Case Studies

Design of Medical gas system for Mater Dei Hospital in Malta

Medigas consult carried out the design of the medical gas system for the state of the art Mater Dei hospital in Malta.

250,000 square metre complex includes 825 beds and 25 operating theatres.

Design of Medical gas system for Libyan European Hospital Benghazi, Libya

Medigas consult carried out the design of the medical gas system for the Libyan European Hospital in Benghazi, Libya

The hospital provides medical care on a secondary level with all common medical specialties such as General Surgery, Cardiology, Gynaecology/ Obstetrics, Paediatrics, ENT, Ophthalmology, Urology, Physical Medicine & Rehabilitation, Dermatology, Plastic & Reconstructive Surgery, Neurology, Dentistry, Oncology and Orthopaedics.

Audit carried out by Medigas consult for four existing hospitals in Libya.

Medigas consult was requested by the Libyan Health authorities to carry out an audit of the existing situation of the medical gas system at four hospitals in Tripoli.

The four hospitals in Tripoli were:

- Ta Joura Hospital
- Al Jalaa Children's Hospital
- Abu Slim Hospital
- Al Zahra Hospital

Medical Oxygen & Vacuum System Makiungu Hospital – Tanzania

In early 2010 Medigas Consult was asked to look into the requirement to install a complete Medical Oxygen system in a central hospital in Makiungu, Tanzania, so a Technical team proceed to Makiungu to familiarise themselves with the hospital environment and perform a thorough survey

Having considered all the options, it was recommended that an oxygen concentrator system, with standby cylinder backup should be installed. It was also recommended to install a vacuum system, and in order to minimise the capital expenditure it was suggested that a refurbished second hand medivac system could be installed.

The project was completed by August 2011

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MediGas consult

Design & Management of Medical Gas Systems

Services

About us

MediGasConsult is driven by professional engineers with several years of experience in the design, execution and management of Medical Gas systems in Health care facilities, to both HTM and EN7396 standards.

Our Medical Gas Consulting services cover the complete range of Medical Gas Systems and are directed to the Healthcare Industry, M&E Consultancy firms, as well as contractors and architects.
Our philosophy is that we consider our clients as our partners and together we design and develop Complete Medical Gas Solutions to international standards and to the satisfaction of our customers

MediGasConsult has the interest of the client as their first and foremost priority and always strives to achieve this through a professional approach to any project they are entrusted with.

Design

In the case of new hospitals or clinics which are still being planned, MediGasConsult offers a complete package of services which include:

- Initial Conceptual Design
- Detailed Design including plant and pipeline sizing
- Preparation of specifications for tendering
- Preparation of Bills of quantities
- Adjudication of offers.

Project Management

We are able to assist contractors or subcontractors with timely and within budget management of Medical Gas Systems.

- Project management and coordination of services
- Preparation of installation drawings
- Assistance with Engineering Testing
- Conformance Documentation
- Training on system maintenance

Auditing & Conformity

Auditing of existing systems is a service which surveys and reports on the actual state and efficiency of the existing plant and piped network.
A report is drawn up detailing the current state of the systems installed, and works that need to be carried out. Recommendations are put forward in order to rectify any shortcomings as well as to ensure that the Medical Gas Systems within the hospital are in line with recognised international standards, such as the Medical Devices Directive, EN7396-1, or the Heath Technical Memorandum, as appropriate.

Operational management of medical gas systems requires a thorough understanding of both the engineering aspects of the systems, as well as the requirements of the medical staff to ensure that systems are kept safe and secure.

- Definition of roles and responsibilities of executive manager, operations manager, authorising engineer, authorised person, and quality controller involved in the medical gas systems.
- Institution of an effective operational policy which defines the procedures that must be in place to ensure continuity of service. This is to include a comprehensive system of reporting and resolving any faults that may come up, as well as dealing with any required alterations to the system.
- System in place for regular training of staff. This is to include possible accreditation and certification of staff.
- Establishment of proper permit-to-work system to ensure that any interventions are fully notified and approved by users of the system, thus minimising the risks involved in performing both routine and corrective maintenance.
- Proper documentation of all activities connected with the medical Gas systems, including all drawings being kept up to date and all maintenance certification to be available in case of any difficulties.

Gas Purity Testing

Medical Gas systems deliver gases directly to patients and must be tested for purity. This applies to new systems as well as existing systems.

- Tests for any particulate matter contamination, using filters connected to the gas outlets. Gas is allowed to pass at a higher rate than would be normally used.
- Tests for gas identity
- Test for gas quality, in particular oxygen purity level, which needs to be checked using a paramagnetic oxygen analyser.
- Nitrous oxide readings are taken using a FP99 infra-red analyser.
- Carbon monoxide, carbon dioxide, water vapour, Sulphur dioxide, higher oxides of nitrogen will be checked for using detector reagent tubes and a sampling pump.
- Oil levels are measured using detector tubes and a flow of gas is passed through the reagent tube for two hours.
- Odour and taste are performed using human organoleptic senses.

System Redesign

Projects for refurbishment of hospitals require particular attention when being redesigned, including:

- Physical examination of existing installations
- Research of drawings and technical documentation pertaining to the systems installed
- Re-evaluation of network sizing in view of any new demands being imposed on the hospital.
- Fresh sizing calculations, taking into account existing installed pipework, so as to ensure that upgrading is both functionally satisfactory and cost–effective.
- Physical Testing of network to check structural and quality integrity.
- Checking for conformance to HTM, EN 7396, or the Medical Devices Directive as appropriate.

Third Party Validation

Another service offered by Medigas Consult is the validation of newly installed Medical Gas Systems. This service includes:

- Verification of pipeline mechanical integrity by pressure testing whole or parts of the network
- Visual checking of labelling and marking to ensure users are provided all the information they need without any ambiguity.
- Tests for cross-connection of services
- Zoning tests for area valves
- Functionality and flow tests for all outlets
- Validation and verification of AGS disposal systems
- Performance tests for all plant and warning and alarm systems.