

Delft University of Technology

Vapour Compression Cycle Technology for Aviation Automated Design Methods and a New Experimental Setup

Ascione, F.

DOI 10.4233/uuid:39ef6ce1-d97f-4197-83ab-96d1e766de61

Publication date 2024

Document Version Final published version

Citation (APA)

Ascione, F. (2024). Vapour Compression Cycle Technology for Aviation: Automated Design Methods and a New Experimental Setup. [Dissertation (TU Delft), Delft University of Technology]. Delft University of Technology. https://doi.org/10.4233/uuid:39ef6ce1-d97f-4197-83ab-96d1e766de61

Important note

To cite this publication, please use the final published version (if applicable). Please check the document version above.

Copyright Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.

This work is downloaded from Delft University of Technology. For technical reasons the number of authors shown on this cover page is limited to a maximum of 10.

Propositions

accompanying the dissertation

VAPOUR COMPRESSION CYCLE TECHNOLOGY FOR AVIATION

AUTOMATED DESIGN METHODS AND A NEW EXPERIMENTAL SETUP

by

Federica ASCIONE

- 1. In the case of energy conversion systems, and vapour compression cycle systems in particular, focusing research on heat exchangers yields more performance gains than on turbomachinery. (*This proposition pertains to this dissertation*).
- 2. The complexity of integrated system design optimization applied to aerospace energy systems makes it challenging to generalize the results and provide comprehensive design guidelines. (*This proposition pertains to this dissertation*).
- 3. Using natural refrigerants instead of synthetic refrigerants enables the design of vapour compression cycle systems with higher performance; however, their flammability poses a challenge for aircraft applications, which will limit their deployment in favour of blends. *(This proposition pertains to this dissertation).*
- 4. In the design of a novel setup for energy conversion, the use of a dynamic model of the facility for simulations is crucial to select appropriate hardware and implement flawless control systems. *(This proposition pertains to this dissertation).*
- 5. A radical change in people habits is the solution to the environmental crisis, not sustainable technologies.
- 6. In academia, the use of impact indexes has negative effects on the ethical behaviour of scientists: it reduces the quality of publications and creates communication barriers between research groups.
- 7. Quotas in the job market do not solve the problem of diversity and create in the new hire belonging to a minority group the perception of being selected for reasons other than merit.
- 8. The significant number of company-funded research projects is transforming engineering academic schools into low-cost consultancy companies, relegating to the background their academic mission.
- 9. The massive use of electronic devices and the short attention span of young generations pose a threat to democracy.
- 10. Modern society underestimates the cultural and spiritual importance of classical music.

These propositions are regarded as opposable and defendable, and have been approved as such by the promotor Prof. dr. ir. P. Colonna and the copromotor Dr. ir. C. M. De Servi.