

Saras II makes maiden flight

EXPRESS NEWS SERVICE

Bangalore, April 18: The second prototype of the Saras 14-seater multi-role light transport aircraft developed by National Aerospace Laboratories (NAL) successfully completed its maiden flight on Wednesday. The aircraft PT-II took off from Bangalore at 9 am piloted by Saras Chief Test Pilot Wg.Cdr. R.S. Makker and two other test pilots Wg. Cdr. A Malik and Wg. Cdr. M S Ramamohan from IAF's Aircraft & Systems Testing Establishment (ASTE).

The PT-II is flying three years after the first Saras prototype PT I -- which has logged 106 flights till date -- made its inaugural flight on May 29, 2004. An NAL press release said that various improvements incorporated in the aircraft have brought PT II much closer to the final production standard aircraft, which would be achieved in a third prototype.

"The PT II with new engines appears to be a very potent and powerful machine. All systems performed precisely in the first flight itself," Wg. Cdr. Makker said after the 49-minute flight during which the aircraft climbed to an altitude of about 9,000 ft and reached a maximum speed of nearly 150 knots. Several mild manoeuvres were executed by the pilots



to get a feel of the aircraft handling qualities. The landing was perfect. The two higher power engines and larger diameter propellers were incorporated to meet the stringent climb gradient requirements under one engine failure condition, as sti-

Talks are on with the IAF for the purchase of Saras

pulated by the US Federal Aviation Regulations-25, the certification standard for Saras, the release said.

Improvements on the flight control system layout, flap operating system, avionics and electrical system layout were made, taking

into account the inputs received from the flight crew and maintenance staff of the first prototype. NAL had also taken up weight optimisation programme to bring down weight by 500 kg. The FAR-25 standard certification by the Director General of Civil Aviation was targeted for the end of 2009.

NAL said that discussions were on with the IAF for the purchase of Saras to meet some transport and training requirements, as well as negotiations with the Hindustan Aeronautics Limited for producing the aircraft.

The aircraft performance would be demonstrated in PT II by simulating the all up weight of 7,100 kg. After some more data was gathered, NAL is looking to offer Saras to the Ministry of Civil Aviation.

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Saras takes off



Maiden flight: The second prototype of Saras, the 14-seater light transport aircraft under development, had its first flight on Wednesday in Bangalore. Conceived in the 1980s and sanctioned in 1999, Saras is meant to enter the market as air taxi, air ambulance, cargo or for surveillance. (Report on Page 10)

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Saras makes its maiden flight; production version likely next year

Our Bureau

Bangalore, April 18

The second prototype (PT2) of Saras, the 14-seater light transport aircraft under development, had its first flight on Wednesday, National Aerospace Labs here said.

NAL expects to ready the next version in 2008 to production standards. It is targeting its flight certification by 2009-end, its Director, Dr A.R. Upadhyaya, told *Business Line*.

Though PT2 has not addressed the critical issue of weight, it has been structurally improved with a redesigned and larger propeller. Its flight data would be valid. It now weighs nearly a tonne more than the desired six tonnes.

The third version would aim to cut the weight by 500 kg using advanced materials and less fuel.

PT2, fitted with a new Pratt & Whitney engine was 35 per cent more powerful than the first prototype, he said.

"Today we had a much higher rate of climb. With the modifications we have corrected some of the snags" reported about PT1, though it is still the old design version, Dr Upadhyaya said.

PT2 comes almost three years after PT1 - which has completed 106 flights since August 2004. It started low-speed taxi trials in late March this year.

The prototypes will have to log 500 flights to be certified air-worthy.

The nearly Rs 160-crore Saras was conceived in the 1980s and sanctioned in 1999 and is meant to enter the market as air taxi, air ambulance, cargo or for surveillance.

Saras makes maiden flight

BANGALORE, DHNS: The second prototype of Saras, the indigenous 14-seater multi-role light transport aircraft, made its successful maiden flight in Bangalore on Wednesday.

India's first indigenous civil aircraft, is being developed by the National Aerospace Laboratories (NAL), a constituent unit of the Council of Scientific and Industrial Research (CSIR).

Wing Cdr R S Makker was the chief test pilot for Wednesday's flight. He was joined by Wing Cdr A Malik as the co-pilot and Wing Cdr M S Ramamohan as the flight engineer.

All the personnel belong to the Aircraft Systems and Testing Establishment (ASTE) of the IAF, which is the flight testing organisation for Saras, an NAL statement said.

The first prototype of Saras made its maiden flight on May 29, 2004. NAL said several improvements had been made in the second prototype, the most important ones being the incorporation of two higher power engines - PT 6A-67A with 1,200 horsepower each in place of the PT6A-66 of 850 HP each used in the first prototype - and new propellers of larger diameter.

The improvements, it said, had brought the second prototype much closer to the final production standard aircraft.

A weight optimisation programme was also taken up with a target to reduce the aircraft's weight by 500 kg, the release said.

Another prototype will be built to the final production standard and proved through a combination of ground and flight tests.

The Hindu

Saras PT2 makes maiden flight

Pilots report "no surprises" after mild manoeuvres to test handling qualities

Ravi Sharma

BANGALORE: The second prototype of Saras, India's first commercial civilian aircraft, had a successful 40-minute maiden flight here on Wednesday, climbing to an altitude of 9,000 feet.

Designed and developed here by the National Aerospace Laboratories (NAL), a constituent of the Council of Scientific and Industrial Research, the eight to 14-seater light transport aircraft, Saras Prototype two (PT2), follows Prototype one (PT1), which flew in May 2004.

Piloted by Wing Commanders R.S. Makker and A. Malik, with Wing Commander M.S. Ramamohan as the flight-test engineer, PT2 had an almost flawless flight, attaining a maximum speed of just under 150 knots. Executing several mild manoeuvres to get a feel of the aircraft's handling qualities, the pilots reported "no surprises."

"Estimates met"

Describing the maiden flight as "fine," the head of NAL's Centre for Civil Aircraft Design and Development, K. Yegnanarayan, told *The Hindu* that the next few flights of PT2 would enable scientists and designers to obtain qualitative data on its performance. "We have realised whatever parameters we set out for; our estimates have been met." PT2's next flight is expected on Friday.

The chief difference between PT2 and PT1 is the incorporation of two turboprop (rear facing propellers) Pratt and Whitney PT 6A-67A engines of 1200 hp each and propellers of a larger diam-



A SUCCESS: The second prototype of Saras, India's first indigenously designed civilian aircraft makes its maiden flight in Bangalore on Wednesday. - PHOTO: SPECIAL ARRANGEMENT

ter. PT1 had two PT 6A-66 engines of 850 hp each.

"This has been done to meet the stringent climb gradient requirements under one engine failure condition as stipulated by the Federal Aviation Regulations (FAR-25) of the United States, which is the certification standard for Saras. The supporting stubwing structure and the engine nacelle

were also modified to suit the new engine. Improvements have also been incorporated in the flight control system, the flap operating system, avionics and the electrical system," Dr. Yegnanarayan said.

While PT2 is much closer to the final production standard, NAL has begun a weight optimisation programme "through optimisation of me-

tallic structures, stringent fabrication control and increased use of composites."

While the maiden flight of PT2 has to be applauded, NAL scientists agreed that much work still remained before it could become a marketing or even an aviation success. It is, for example, yet to be decided who will manufacture the Saras, at what cost and in what timeframe. And though the

Indian Air Force (IAF) is expected to be the launch customer, using the aircraft for training and other roles, it is yet to send in a letter of intent.

NAL is expected to demonstrate the performance of PT2 to the IAF by simulating the all up weight of 7,100 kg.

NAL hopes to pitch Saras as a feeder aircraft, light cargo aircraft and an air ambulance.

ಸರಸ್ ಪರೀಕ್ಷಾರ್ಥ ಹಾರಾಟ ಯಶಸ್ವಿ

ಹೊಸದಿಲ್ಲಿ, ವಿ. 18-ದೇಶದ ಮಹತ್ವಾಕಾಂಕ್ಷಿಯ ಹಗುರ ಸಾರಿಗೆ ವಿಮಾನ 'ಸರಸ್' ತನ್ನ ಎರಡನೇ ಪರೀಕ್ಷಾರ್ಥ ಹಾರಾಟವನ್ನು ಬುಧವಾರ ಯಶಸ್ವಿಯಾಗಿ ಪೂರೈಸಿದೆ. ಸ್ವದೇಶಿ ನಿರ್ಮಿತ ಮೊದಲ ನಾಗರಿಕ ವಿಮಾನ 'ಸರಸ್'ನ್ನು ರಾಷ್ಟ್ರೀಯ ವಿಮಾನಾಂತರಿಕ ಪ್ರಯೋಗಾಲಯ (ಎನ್‌ಎಎಲ್) ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿದೆ. ಪರೀಕ್ಷೆಗಾಗಿ ನಿರ್ಮಿಸಿರುವ ಎರಡನೇ ವಿಮಾನವನ್ನು ವಿಂಗ್ ಕಮಾಂಡರ್ ಆರ್.ಎಸ್.ಮುಕ್ತೇಶ್ ನಡೆಸಿದರು. ವಿಂಗ್ ಕಮಾಂಡರ್ ಎ.ಮಲಿಕ್ ಸಹಾಯಕ ಪೈಲಟ್ ಆಗಿ ಮತ್ತು ವಿಂಗ್ ಕಮಾಂಡರ್ ಎಂ.ಎಸ್. ರಾಮಮೋಹನ್ ಪೈಲಟ್ ಇಂಜಿಯರ್ ಆಗಿ ಮುಕ್ತೇಶ್ ಅವರಿಗೆ ಸಹಾಯ ಮಾಡಿದರು. ಪರೀಕ್ಷಾರ್ಥ ಹಾರಾಟದಲ್ಲಿ

ಭಾಗವಹಿಸಿದ ಈ ಮೂರು ಮಂದಿ ಭಾರತೀಯ ವಾಯುಪಡೆಯ ಏರ್ ಕಾಪ್ಸ್‌ಮನ್ ಆಂಡ್ ಟೆಕ್ನಿಕ್ಸ್ ಎಸ್ಕಾಡ್ರನ್ ವೆಂಟ್ (ಎಎಸ್‌ಟಿಇ)ಗೆ ಸೇರಿದವರು ಎಂದು ಎನ್‌ಎಎಲ್ ಮೂಲಗಳು ತಿಳಿಸಿವೆ. ಸರಸ್ ವಿಮಾನದ ಮೊದಲ ಪರೀಕ್ಷಾ ಮಾದರಿ 2004 ಮೇ 29ರಂದು ಪರೀಕ್ಷಾರ್ಥ ಹಾರಾಟ ನಡೆಸಿತ್ತು. ಅದೇ ವರ್ಷ ಆಗಸ್ಟ್ 22ರಂದು ಸರಸ್ ಎರಡನೇ ಹಾರಾಟವನ್ನೂ ಯಶಸ್ವಿಯಾಗಿ ಮುಗಿಸಿತ್ತು. ಮೊದಲ ಪರೀಕ್ಷಾರ್ಥ ಮಾದರಿ ಇದುವರೆಗೆ 106 ಬಾರಿ ಆಕಾಶದಲ್ಲಿ ಯಶಸ್ವಿಯಾಗಿ ವಿಹರಿಸಿದೆ. ಮೊದಲ ವಿಮಾನದಲ್ಲಿನ ಕುಂದು ಕೊರತೆಗಳ ಬಗ್ಗೆ ಅಧ್ಯಯನ ನಡೆಸಿ ಎರಡನೇ ವಿಮಾನದಲ್ಲಿ ಕೆಲವು ಸುಧಾರಣೆ ಮಾಡಲಾಗಿದೆ. ಎರಡನೇ ವಿಮಾನ ಎರಡು ಶಕ್ತಿಯುಳ್ಳ



ಇಂಜಿನ್‌ಗಳನ್ನು ಹೊಂದಿದೆ. ಮೊದಲ ಮಾದರಿ ಪಿಟಿಎ-66ನಲ್ಲಿ ತಲಾ 850 ಹಾರ್ಸ್‌ಪವರ್ ಸಾಮರ್ಥ್ಯದ ಎರಡು ಇಂಜಿನ್‌ಗಳನ್ನು ಒಳಗೊಂಡಿತ್ತು. ಎರಡನೇ ಮಾದರಿ ಪಿಟಿಎ-67ಎನಲ್ಲಿ ತಲಾ 1,200 ಹಾರ್ಸ್‌ಪವರ್ ಸಾಮರ್ಥ್ಯದ ಎರಡು ಇಂಜಿನ್‌ಗಳನ್ನು ಆಳವಡಿಸಲಾಗಿದೆ. ಅದೇ ರೀತಿ ವಿಮಾನದ ರಕ್ತೆಗಳು ಮೊದಲಿನದಕ್ಕಿಂತ ಹೆಚ್ಚು ವಿಶಾಲ

ವಾಗಿವೆ. ವಿಮಾನದ ತೂಕ ಕಡಿಮೆಗೊಳಿಸುವ ನಿಟ್ಟಿನಲ್ಲಿ ಹಲವು ಮಹತ್ವದ ಉಪಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳಲಾಗಿದೆ. ಮೊದಲ ಮಾದರಿಗಿಂತ ಎರಡನೇ ಮಾದರಿ 500 ಕಿಲೋಗ್ರಾಂ ಕಡಿಮೆ ತೂಕ ಹೊಂದಿದೆ. ವಿಮಾನಗಳ ಸರಣಿ ಉತ್ಪಾದನೆ ಆರಂಭಿಸುವುದಕ್ಕೆ ಮುನ್ನ ಮೂರನೇ ಮಾದರಿಯನ್ನು ರಚಿಸಿ ಪರೀಕ್ಷೆಗೊಳಪಡಿಸಲಾಗುತ್ತದೆ.