

RESEARCH IN TURBOMACHINERY ACROSS DIFFERENT TRL

M. Carnevale
Department of Mechanical Engineering
University of Bath

The global warming concern is pushing international community to meet the target of decarbonization within 2030. In this perspective energy production and mobility play an important role as they impact largely on the amount and quality of atmospheric emissions.

The nature of research in Mechanical Engineering (and Turbomachinery in particular) is often characterised by high Technology Readiness Level (TRL) as it has to answer needs from the industry. This request is often aimed to a short-time application resulting in an incremental research rather than innovative. Despite the incremental approach is fundamental to improve engineering sustainability, it is built on top of existing technologies and margins for improvements can be limited. In turn, innovative research features low TRL and it is characterised by long term-results. Moreover, new technologies and innovative approaches are continuously moving the border of the different research areas and it is mandatory for researchers to develop variegated skill sets to face multi-trans-disciplinary research.

The talk will cover the research vision carried out across different topics (Physics and Mechanical Engineering) and across different research systems (UK and Italy).

The research portfolio, developed in the last 10 years in the field of modelling/experimental field in turbomachinery at different TRL, will provide an example of how multidisciplinary represents an opportunity to incorporate/merge mature technologies across different contexts increasing the initial TRL for innovative research.

Following this vision, the role of academic formation plays an important role and few considerations will be done based on the experience gained in different educational systems.

