

Supersonic organic Rankine cycle radial-inflow turbines for onboard thermal energy harvesting

Preliminary design guidelines and detailed design of a laboratory test rig for experimental validation

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Propositions

accompanying the dissertation

SUPERSONIC ORGANIC RANKINE CYCLE RADIAL–INFLOW TURBINES FOR ONBOARD THERMAL ENERGY HARVESTING PRELIMINARY DESIGN GUIDELINES AND DETAILED DESIGN OF A LABORATORY TEST RIG FOR EXPERIMENTAL VALIDATION

by

Matteo MAJER

1. The preliminary design of radial-inflow turbines based on empirical and low-order models for loss accounting will be replaced by CFD-based tools.
"This proposition pertains to this dissertation"
2. Research papers on design of experimental facilities understate the amount of "non scientific" engineering work required to achieve the goal.
3. Integrating sustainable goals, resources, and methods into product development is intended to create higher value. When this value is not apparent, it may be due to limitations in our evaluation methods and their ability to capture the full impact of these attributes.
4. The increasing involvement of private organizations in research, combined with the growing pressure on researchers to maximize output, is undermining the fundamental principles of scientific research: integrity, originality, and impartiality.
5. Electrification is the future of transportation.
6. Within male dominated fields, the voice of one man can be heard louder than that of many women to drive change towards gender equality.
7. Research should prioritize understanding how to influence people's behavior to make better use of existing technology, rather than the development of new technology to fit their lifestyle.

These propositions are regarded as opposable and defensible, and have been approved as such by the promoters Prof. dr. ir. P. Colonna di Paliano and Dr. ir. M. Pini, and the co-promotor Dr. ir. C. M. de Servi.