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ITER Cryoplant Status and Economics of the LHe Plants

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The ITER Cryoplant is composed of helium and nitrogen refrigerators and generator combined with 80K helium loop plants and external purification systems. Storage and recovery of the helium inventory is provided in warm and cold (4.5K and 80K) helium tanks.

The conceptual design of the ITER Cryoplant has been completed, the technical requirements defined for industrial procurement and contracts signed with industry. Each contract covers the design, manufacturing, installation and commissioning. Design is under finalization and manufacturing has started. First deliveries are scheduled by end of 2015.

The various Cryoplant systems are designed based on recognized Codes and international Standards to meet the availability, the reliability and the time between maintenance imposed by the long-term uninterrupted operation of the ITER Tokamak. In addition, ITER has to consider the constraint of a nuclear installation.

ITER Organization is responsible for the Liquid Helium (LHe) Plants contract signed end of 2012 with industry. It is composed of three LHe Plants, working in parallel and able to provide a total average cooling capacity of 75kW at 4.5K. Based on concept designed developed with industries and the procurement phase, ITER has accumulated data to broaden the scaling laws for costing such systems.

After describing the status of ITER Cryoplant part of the cryogenic system, we shall present the economics of the ITER LHe Plants based on key design requirements, choice and challenges of this ITER Organization procurement.

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