

- B. The control and instrumentation systems shall include all the instruments, automatic controls, manual controls, protective systems, trip systems and alarm systems to enable the plant to meet the control, supervisory and operational requirements as specified.
- C. The Contractor shall provide & install all instruments, controls, part of instruments and controls, accessories not specially mentioned but essential for the proper functioning of the Plant, all as specified and as required by the Engineer and shall allow in his rates for the costs of such provisions.
 - a. Instruments shall be procured from one manufacturer. Basic units shall be interchangeable.
 - b. The manufacturer for the instrumentation and accessories must comply with ISO 9001/2
- D. Instruments shall be of industrial design for heavy duty application, suitable for the ambient conditions prevailing at the place of installation.
- E. Instruments or parts of the instruments, having a short lifetime, shall be provided sufficient in number to provide replacements required for a period of 1 year operation calculated from the date of Final Acceptance.
- F. Instruments shall be arranged in such a way that the exchange of parts or of a complete instrument is possible without dismantling other parts of the Plant, and without draining the part of the Plant the instrument is connected to.
- G. Instruments shall be linked with a flexible connection to vibrating / oscillating equipment in order to avoid malfunction and damages. Flexible connections shall be provided as required, subject to the approval of the Engineer.
- H. Unless otherwise specified or approved, all parameters, e.g. pressure, flow, level, temperature, etc. for indication on points remote from the point of measurement shall utilise transmitters which shall convert the measured parameter into a standard DC signal.
- I. More than one signal type that is either analogue, binary or digital shall not be permitted in the same cable.
- J. Transmitters shall be of the 2 wire type isolated from earth and shall have an output signal range of 4 - 20 mA DC, and shall be equipped with test connections.
- K. Equipment shall not generate any type of interference (e.g. electrical, electro-magnetic, audible, vibration, etc.) at a level which could be detrimental to the