

- G. Computer based comprehensive hydraulic transient analysis calculations showing the performance of the surge control system installed in the piping system under various normal operating modes and sudden shut down of pumps shall be included in a report discussing the analysis of fully explaining the data used and results obtained. The form analysis and the report shall be such that it can be reviewed by the engineer. The cost analysis shall be deemed to have been included in the cost of the surge protection equipment.

#### **1.2.5.1 Surge Vessel**

- A. Surge vessels shall be designed, fabricated, tested and inspected in accordance with ASME 8VII – Division I latest edition. Vessels shall be fabricated from A516 grade 70 or SA516 grade 70 steel manufactured in Europe, USA or Japan with 3mm corrosion allowance.
- B. The Contractor/Manufacturer shall submit material test certificates for vessel major components in accordance with ISO 10474 3.1B certificate to Engineer for approval prior to manufacturing processes.
- C. Bladder type vessels shall be supplied with interchangeable butyl rubber bladder with 5 years warranty. Outsourced or by-off bladder shall not be accepted.
- D. The surge vessel shall be grit blasted to SA 2.5 and coated externally using 4 coat anticorrosion system as follows:
- a) Primer Coat: Inorganic zinc silicate primer to a DFT of 75 microns.
  - b) Second Coat: Polyamide cured tie coat to a DFT of 40 microns.
  - c) Third Coat: Amine or Polyamide cured high build epoxy to a DFT of 125 to 175 microns.
  - d) Top Coat: Polyurethane high gloss finish to a DFT of 50 to 75 microns.
- E. The surge vessels shall be coated internally using powder coated epoxy system to a total dry film thickness of 300 microns minimum complying with BS 6920 requirements.
- F. The vessel shall comprise two domed ends with an intermediate cylindrical section. Vertical mounting is preferred. Not less than two lifting lugs shall be provided for lifting of the complete vessel.
- G. The inlet and outlet pipe work shall be designed to the same criteria as the vessel terminating in flanged connections complying to BS1092 standard. A drain line