



EU-Japan R&T Cooperation about Aircraft Systems

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What is NEDO ?



1. Name:

“NEDO” stands for **N**ew **E**nergy and Industrial Technology **D**evelopment **O**rganization

2. Address:

Kawasaki City, Kanagawa Pref., JAPAN

3. Mission:

- ◆ Addressing energy and global environmental problems
- ◆ Enhancing industrial technology

4. Employees:

Approximately 800

5. Budget:

Approximately 131.9 billion yen (FY2015)



NEDO Head office



Overseas Offices

Role and Positioning of NEDO



- (1) **Future passenger-friendly cabin architecture and systems**
 - *aim at innovative human-centered cabin space architectures and advanced on-board systems to enhance accessibility, safety, comfort, connectivity and availability of new contents and services*

- (2) **Efficient composite structure manufacturing and monitoring**
 - *aim at increased productivity, reliability and performance through new composite manufacturing and assembly processes for aircraft production*

- (3) **Smarter flight control technologies for enhanced safety**
 - *aim at smarter flight control technologies such as fault-tolerant / adaptive control, in-flight self-learning systems and haptic interfaces for pilot assistance, especially at emergency situations*

(4) Lighter integrated heat exchanger systems

- aim at further developing technologies, at better integrating the components and at advancing manufacturing capabilities to enable compact low-cost heat exchanger systems

(5) Seamless cockpit display with touch-screen operation (Yokogawa)

- aims at reduction of pilot workload, human error, pilot skill level, and adaptation of flight control system for future generation through seamless cockpit display with touch-screen (multi-touch) operation

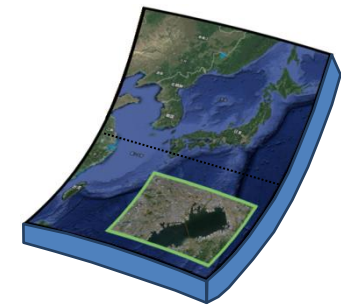


Image of cockpit display

(6) Landing gear extension and retraction system (SPP)

- aims at reduced fuel consumption, increased reliability and maintenance performance through electric-powered landing gear extension and retraction system using electro-hydraulic actuator

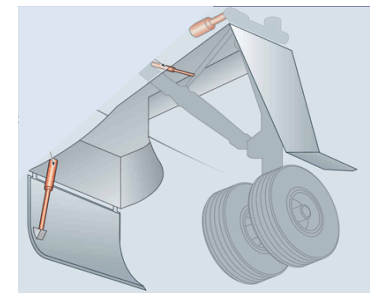


Image of landing gear extension and retraction system

(a) Electric-powered taxiing and brake systems (SPP)

- aim at reduced fuel consumption and maintenance cost through electric-powered taxiing system with in-wheel motor and brake system with magneto-rheological fluid



Image of electric-powered taxiing system

(b) Local cooling system (Shimadzu)

- aims at less power consumption, more compact and lighter weight compared with conventional liquid cooling, by using two-phase cooling with loop heat pipe or mechanical pump which utilize latent heat of refrigerant fluid

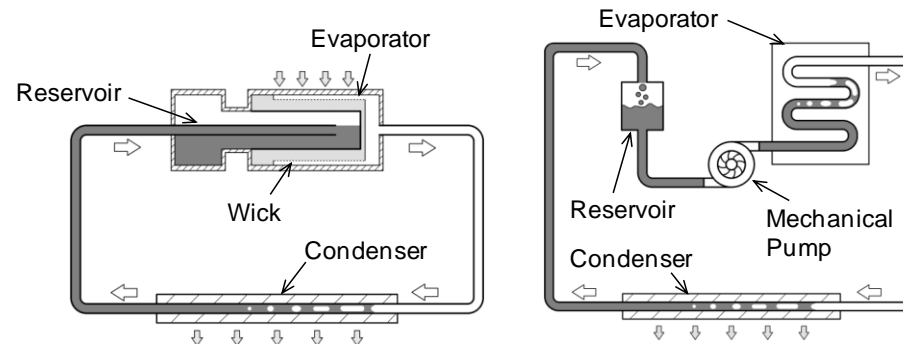
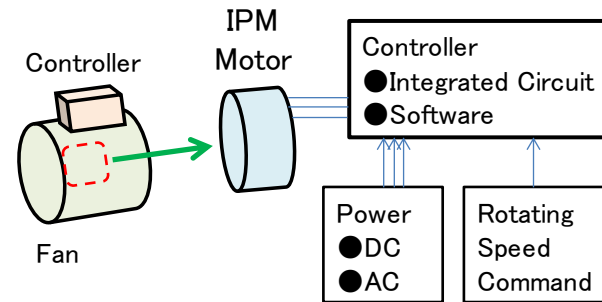


Image of local cooling system

(c) Variable speed smart fan (Shimadzu)

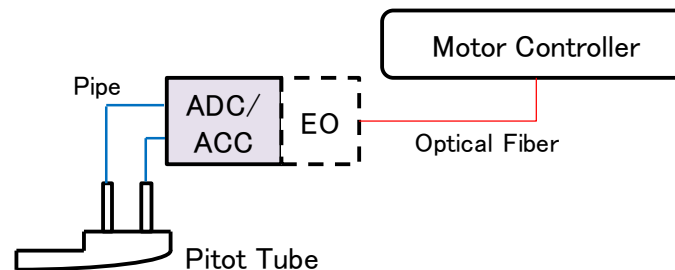
- aims at compact and high-efficient variable speed smart fan with flexible and optimized control for wide range of operation during flight and accommodate to variable frequency AC BUS



Conceptual diagram of variable speed smart fan

(d) Backup flight control system with optical communication (TKK)

- aims at reduced fuel consumption, maintenance cost, and increased tolerability for electromagnetic interference through flight control system with optical communication using electro-mechanical actuator



Conceptual diagram of backup flight control system with optical communication

- NEDO is a project management agency, and we promote national R&D projects coordinating with METI, industry and universities to accomplish our mission.
- NEDO will conduct appropriate project management to bring the result that these technologies introduced in this presentation are applied to next-generation aircrafts.
- NEDO promotes many kind of R&D projects except that of aircrafts. Please contact us if you are interested in R&D projects conducted by NEDO.

Innovation for a Brighter Future



~ Contributing industrial technology
to the international community ~

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