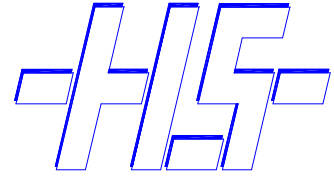


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11 June 2013
Rev 3

AA Crown Holdings

Dear Sirs,

**Wollongong Private Hospital
Design Statement
For the Section 75W Submission for AA Crown Holdings
Medical Gases Systems**

We have the following report details for the Section 75W Submission for AA Crown Holdings for the Medical Gas proposed design and installation at Wollongong Private Hospital:

Gaseous cylinder compound and Liquid Oxygen Vessel Installation requirements:

The Oxygen System for this facility will require the installation of cryogenic oxygen vessel/s. The design consumption of oxygen for this facility is larger than would be able to be supplied from a cylinder based system. As the ratio from liquid oxygen to gaseous is in excess of 700:1 and therefore the installation for the main oxygen supply for this hospital must be from a cryogenic source. To allow for reduced number of deliveries (from a cryogenic tanker) and future expansion of oxygen consumption the cryogenic main vessel has been sized as 7000 litres. The second back up vessel has also been incorporated into the design with a capacity of 3000 litres to ensure the 24 hour back requirements under AS2896 2011. (Note: the installation of 2 x 2 15Man oxygen packs will meet the current minimum requirements for a 24 hour back up supply). For the purposes of design the second vessel with more onerous requirements on separation and dangerous goods certification has been included in the scope.

All aspects with regards to the requirement to AS1894 1997 and amendments has been taken into account regarding the distances to flammable liquid storage tanks and filling conditions. The distances from the oxygen vessels to the occupied bed spaces as required under AS1894 1997 table 5.1 amendment No 1 has been taken into account in positioning the vessels. Refer to the Dangerous Goods Design Assessment dated 9 July 2013.

The daily necessity of cylinder changing in accordance with AS2896 2011 has placed the gaseous cylinder compound closest to the “back of house” driveway. To reduce the number of cylinder movements and manual handling it is proposed to use cylinder packs for the high consumption gases such as surgical tool air. The cylinder packs will require a truck with “hiab” to off load the Man packs. The location and design of the cylinder store allows for minimal movement of these packs on the concrete slab area. The low volume gases such as Nitrous Oxide and Carbon Dioxide will still be designed as individual gas G size cylinders and to minimize cost of medical air cylinders and the manual handling a purpose built medical air plant and oil free non clinical compressed air plant has been designed on level 2.

We have designed the cryogenic tanks and cylinder compounds to be on Ground level at “back of house” for delivery purposes but also to be as discreet as possible regarding the visual aspect. The 7000 litre oxygen vessel, being the largest item in height, will not impact from the front aspect of the building and as there is a high embankment between adjacent property this neighbour (on the gas compound side) will have the majority of the equipment out of view. The height of the embankment, will require a fence for safety at the top, between the adjoining property and the new hospital. We have proposed that this fence, will also provide the security for the cylinder and vessel compound. The design of VIE area allows for maximum natural ventilation from the south as well as the cylinder store.

The end of the cylinder store closest to the oxygen vessels will require a splash guard and a minimum of 50mm is required from the height that the cylinder stand and the height of the hardstand for the tanker to ensure that any liquid spill during the filling process will not contact the cylinders.

All pipe work from the external compounds will be secured within the fenced perimeter to ensure against vandalism and accidental damage of life support systems.

The layout of the dual oxygen vessel compound and siting of the cylinder store will require a remote fill point for the two oxygen vessels. It is proposed to position this “back of house” adjacent to the drive way to ensure that all safety aspects of the oxygen delivery requirements are met and has the added advantage of only be a single fill connection for both vessels ensuring that the back-up vessel is always topped up on each delivery or whenever necessary without additional time for the driver. There is to be a concrete hard stand for the rear of the oxygen vessel tanker to stand while filling. This hard stand must be kept clean, free from oil and grease and combustible materials. Care will be required to ensure that other vehicles cannot use the hard stand for parking and contaminate the area. This may require the installation of removable bollards or some other protection equipment. All relevant safety signage is required at the remote fill point as well and at the vessel compound and cylinder store area. This truck connection location will require an “upstand” with gauges to repeat the pressure as indicated at the vessel location as well as the 32A 5 pin 3 phase power outlet. There must be adequate lighting at the “upstand” and in the vessel compound area for the safety of the deliveries to be made 24 hours a day. All electrical points within the vicinity will be required to be spark free or of a sealed type. The fire protection system for the oxygen vessel and cylinder store area will be required. These system will also incorporate the installation of “fire fighting” equipment suitable for use in an oxygen enriched environment. The slope from the cylinder manifold store area shall be minimal to ensure that the movement of cylinder packs in the area is as safe as possible of the operator.

The Medical Air and Non-Medical Oil Free Compressed Air Plant

The two compressor plants are to be located as close proximity to allow for the use of a single Electrical Control Board. These plants are sited on Level 2 close the main uses of CSSD and the high use areas such as the theatres. They include the latest technology (but well tested) Oil Free Scroll Compressed fitted with anti-vibration and acoustic cabinets. The factory tested equipment will have minimal noise “break out” from the plant room and as it is sited in the middle of the floor plate will have no visual impact to the building exterior. Plant sizing for the Medical Air uses has a 25% spare capacity allowance (for areas as indicated in the Wollongong Private Hospital Design Statement Revision 1) for future expansion. The CSSD oil free air supply includes dual compressors to ensure that the maintenance will not interfere with the operation of the CSSD Area. All plant condensate is completed free of oil residue and therefore has no impact on water quality in the sewer.

The Medical Vacuum Plant

The Medical Vacuum Plant is to be located on Level 2 (or alternatively on Level 8). Plant sizing for the Medical Suction Plant includes a 25% spare capacity (for areas as indicated in the Wollongong Private Hospital Design Statement Revision 1) allowance for future expansion as well as incorporating a provision for a future pump. The pumps are oil flooded rotary vane type ensuring the lowest possible dB(A) for equipment of this type. The factory tested equipment will have minimal noise “break out” from the plant room and as it is sited in the middle of the floor plate will have no visual impact to the building exterior. Vacuum Pump vents will be piped to the roof to ensure that the exhaust air is well separated from air intakes and will have no visual aspect from the surrounding areas. All plant oil will be collected at time of service and no connection or floor wastes are to be installed in the vacuum plant area ensuring that no oil residue will impact on water quality in the sewer.

We have taken into account the following standards when designing the medical gas and associated systems:

AS1894 1997	The Storage and handling of Non-Flammable Cryogenic and Refrigerated Liquids
AS2896 2011	Medical Gas Systems- Installation and Testing of Non Flammable Medical gas Pipeline Systems
AS2030.1 1999	Cylinder Compressed Gases / Acetylene
AS2120.1 1992	Medical Suction Equipment
AS2120.2 1992	Medical Suction Equipment
AS2120.3 1992	Medical Suction Equipment
AS2430.3.1-2004	Class of hazard area – classification (General)
AS2472 1996	Valves for medical gas cylinders
AS2568 1991	Medical Gas Purity of Breathing air
AS2625.3 1983	Rotating and reciprocating machinery
AS2625.2 1983	Rotating and reciprocating machinery
AS2625.1 1986	Rotating and reciprocating machinery
AS2885 1987	Pipe line Code
AS2902 2005	Medical Gas Systems –Low pressure flexible connection assemblies
AS3003 2011	Electrical Installations – Patient areas
AS4332 2004	Storage and handling of gases in cylinders
AS4041 1998	Pressure Piping
AS5034 2005	Safe Handling & use of Inert gases and medical gases

NOTE:

Fire Design Report to be supplied by McKenzie Group, with specific design is the vicinity the medical oxygen and cylinder manifold area.

We trust our report meets with your favorable consideration, should you require any further information please do not hesitate to contact us.

For and on behalf of
HOSLAB PTY LTD

Shelley Watson

Inclusions: Refer to Safety Engineering & Technical Services Pty Ltd OHS&E consultants report dated 9 July 2013