corrosion. Periodic inspection of Zinc anodes to be carried out in accordance to manufacturer recommendations.

1.2.4.6 Factory Tests

A. The Contractor/Manufacturer shall submit material test certificates for all pump components in accordance with ISO 10474 2.2 or 3.1 certificate. Type of the certificate (2.2 or 3.1) shall be approved and agreed by Engineer prior to manufacturing processes.

B. The non-clog submersible direct-coupled pumps casings shall generally be hydro-tested to a pressure 1.5 times the duty pressure, plus the suction pressure. However with low head pumps (5 bars and below) the pumps casings shall be tested to 1.5 times shut-off head off head plus the suction pressure.

C. Each pump/ motor set shall undergo performance test. Performance tests shall be conducted with job motor and in accordance with BS EN ISO 9906. The test curves shall be plotted at minimum of seven heads/flow rates , between zero flow and maximum continuous capacity, together with efficiencies, NPSH, power etc.

Measured values shall be within acceptable tolerance in accordance to BS EN ISO 9906. However for efficiency, negative tolerance is not acceptable.

The factory tests shall include, but shall not be limited to:

- Performance test;
- String test with V.S.D.S. & job motor (if required);
- Bearing temperature measurement;
- Noise measurement for dry installed pumps;
- Vibration measurement for dry installed pumps;

D. All instruments used during shop tests at manufacturer's premises shall be calibrated by recognized laboratories. The calibration certificates shall not be more than six month old and shall be inspected and certified prior to starting the shop tests.

1.2.4.7 Site Tests

A. After complete installation and before commissioning, the Contractor shall carry out site pump site tests in accordance with BS EN ISO 9906 Grade 2, to be witnessed by The Owner/Engineer personnel, as well as pump and motor, manufacturer's representatives.