

## Measuring Technology of Airship Propeller Thrust and Torque in China Academy of Aerospace Aerodynamics

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**Abstract :** In order to measure thrust and torque of airship propeller, a two-component balance and data acquisition system was developed in China Academy of Aerospace Aerodynamics(CAAA) in early time. During the development, some problems were encountered. At first, the measuring system and its protective parts made the weight of whole system increase significantly. Secondly, more parts might induce more failures, so the reliability of the system was decreased. In addition, the rigidity of the system was lowered, and the structure was more possible to vibrate. Therefore, CAAA and the Academy of Opto-Electronics, Chinese Academy of Science(AOECAS) developed a new technology, use the propeller supporting rack as a spring element, attach strain gages onto it, sum up as a generalized balance. And new math models, new calibration methods and new load determining methods were developed.

**Keywords :** airship, propeller, thrust and torque, flight test

**Conference Title :** ICAAA 2016 : International Conference on Applied Aerodynamics and Aeromechanics

**Conference Location :** London, United Kingdom

**Conference Dates :** August 25-26, 2016