



## Technical Infrastructure

In accordance with Agenda 2007, ESTEC finalised an intensive, customer-focussed review of its Technical Facilities, namely the laboratories working in the mechanical, electrical, software and design domains, as well as the Test Centre and the Microgravity Laboratory, and defined its strategy and medium-term investment requirements. Both the internal customers from the ESA Programmes as well as external customers from Industry expressed their satisfaction with the services received and provided detailed information regarding their future needs. In implementing the results of the review, care will be taken to ensure funding of the competences needed to successfully support the various Programmes.

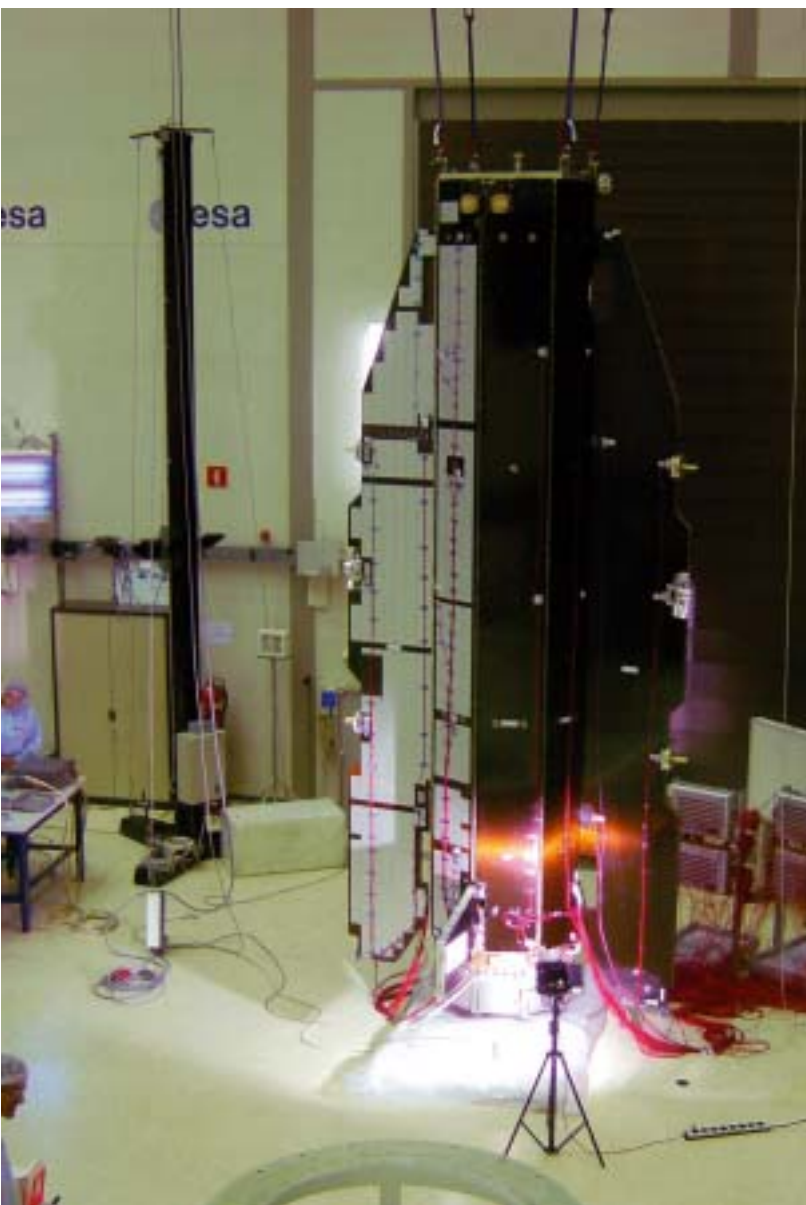
## Test Centre

The ESTEC Test Centre played host to four spacecraft during the year: the second flight model of the MetOp Payload Module, the structural model of GOCE, the structural qualification model of Galileo GSTBV2A, and the proto-flight model of the Automated Transfer Vehicle (ATV). The EMC tests for the latter were performed in the newly completed Maxwell chamber, and the campaign is scheduled to last until mid-2005 with further tests in the acoustic chamber (LEAF) and the Large Space Simulator (LSS). The new large 'Maxwell' chamber provides an EMC facility of the same high standard as the other ESTEC Test Centre facilities.

In parallel, a number of smaller test campaigns were executed with satellite instruments, antennas and solar arrays primarily for the Scientific and the Human Spaceflight Directorates, but also for external customers. One of the latter was a novel test on the hydraulic shaker (HYDRA) in which Airbus 380 cargo containers were subjected to transient landing vibrations.

Upgrading of the force measurement device and the mass-property measurement facility was initiated for first use by the Herschel project. The replacement/updating of ageing equipment will be further pursued over the

The Automated Transfer Vehicle (ATV) in the new 'Maxwell' EMC chamber at ESTEC



The GOCE structural model on the Multishaker in the ESTEC Test Centre



The carbon-fibre-reinforced reflector for ESA's Planck spacecraft under test at the Centre Spatial de Liège (CSL)

### Electrical Engineering Laboratories

The first version of the Galileo Signal Validation Facility (GSVF) was delivered to the European Navigation Laboratory. This unique facility can simulate in real-time the Galileo constellation signal-in-space, the propagation impairments, an advanced, multi-channel, multi-carrier receiver, and the navigation processing unit. It is currently being configured to support the most recent Galileo signal-in-space specifications.

coming years in order to continue offering the best possible service to the ESTEC Test Centre's customers.

### European Coordinated Test Centres

ESA-related activities at the coordinated test centres included tests at Intespace (F) on the first and second flight models of MetOp. A large number of subsystem tests were performed at IABG (D) for ESA projects, including Planck, Herschel, Venus Express, ATV, MetOp and GOCE. Tests performed at CSL (B) included cryogenic vibration tests for the Herschel experiments, and a thermal-vacuum test on the Planck qualification-model reflector at cryogenic temperatures.

### Mechanical Engineering Laboratories

Laboratory Accreditation to ISO/IEC 17025 by the Dutch RvA has been awarded to the Optics Mechanical Systems, Life Sciences Instrumentation, Propulsion, and Metrology Laboratories. This accreditation adds value in terms of system quality and technical authority at international level and extends the ISO 9001 certification already issued for the Propulsion Laboratory, the Automation and Robotics Laboratory, and the Engineering Services of the Mechanical Engineering Department.

The integration and optical alignment of the qualification model of the COROT baffle took place in the Metrology Laboratory.



The winning entry in the ESTEC No-smoking Poster competition, an intriguing interpretation of the ESTEC Site map by Ms Kaisa Hyryla, chosen by a jury led by the Technical Director Mr Michel Courtois and including the ESTEC Medical Officer Dr Elisabeth Kubbinga

### The Establishment

ESTEC welcomed a record 64000 visitors in 2004 as part of an ongoing trend, which was also influenced by the Dutch Presidency of the EU in the second half of the year. In addition to 76 conferences and major meetings, the Establishment also hosted visits from a number of World figures, including the King of Belgium and the Russian and Chinese Prime Ministers.

The continuing drive to consolidate ESTEC's security situation proved its worth during all of these events, and the year also saw the commencement of major works to upgrade control of access to the site, with the first phase due to be completed by mid-2005.

The main change to the ESTEC architectural landscape was the completion of a new office block adjacent to the Erasmus building. The new 'T Building', constructed in just six months

using advanced modular techniques and state-of-the-art methods to minimise life-cycle costs, has also proved to be

highly popular with its occupants. It has not only allowed all HME Directorate team members to be brought together, but it has also provided an impulse in the drive towards modern, high-standard accommodation for all those on site.

Work has continued on the design of a major new office and laboratory building; construction will begin in mid-2005 and will represent the next major step in the programme to eliminate asbestos on the site, which is due to be completed by the end of 2007. The year saw work in many other areas of the site as part of that programme.

ESTEC also moved progressively towards the goal of being a non-smoking work area by 1 January 2005. To back the effort, a large number of highly innovative posters were designed by staff members and their families.