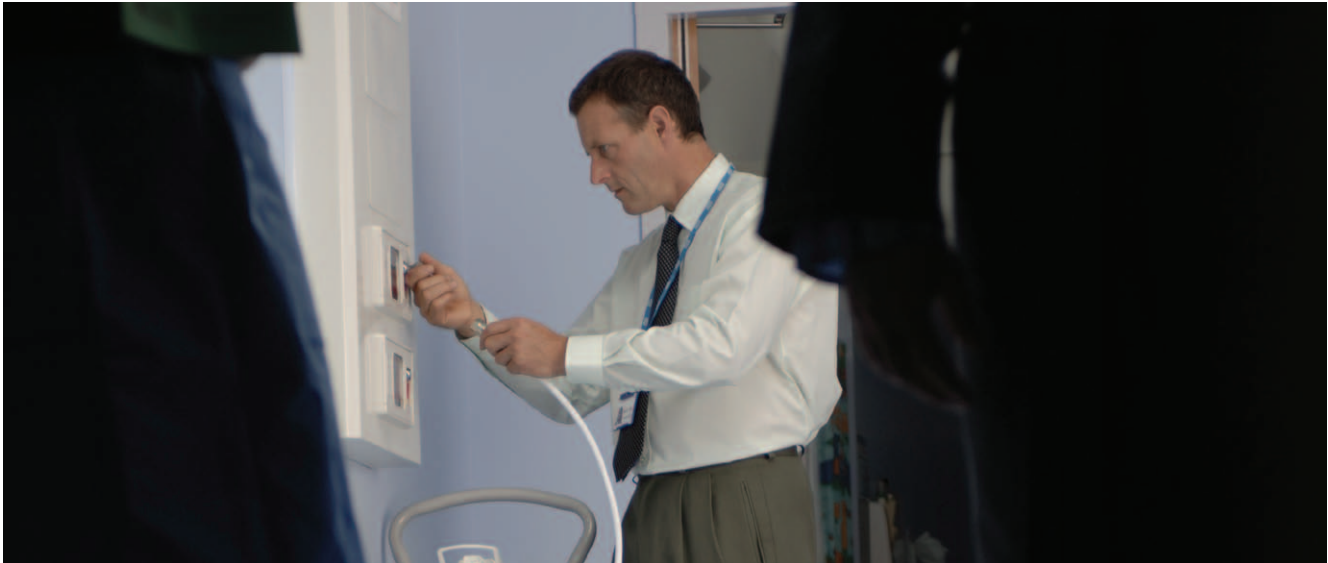
Operational AP (MGPS)

Where you need assistance on site or where your site isn't large enough to warrant a qualified engineer of your own, we can provide this on your behalf. Some of the duties would include:

- Manage interruptions to service requiring high hazard level permits to work
- Advise local staff on all aspects of medical gas management
- Train your staff to act as Responsible Persons deal with contractors and low hazard permits to work.
- Attend medical gas committee meetings
- Selection and management of medical gas contractors working on your site

Construction AP (MGPS)

Even where you have the operational staff required to manage your existing systems, you may not have the experience necessary to adequately manage a large MGPS installation project. Here we can provide technical assistance to enable you to ensure that the installation contractors working on your project are carrying out the work competently and that the completed works are tested and commissioned to the required design parameters.



This can be divided into the following elements:

- Design Validation, to ensure that the systems have been designed to cater for your demands
- Contractor evaluation, to ensure that the specialist installers have the correct training and qualifications to complete the work safely
- Installation testing, to ensure that all functional and safety tests are carried out at the correct times and to the correct standards
- Commissioning, after all the works have been completed the systems need to be commissioned to ensure the design parameters have been adhered to, the system performs to design and it is safe for patient connection.

Authorising Engineer Service

This is designed to allow the BOC Authorising Engineer to ensure that you can demonstrate your familiarity with the MGPS. During the survey you will show the BOC Authorising Engineer around:

- All primary plant and emergency reserves
- Main distribution and primary valving
- Alarm Systems
- Emergency inlet points and back up cylinder stock
- Representative selection of wards, theatres, ITU etc

In this element, the BOC Authorising Engineer will be looking to review evidence of adequate and up to date training together with correct management systems, including relevant documentation:

- CV's, Certificates and training records of yours and those of your staff
- Your operational policy
- Hard/Electronic copy of your as fitted drawings

- Permit to work book with any supporting documentation (Risk assessments and method statements, hot work permits etc.)
- Current copy of HTM 02-01 and C11
- Maintenance and installation specifications for MGPS
- Plant/equipment history sheets and maintenance record sheets
- Written scheme of examination and competent person inspections (PSSR)
- Tools, equipment and test gear

The BOC Authorising Engineer will set a typical occurrence within a hospital environment. They will review the pre visit work you have prepared and the manner in which the paperwork has been completed, they will also look at:

- Notification to users
- Specification preparation, risk assessments and method statement
- Instructions to contractors
- Permit to work
- Agreements with other stakeholders

Our partnership approach to this service not only achieves your sign off requirement by the Chief Executive but also creates the foundations for you and your AP's to confirm your medical gas pipeline systems are managed in accordance with the standard.

BOC Healthcare

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