

The advantages and disadvantages of different turbine test rig

Abstract

Fast development in material and processing technology, along with widely application of aerodynamics, fluid mechanics, thermodynamics and other related disciplines in the actual turbine design, leads to that the performance of the turbine components has improved significantly since the 21 century. But the turbine test has its irreplaceability, and more data needs to be collected during a test for turbine design. That means, there is more challenges for turbine test. As the main part of the turbine test, turbine test rig attract the most attention. And different test rig shows its own the advantages and disadvantages. Full size test bench achieves relatively accurate simulation and experimental data, while the indentation size test rig with same dimensionless number, demands lower cost. The trade-off must be considered accordingly. In addition, short cycle test rig is new focus point in the 21st century, which pays more attention to the time cost, and achieves the fair effect that can only be achieved by long cycle experiment. In this paper, several popular turbine test rig are analyzed and compared, in term of their disadvantages and advantages. The aim is to decide a more appropriate choice in the future tests.