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Vlaamse Ruimtevaartindustrie
VRI Flemish Space Industries

NEWSLETTER

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EDITORIAL

VRI is preparing a new paper giving an overview of the global space market. In 2000 VRI published a similar study for the first time and it was decided to make an update. The gathering of all the different figures and the feedback of the results of this research to the situation in Flanders was quite a challenge. But the first tendencies are clear.

It will not surprise anyone that the past 5 years were difficult years for the space market. The commercial space market did not escape from the global economical weakness, headed by the companies in the high technological field.
Nevertheless, a recovery in the last two years is apparent. This recovery is partly a catching up: the amount of manufactured satellites, the first indicator, is again at a high level but includes some projects that were postponed earlier.

To VRI it has been clear for a long time that the future of the space market lies in space based services. These services (telecommunication, earth observation and navigation) will grow enormously in the next years. Whereas satellite manufacturing tends to follow this growth, the global revenue and added value within the field of launchers seem to stagnate. Nor can we ignore the important evolution of the consumer market, some of these evolutions being very surprising and unknown.
For instance, during the most recent VRI seminar it became clear that space travel is no longer science fiction and that large investments are done in the United States. Another example: in the United States over 14 million subscribers use direct satellite radio. This is about half of the number of iPods on the American market!

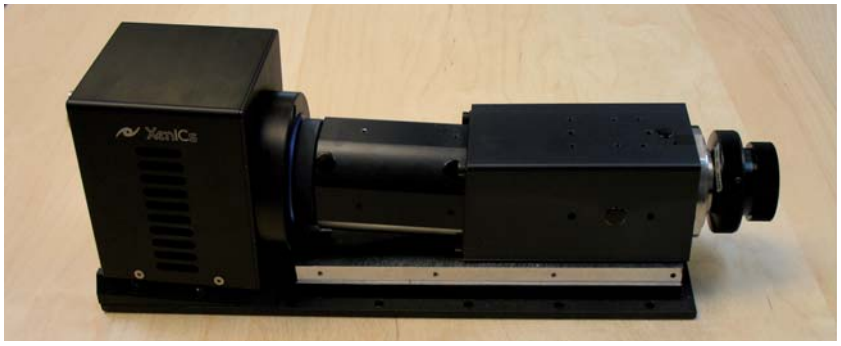
All this indicates that the evolution of space continues and enters fields, which could not be foreseen five years ago. To these market challenges the VRI members want to give an answer. ■

Dirk Breynaert,
President

XENICS DEVELOPS INFRARED CAMERAS FOR SPACE

XEVA-FPA-1.7-320-camera.

XenICs, a Belgian firmn located in Leuven, develops more and more infrared detectors and cameras for space applications. That is the case for NAS and NRL in the US and the York University in Toronto Canada, who apply the latest developments of XenICs in the field of infrared cameras.
The York University in Toronto uses a XenICs camera in the development of a "Spatial Heterodyne Spectrometer" (SHS) to measure the amount of water vapour in the Earth's upper atmosphere.
The XEVA-FPA-1.7-320-camera is the basis of the SHS instrument. This camera is equipped with a thermo-electrical cooled InGaAs detector with 320 x 256 pixels and a cut-off wavelength at 1.7µm.
The ultimate goal is the development of a compact, satellite-based instrument that would view the Earth's limb (the edge of the earth as seen from space) and measure water-vapour concentrations from 15 km altitude to 80 km altitude.
The SHS instrument consists of a beamsplitter and two gratings, similar to the gratings found in standard spectrometers.
Instead of using a single grating to produce a spectrum on a detector, the SHS instrument uses two gratings. The interference pattern, produced when the two beams are recombined, is imaged on a XenICs detector.
No slit is required in this configuration. As a result the amount of light collected on the detector is much higher than in a standard grating spectrometer with only one grating.
Because of their high sensitivity in the near infrared wavelength range, from 0.9 µm to 1.7 µm, the XenICs InGaAs cameras are very appropriate to measure absorption lines of water. The detector of the XEVA-FPA-1.7-320-camera reaches the highest sensitivity around 1.5 µm. As a result the SHS instrument is able to produce a strong signal of the absorption of water at the wavelength of 1.364 µm.
Also NASA uses a XenICs camera in the development of a spectrometer for research in space. ■



Example of a spectrometer built with a XEVA-FPA-1.7-320-camera.

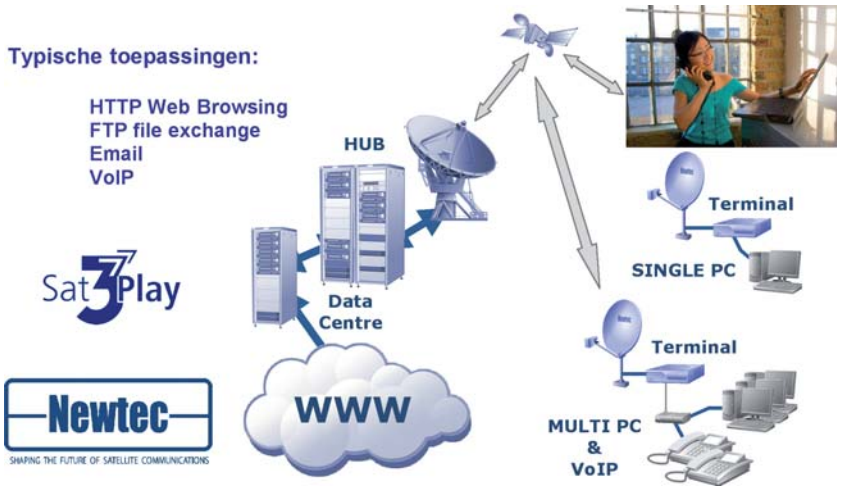
NEWTEC SUCCESSFUL IN BRINGING LOW COST TRIPLEPLAY EQUIPMENT TO THE MARKET

SHAPING THE FUTURE OF SATELLITE COMMUNICATIONS

allowing Internet Service Providers to enter the consumer market using only broadband satellite communications

Based on its dedication to sustain its product leadership in the field of satellite ground segment equipment, Newtec has been successful in launching a new product line allowing service providers to enter new market segments which previously were thought to be out of reach. Although operators such as ISPs, had been using VSAT technology to cover region deprived from terrestrial infrastructure to offer high-end IP broadband services, the cost of the end-user equipment was up to now always considered to be a heavy stumbling block. Through a unique combination of its existing low-cost state-of-the-art interactive television technology and its extensive experience in broadband VSAT platforms, Newtec was able to develop affordable end-user equipment for true DSL-like TriplePlay services using two-way satellite communications: Sat3Play. Through the drastic reduction of the equipment cost and increase in space segment efficiency using DVB-S2, service providers can now be successful in entering the consumer market at price points comparable with terrestrial DSL service offerings.

In its most basic configuration, the Newtec Sat3Play system provides the means to establish an "always-on" two-way connectivity between the end-user and the Internet or a private network, therefore remaining completely independent from existing terrestrial networks. The outdoor equipment of the end-user terminal consists of an interactive LNB (iLNB)



mounted on a 75cm antenna. The iLNB is the integration of a standard LNB and a low-power, small-size 0,5 Watt transmitter. Indoors, a small-size Sat3Play DVB-S2 Indoor Unit connects to the end-user's PC via a standard Ethernet port and to the outdoor satellite antenna via standard coaxial cables.

The Sat3Play terminal is also designed to support Voice over IP telephony, and can be used in conjunction with a standard DVB set-top box to receive radio, television and interactive television signals. In the latter case, the return channel of the interactive television system is easily implemented on the satellite return channel of the Sat3Pay system, independently from any terrestrial infrastructure. When the Sat3Play terminal is equipped with an additional standard LNB, the television signal can be received from another adjacent satellite.
Being a versatile IP broadband access technology, Sat3play is prone to support – next to pure Internet access services – a variety of other applications such VoIP telephony, Content on Demand, Digital Signage, IPTV, VPN Intranet services, or even SCADA applications. Next to other types of service providers in other regions of the world, Newtec can account for SES Astra, the leading provider of satellite services in Europe, to have bought a Sat3Play platform in order to launch its new satellite-based interactive and low-cost broadband internet access service into the residential and small office/home office (SoHo) market. ■

VERHAERT SPACE COMPLETED A NEW CONTROL UNIT FOR ITS SATELLITE FAMILY

VERHAERT SPACE
A QinetiQ Company

Early this year Verhaert Space in Kruibeke – Belgium – completed a new "Advanced Data & Power Management System", shortly called ADPMS, for the second Belgian satellite Proba-II, which will also be manufactured once again by Verhaert Space.

This advanced instrument is the heart of the satellite and is responsible for the control and housekeeping of the whole satellite and its sub-systems.

Verhaert Space gained a lot of experience with the Proba-I satellite, which is, since its launch in 2001, successfully used on a daily base by a large scientific users community all over the world. Based on that experience, this new advanced computer, which will give its first in-orbit demonstration on board of the Proba-II satellite, was developed. Proba-II will be launched later this year from Russia.
These developments form part of ESA's "small satellite" technology program, in which the Proba-family clearly demonstrates that small satellites are absolutely capable to realise an important scientific return for a significantly smaller budget and can be realised in a much shorter time than what is typically the case for 'large' satellites.
Thanks to this ESA program the maturity of small satellites and their usability for scientific purposes gets nowadays generally acknowledged.

The ADPMS-development ended with an extensive test campaign in order to provide the necessary proof to ESA that this new equipment is flight-worthy. During this test campaign the equipment was subject to extreme environmental conditions concerning temperature, vibrations and electro-magnetic radiation.
The immediate availability of this advanced satellite control unit gives Verhaert Space an important lead in the market of small, intelligent and autonomous satellites. And also allows thinking of new applications for small satellites, which were up to now unthinkable as there are: formation flying of different small satellites, or the processing and recognizing in an intelligent way of video images, captured in space, before sending them to earth.

For more information on this project you can contact Koen Puimège, Project Manager Verhaert Space, +32 3 250 14 14, koen.puimege@verhaert.com, www.verhaert.com ■

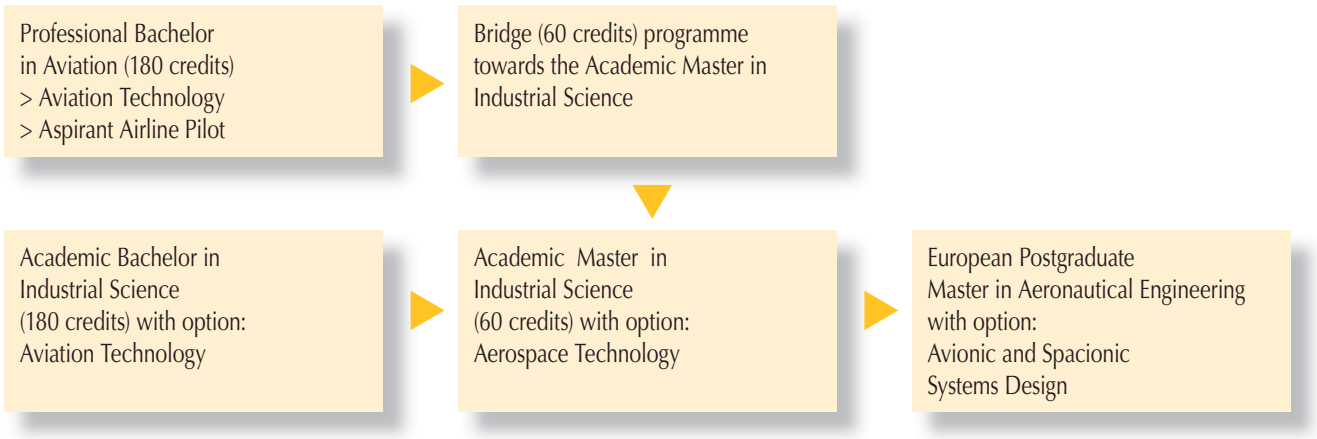
THE KHBO-AEROSPACE DEPARTMENT CAMPUS OOSTENDE

KATHOLIEKE HOGESCHOOL BRUGGE - OOSTENDE

1. Mission of the KHBO-Aerospace Department

The Aerospace Department of the KHBO-Faculty of Industrial Sciences and Technology is located at the Ostend Campus, close to the international airport Ostend-Bruges. It's goal is to offer a wide range of aerospace related professional and academic education programmes, matched to the needs of the national and European aerospace industry. The department offers to students and staff members the opportunities of a wide European-aerospace-exchange-network (mainly Socrates), including universities in Spain, France, United Kingdom, the Netherlands, Finland, Germany, Poland, Czech Republic, Slovak Republic and Italy. On the other hand, every year we offer to some ten aero-engineering students from abroad, an adapted one semester (30-credits) programme.

2. General Structure



3. Bachelor and Master Programmes

The professional bachelor in aviation programme (180 ECTS-credits) provides a common scientific and aviation technology oriented core of 90 credits, plus a choice between two degree-options, 90 credits each: aviation technology or aspirant air transport pilot. Both options are adapted to the EASA-European Civil Aviation Requirements (Part147/66 and FCL-ATPL(A)).

The academic bachelor and master programmes in industrial sciences offer possibilities to choose between specific avionics related or aircraft systems related course packages, including industrial training and project work.

Finally, KHBO and Université Bordeaux 1 are the main partners in the new European Postgraduate Master in Aeronautical Engineering (EPMA). This part-time modular coordinated by HAW-Hamburg (see: www.epma.aero). KHBO offers, as part of this EPMA-project, in close cooperation with the aerospace industry, a part-time modular postgraduate Avionics and Spacionics Design Engineer programme (ASDE), intended for high potential design engineers and project managers for the avionics and spacionics related industry. ASDE (30 credits) includes six modules: aerospace technology (8), air transport economics (4), avionic systems technology (4), spacionic systems design (4), unmanned aerial vehicles (4), aerospace project management (6). Most of these modules are organised in a short course format.

Aerospace course- and training activities are running in classrooms and labs of the Faculty of Industrial Sciences and Technology at the Ostend Campus or at the new Flanders Aerospace Training Centre (VLOC), located at the international airport of Ostend-Bruges. Our aerospace course- and lab-activities include also more and more Multimedia Computer Based Training and E-learning.

More information can be found on the web: www.khbo.be, or contact: Prof. Roland Defever, Head of the KHBO-Aerospace Department (roland.defever@khbo.be), Zeedijk 101, B-8400 Oostende. ■

Flanders Aerospace Training Centre (VLOC)