

# CONCURRENT CERTIFICATION IN THE DESIGN AND DEVELOPMENT OF HTT 40 BASIC TRAINER AIRCRAFT

Pradeep Mahuli  
Regional Director (Aircraft)  
RCMA (Aircraft), CEMILAC  
Defence Research and Development  
Organisation  
(DRDO), Marathahalli Post  
Bangalore-560 037, India  
Email : [rdrdma.aircraft@cemilac.drdo.in](mailto:rdrdma.aircraft@cemilac.drdo.in)

B. Prashant Singh  
Deputy Project Manager (HTT-40)  
Chief Manager (Design)  
Aircraft Research and Design Centre (ARDC)  
HAL, Marathahalli Post  
Bangalore-560 037, India  
Email : [prashant.bharodia@hal-india.com](mailto:prashant.bharodia@hal-india.com)

## Abstract

HTT 40 is a basic trainer aircraft, which shall be used for ab initio training of rookie pilots. The aircraft design was based on the PSQR issued by the Indian Airforce for their Basic Trainer aircraft requirement. Not awaiting for formal clearance and funding from the Ministry of Defence, HAL has undertaken the project with internal funding. The design and development of HTT 40 has been completed in a period of two years and the first flight has been achieved in less than a year's time from the date of completion of detailed design phase. The program had to absorb a mid-program engine switch after the engine OEM of choice refused to supply engine for the programme. ARDC HAL and the certification agencies worked jointly right from the preliminary design phase, and this ensured timely clearances for the project in order to get airborne in the extremely aggressive time frames. Also there was a significant cost and time benefit gained due to the proactive approach taken by all major stake holders which included RCMA, RDAQA and Flight operations. There were key de nova certification approaches undertaken, which otherwise is not a regular feature in most D and D projects wherein the conventional role and approach of the certification process is adopted. HTT 40 specific certification plan was developed jointly and this identified the key requirements as far as clearances and certification process is involved. The process was split into two blocks namely first block of flight phase which addressed the certification requirements identified for first flight and initial assessment flights, and, block 2 phase which focused on the entire aircraft envelope and certification aspects. The project, being internally funded by HAL, had key constraints in budget and time aspects, and hence a key focus was laid on using COTS equipment from existing projects. This required exhaustive studies for compliance of these units for HTT 40 specific envelope. Proactive participation by the certification agencies namely RCMA and RDAQA ensured that there were no major challenges as the project approached the first flight phase. The project currently is progressing in a well-planned manner due to clearly laid out flight test and certification plan which has been jointly authored by all the participants.

**Keywords:** Basic trainer aircraft; Hindustan turbo trainer-40; Airworthiness certification