

CSIR- NAL and TASL Bestowed with Prestigious 'CSIR Diamond Jubilee Technology Award 2020'



Award given Virtually due to Covid Scenario

List of Team members from CSIR- NAL and TASL

Name of the Employee		
Shri Jitendra J Jadhav	Shri. Siva M	Shri Giridharan A
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Shri. Gaddikeri Kotresh	Shri. Murthy B.Y.K.	Shri Krishnappa BM
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Shri N Lohith	Shri. Shadakshari KS	Shri Eswarappa S
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Dr. Anil Kumar A	Shri. Pichuka Madhu Babu	Shri Mani S
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Shri. Naik BN	Shri. Rajesh Kumar S	Shri Om Prakash Swamy
Shri. Srinivasa V	Shri. Dhinakaran K	Shri Parthiban B
Shri. Pitchai P	Shri. Dharanendra Y	Shri Praveenkumar JN
Shri. Dinesh BL	Shri Ramanna Gundad	Shri Raju HL
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Shri. Raju BM	Shri. Chandrashekar R	Shri. Pradeep MS
Shri. Karuppannan D	Shri. Prabhakaran D	Smt. Radha BR
Shri. Murali.P	Shri Rathnakar B	Shri Naresh KR
Shri Radhakrishnan G	Shri. Kailash Singh	Shri. Punitha SJ
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Shri. Saravana Kumar N	Shri. Patil Vinayak	Shri. Neelakante Gowda MN
Shri. Dasmal Baskey	Shri. Naveen Kumar,M	Shri. Rawat RS
Shri. Suresh Chand Jangir	Shri. Athimoolaganesh S	Shri. Govindan Kutty MG
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TASL Team

Name of Employee		
Shri Ramakrishna Kodamarti	Shri. Adhithya A	Shri. Louis Babu X
Shri. Lokesh Kumar Y	Shri. Divya MV	Shri. Avinash N
Dr. Vijayakumar Hiremath	Shri. Ravikumar Saravanan	Shri. Kiran Kumar KB
Shri. Muralidhar Nayak	Shri. Vani Tyagraj	Shri. Ningappa B Hosalli
Shri. Alok Sharma	Shri. Senthilkumar S	Shri. Gowrish V
Shri. Sandipan Ganguly	Shri. Tejas T	Shri. Mithun T.G
Shri. Mohan Babu V	Shri. Murali T	Shri Sreedeeep R
Shri. Ravitej Reddy H	Shri. Chandrasekhar M S	

Executive Summary of Achievement

CSIR- NAL took up the challenging task of productionisation of 13 complex cocured parts with M/s Tata Advanced Systems Limited, TASL (erstwhile Tata Advanced Materials Limited, TAML). In the initial stages, several challenges were faced and in fact, ACD had to take up projects to redesign and manufacture tooling to meet series production requirements. NAL and TASL successfully completed the IOC order of 20 sets consisting 13 types of parts/set in 2019. Based on this, the FOC order of 20 sets, was taken up and NAL is successfully executing the same with TASL. This is expected to be completed by May 2022.

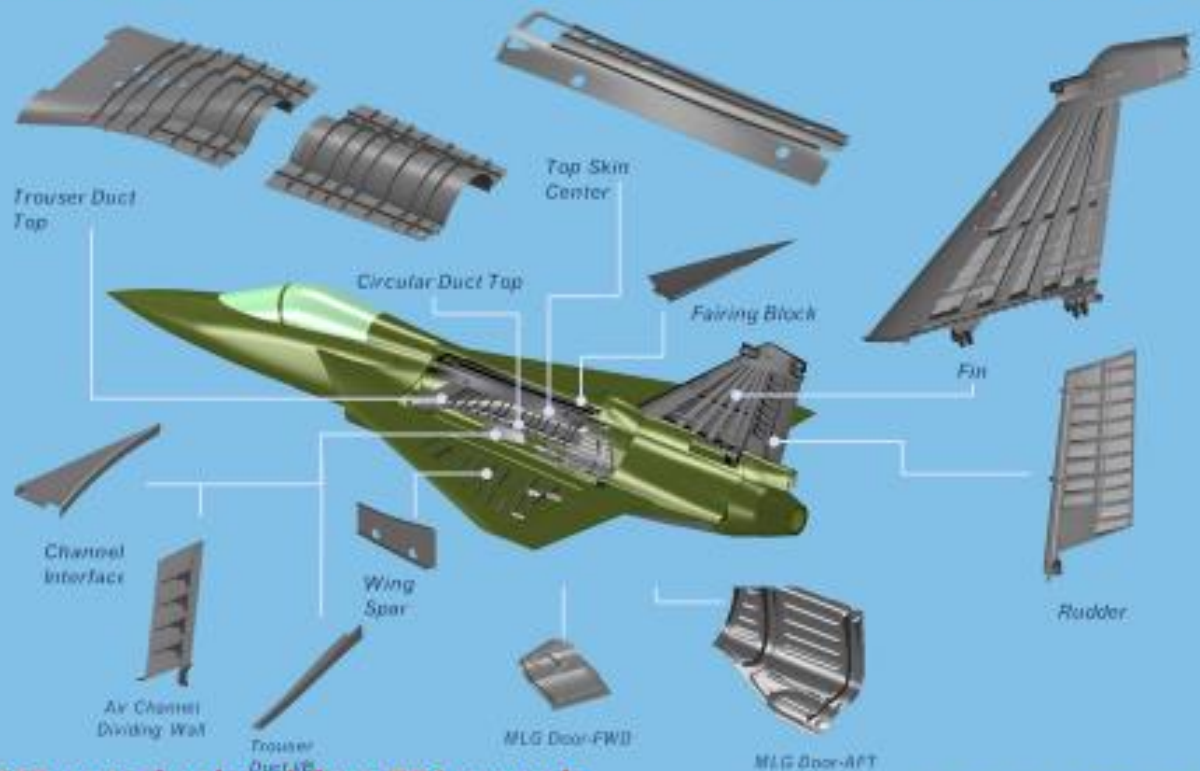
All aspects related to composite technology development have been addressed by the team at ACD, CSIR NAL without taking any overseas support. Composite technology developed by NAL has been streamlined and brought to production standards during the productionisation at TASL under the guidance of CSIR-NAL team. Several activities towards streamlining of process, simplifying operations, standardisation of process documents to ensure repeatability and consistency in quality have been carried out jointly by NAL and TASL.

The use of cocuring technology developed by CSIR-NAL in LCA-Tejas has resulted in a **40% reduction in the part count, the number of fasteners by half and 30% reduction in the assembly time** and associated costs when compared to a conventional metallic airframe. **The usage of composites has led to an overall weight reduction of 20% in the airframe of LCA.** It is a matter of pride for the country as percentage deployment of composites in LCA-Tejas is one of the highest among contemporary aircrafts of its class. Apart from making the aircraft much lighter, there are also fewer joints or rivets, which increases the aircraft's reliability and lowers its susceptibility to structural fatigue cracks.

Thus, apart from the cost benefit, the **nation has gained a leadership position** in an area that is often in a technology denial regime. In a report released by Prof R Narasimha and Dr. Kota Harinarayana in April 2017, they brought out that the development of composite technologies would lead to significant cost savings in foreign exchange of about Rs.3000 crores and overall revenue generation of about Rs.3047 crores for the nation for an order of 120 aircrafts.

Productionisation of indigenously developed state of the art technologies has been possible due to the positive leadership shown from top management from both the organisations. In order to supply the airworthy parts to Series production programme of LCA, an enormous amount of coordination activity was carried out with certifying authorities like CEMILAC, DGAQA and other stakeholders like ADA, HAL and IAF. NAL gratefully acknowledges the stupendous support received. NAL acknowledges Dr. AR Upadhyaya, former Director, CSIR-NAL for his initiative in setting up this partnership with TASL and Dr. K Sham Sunder, former advisor ACD for his role in formulating the MOU. Support extended by various technical divisions of NAL and all groups of NAL administration is also duly acknowledged.

Composite Parts Developed for LCA-TEJAS by CSIR-NAL



- **165 parts developed from TD1 onwards**
- **152 parts ToT given to HAL in 2005**
- **13 critical parts being manufactured with Partner TASL**
- **More than 30 sets successfully completed and delivered to HAL**

Total = 165 parts