



Power Recovery from Low Grade Heat by Means of Screw Expanders

Ian Smith, Nikola Stosic, Ahmed Kovacevic



Current concerns with climate change have resulted in greatly increased interest in power recovery from low grade heat sources. This includes both hot fluid streams which can be expanded directly to produce mechanical power and those which act as a source of heat to closed cycle power generation systems. Power recovery from low grade heat by means of screw expanders with a generalised overview of how best to recover power from such sources, based on thermodynamic considerations, which differs to the approach used in classical thermodynamics textbooks and which includes an introductory description of the types of working fluid that are used in systems used to recover power from such sources and the criteria that must be taken into account in their selection. This is followed by a description of the mathematical modelling of twin screw machine geometry. The modelling of the thermodynamics and fluid flow through such machines is then given, together with how this is used to predict their performance. Finally a detailed description is given of systems currently used or projected both for direct expansion of the source fluid and by recovery of heat from it, which includes those which are particularly suited to the use of screw expanders in place of turbines.

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