Vlaamse Ruimtevaart Industriëlen
Flemish Space Companies

NEWSLETTER

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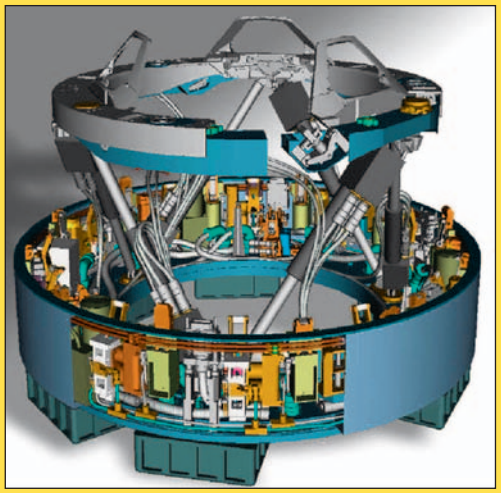

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IN THIS EDITION

EDITORIAL

2005 will be another crucial year for the Flemish Space Companies , not only because of the celebration of 10 years FSC. We want to celebrate this second fifth anniversary in an appropriate manner and we want especially bring the strong growth of our sector under the attention of the broad public and the policy makers. Our sector no longer resembles in any way to the one existing 10 years ago. But nor that celebration, nor the retrospection will turn 2005 into such an important year: 2005 will be another year in which ESA wants to have its long-term programmes approved on a ministerial conference to be held end of this year. During this conference decisions regarding an important part of the turn over and of the strategic support for the Flemish companies will be made. Therefore FSC has already started to prepare a coordinated position to be presented to the competent governments. FSC has built up experience in this exercise and its input is highly appreciated. We were also able to prove that the investment made in the technology development in the space sector, has a direct impact on the added value and employment created by our companies. This increase should continue and we therefore ask the governments to take the strategic choices of the Flemish companies into account. We are not fully comfortable about that. Our strategy, elaborated with the Belgian government, departs from an investment in technology development giving companies the opportunity to develop technologically advanced niche products and services.

We notice that ESA is no longer committed to this strategy. The tendency to focus only on large projects, will make it impossible for the Flemish companies to continue their successful strategy. This will be the main item in our position and we are convinced that the Belgian delegation at ESA will support us. The most convincing arguments for this strategy will be the results that we will demonstrate at the celebration of 10 years Flemish Space Companies in June. But as often happens with crucial years, 2005 will be a year in which we will have to work very hard to have our voice heard in Belgium and in ESA. But the stakes are very high.

Hans Bracquené

ESA orders Galileo receivers from Septentrio

ESA has awarded a contract for the next phase of the development of the Galileo Test User Receivers to a consortium led by Septentrio, a leading European designer and manufacturer of satellite navigation receivers. The consortium, which is composed of Septentrio, QinetiQ, Delft University of Technology, Ursa Minor, OMP, Deimos and SkySoft, will continue the development of the Galileo Test User Receivers for the In-orbit Validation Phase of the Galileo system, after the successful completion of the previous phase, which included delivery of the world's first compliant Galileo receivers to ESA last summer.

After the kick-off of the development of the first 4 Galileo satellites and part of the ground segment by Galileo Industries, this new contract provides the basis for the continued development of Galileo Test User Receivers, which play a crucial role in the end-to-end evaluation and performance validation of the Galileo system. The Galileo Test User Receivers will support the different services provided with the Galileo system and can be configured to evaluate a large range of different user applications.

"The Galileo Receivers delivered by the team led by Septentrio in 2004, have demonstrated the feasibility of receiving all Galileo signal components and their related performance. These receivers proved to be invaluable as an independent pre-launch end-to-end validation tool for the development of the first two test satellites, for which a first launch is currently expected by end-2005" says Martin Hollreiser, Galileo Test User and Ground Receiver Manager of the Galileo Project Office at ESA. "Under the new contract, the team will extend this important work to the rest of the In-Orbit Validation phase within ESA's stringent technical, budgetary and schedule requirements." Peter Grognard, Managing Director of Septentrio remarks: "Not only does the development of the User Receivers play an important role in the realization of the Galileo program, the early availability of receivers is also vital to a successful launch on the market of Galileo services. Septentrio and the team are proud to continue pioneering this technology, and to play a role in this exciting and ambitious European project."

Galileo is Europe's global navigation satellite system, which will provide a wide range of user positioning services with well-defined guarantees of quality and continuity. Galileo will be compatible with existing systems such as GPS and EGNOS, and is expected to be fully operational before the end of this decade with a constellation of 30 satellites.

Septentrio Satellite Navigation NV designs, manufactures, markets, and supports high-end dualfrequency OEM GPS/GNSS receivers for demanding professional navigation, positioning and timing applications. For more information, please visit our website at www.septentrio.com

IBDM – International Berthing & Docking Mechanism

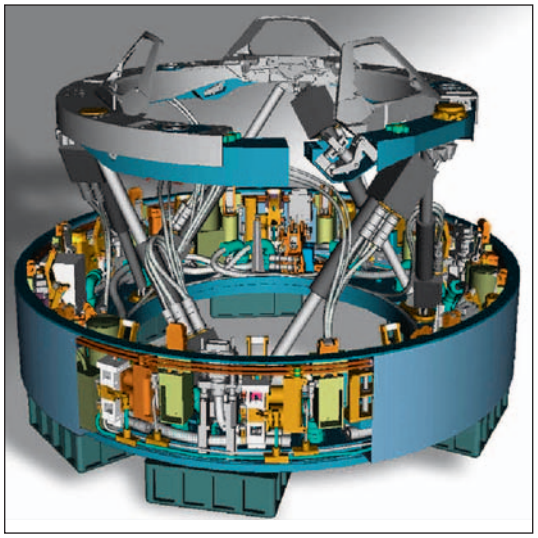
VERHAERT

IBDM is a docking-berthing system of which the development initially started under an ESA-NASA cooperation in the frame of the CRV (Crew Return Vehicle) program. In the meantime, the CRV program has been cancelled but it is clear that the system can be used on other vehicles which will be developed for transportation purposes to the ISS (e.g. CEV, CARV, ATV, ...) and as a crucial component to allow future exploration and sample return missions (moon, mars). At ESA, there is a strong interest to further development of IBDM within Europe as the international standard for crew and cargo transfer applications.

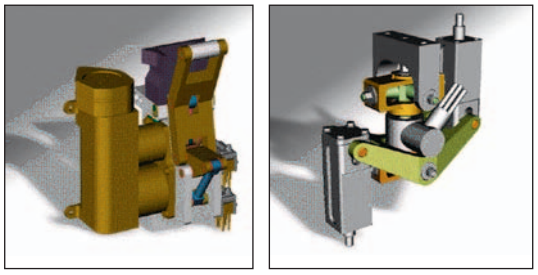
IBDM is a unique system since it has an actively controlled "soft-docking" function, important when docking to the ISS in order to not disturb e.g. running microgravity experiments. The soft-docking function is realised by a 6-DOF platform, which fulfils the alignment and damping functions of the relative motion between the ISS and vehicle. Besides the docking function (2 free-flying spacecraft), the system can foresee as well in a berthing function (vehicles at zero speed relative to each other, e.g. when ISS robotic arm is used). Furthermore, the system is of the androgynous type to simplify the interfacing.

In the meantime, Verhaert has built up a vast experience by the conceptual development and bread boarding of the IBDM system and thanks to the support to the Belgian Federal Science Policy Office, we can further establish our role as Small Systems Integrator. We also want to cooperate with European partners for the development of subsystems and components, as for instance an automatic Rendezvous & Docking function without GPS.

Today, Verhaert is building the breadboard to test critical elements such as the load ring, the locking device and the heavy loaded gearboxes. The coming years, the completion of the full breadboard is planned and the preparation of an in-orbit



IBDM Concept



IBDM Latching System Elements

Rendezvous and Docking demonstration mission. This mission, where two small satellites will be used, will facilitate the in-orbit validation of the IBDM functionalities, before entering the IBDM flight unit production phase.

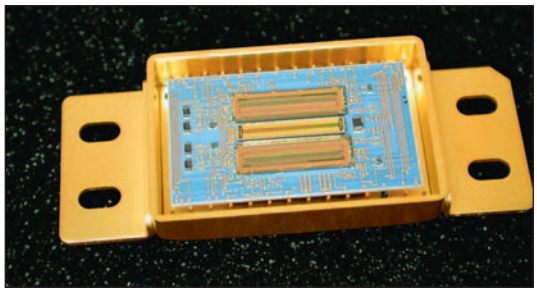
Furthermore, we are involved in large system studies (ATV evolution, CARV) for the IBDM related aspects.

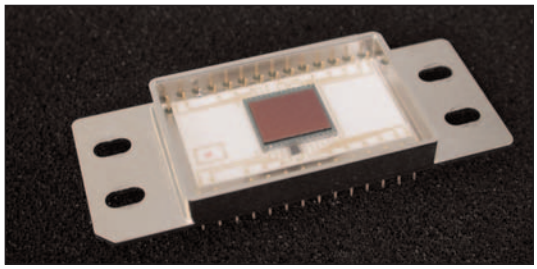
XenICs

XenICs

XenICs develops and commercializes infrared sensors and camera systems for spectroscopy, smart sensing and non-contact temperature measurement applications. The XenICs products cover linear as well as two-dimensional sensor arrays for the infrared wavelength range from 1 up to 14 micrometer. XenICs also delivers custom products according to a specification and planning.

XenICs currently offers products in the near-infrared markets covering wavelength ranges from 1 up to 2,5 µm based on its own InGaAs technology. XenICs also offers InSb cameras





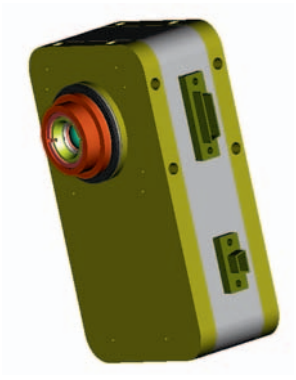
operating in the 3 to 5 µm wavelength range based on InSb engines from international suppliers.
Focal plane and linear InGaAS array sensors are designed and developed by XenICs for use in space. XenICs has delivered linear InGaAs sensors, with 512 pixels, to CONECS in Ukraine for the development of a remote sensing imaging spectrometer for a mini satellite to be launched by YUZHNOYE.
Together with FOS&S, a Belgian company specialized in fibre optic sensing systems, XenICs is involved in the development of fibre optic sensors, based on fibre Bragg grating technology, for space applications and for use in the Airbus A380.
The development project for the Airbus A380, headed by XenICs as prime contractor, concerns the integration of fibre optic sensors for temperature and strain measurements in thermo plastic composite structures of the Airbus A380.

XenICs is developing the interrogation equipment for the fibre optic sensors on basis of their fast response InGaAs sensors.
The fibre optic sensors and the interrogation equipment together will constitute a structural health monitoring system for aircrafts, spacecrafts and satellites.

New VMC camera developments at OIP

OIP Sensor Systems

Example of a VMC camera developed for space applications.



Example of "flat" type VMC camera developed in cooperation with IMEC/Fillfactory.
The dimensions of the camera are 108 x 68 x 79 mm.

OIP Sensor Systems have a large experience directly related to the development of small modular cameras for space applications based on CMOS sensors developed by FillFactory. The "Visual Monitoring Cameras" (VMC) are developed (mostly) under ESA contract and are used for observing the deployment of mechanisms such as solar panels and antennas on board of a satellite and/or spacecraft. The cameras are also very suitable for monitoring the separation phases of satellites, landers, etc from their spacecraft, by taking a sequence of images. Numerous VMC cameras have been successfully launched with the XMM satellite, CLUSTER II, PROBA 1, ARIANE V and the MARS-EXPRESS mission.

The VMC cameras on-board the XMM satellite, CLUSTER II and the MARS-EXPRESS spacecraft are based on the FUGA and/or IRIS CMOS sensor. The dimensions of these cameras are small, i.e. 108 x 60 x 60 mm², and the weight is 430 grams. The camera objectives have a Field Of View (FOV) of 29° x 29°, a focal length of 12,2 mm and are designed to obtain sharp images at object distances between 3 m and infinity.

Following the successful VMC camera developments, OIP set the goal to apply the VMC cameras on the next generation of space missions (ESA, etc). Meanwhile, the development of the cameras is being upgraded (flexible design, which allows for easy modification conform the mission's requirements), to make them even more compact by means of implementation of the latest sensor developments by FillFactory. This evolution process resulted in the development of "flat" type VMC cameras for IMEC and cameras on-board of the HERSCHEL-PLANCK mission (to be launched 2007).

- In cooperation with IMEC, OIP developed a "flat" type cameras, as an alternative for the existing "box" type VMC camera. The camera, based on the IRIS3 sensors of IMEC/FillFactory, is equipped with a camera objective with a focal length of 12,1 mm and a FOV of 40° x 31°. The dimensions of the camera are 108 x 68 x 79 mm², and the weight is 560 grams.

- The new VMC cameras for the HERSCHEL-PLANCK mission are based on the STAR1000 CMOS sensors developed by FillFactory and have the ability to capture/store 15 images. The camera objective has a focal length of 6,65 mm and the FOV is 60° x 60° square. The dimensions of the camera are 108 x 97 x 97 mm², and the weight is 560 grams.