Since its creation VRI is claiming a fair share of the overall Belgian Federal space budget. At that moment less than 25% of this budget was spent in Flanders, a ridiculously low percentage. We were able to increase it, not merely by asking for subsidies but by ensuring that money was also spent on those international programmes that were addressing the specific strengths of the Flemish companies and research institutes. These have since proven to be able to compete globally and the share of Flanders has increased.

However, this trend has stopped in recent years.

In 1988 it was decided to keep the competence for international space programmes federal but this option can only be defended if the competent federal authority is willing to take into account the strengths of the Flemish industry. However, the recent figures indicate that a yearly deficit of tens of millions of Euros continues to exist and that it is increasing.

VRI therefore asks that the policy will be reoriented. During the preparation of the forthcoming ESA Ministerial Conference measures should be implemented to cope with this unacceptable situation. We know that the margins are minimal but decisions have been taken in recent years that were deteriorating this situation and these have to be counter-balanced. It should be underlined that these measures were fully opposed to government decisions.

As the space industry in Flanders has been able to achieve a turnover that represents three times Flemish share in the federal budget these decisions are also important for the whole Flemish economy.

Control mechanisms are required. We do not want to see the situation of the previous years that was only possible because of the lack of control mechanisms, extended.

VRI believes that the Federal Government can continue to be the valuable partner it has been but only if fair decisions are taken and implemented. At the Ministerial Conference and for bilateral co-operation programmes sufficient means for our competencies should be made available.

That is all we are asking for.

Hans Bracquené
THE ENERGETIC PARTICLE TELESCOPE (EPT) INSTRUMENT

The Energetic Particle Telescope (EPT) instrument is a highly innovative science class radiation spectrometer designed to detect, directly identify and measure the energy of electrons, protons, alpha-particles and heavier ions in the space environment. As such EPT is a solution to inaccuracies in radiation flux data and to space weather data availability. The EPT project is managed by QinetiQ Space N.V. for the European Space Agency in cooperation with the Center For Space Radiations from UCL in Louvain-la-Neuve, owner of the EPT concept intellectual property rights, the Belgian Institute for Space Aeronomy in Brussels and the Aboa Space Research Oy in Finland. The first Flight Model (FM) of EPT shall fly on-board PROBA-V planned for launch beginning of 2013 after more than a decade of Research and Development.

The main technological advantages of EPT are:

- **Contamination-free energetic particle flux data measurement:** The EPT particle discrimination concept allows full discrimination at high energy without using a huge amount of sensor material.
- **Real-time flux measurement:** The EPT can provide real-time (ready for use) flux measurements needed for detailed space weather forecasting.

SCK•CEN WORKS FOR A BETTER UNDERSTANDING OF IMMUNE SYSTEM DYSREGULATION IN SPACE

Although space travel sounds fascinating, it is however not such an easy journey. Besides increased cosmic radiation levels and reduced gravity, other stress conditions including confinement, heavy workload, and disturbed patterns of sleeping and eating can affect the astronauts’ body. The biological effects induced by these extreme conditions are very complex and are not yet fully understood. Therefore, more research is definitely needed to gain more insight into these health effects especially in the context of long-term flights.

The Belgian Nuclear Research Centre, SCK•CEN plays an important role in space research, and among others, in the field of human biology. The Radiobiology Unit focuses on the effects of spaceflight conditions including cosmic radiation, weightlessness and long-term confinement. The main aim of the research is to get a more comprehensive understanding of the cellular and molecular changes induced by spaceflight. Since the number of real spaceflight experiments is limited and is often complex, SCK•CEN also performs earth-based research in which space flight conditions are simulated in vitro and in vivo. On the one hand, in vitro studies are performed in which different cell types are exposed to simulated space conditions such as microgravity and ionizing radiation. On the other hand, space analogues on Earth are used with volunteers to perform in vivo experiments. The particular involvement of SCK•CEN in in vivo space analogues is described hereunder.

Earth-based platforms can be useful to gain more insight into spaceflight-induced immune changes

One of the health effects of spaceflight is the weakening of the astronauts’ immune system. The reasons for these immune changes and the underlying mechanisms are still partly unknown, and require more research. In collaboration with the European Space Agency (ESA), SCK•CEN investigates immune changes in volunteers that are subjected to simulated space conditions. SCK•CEN is member of a multidisciplinary topical team which is supported by ESA and which deals with stress challenges and immunity in space. In the context of this scientific field, research is performed on 3 earth-based analogues including the Antarctic Concordia station, bed-rest studies, and the MARS 500 isolation facility.

The Concordia station in Antarctica is an example of an earth-based analogues to simulate space flight conditions. At Concordia, volunteers stay for prolonged periods isolated from the outside world. The station is located at a high altitude where lower levels of oxygen are present: 12-13 % instead of 20,9 % at sea level. This particular state of lower oxygen is called “hypoxia”. In addition, at Antarctic the earth magnetic field, which protects us from cosmic radiation, is weaker. These conditions (long-term confinement and increased radiation levels) are similar to what occurs within the International Space Station. Moreover, the presence of hypoxia can be useful also in the context of future manned explorations and habitats where lower levels of oxygen are anticipated to be advantageous to cope with technical and operational constraints, but also to mitigate to a certain degree the biological risk of radiation. To gain more insight whether staying at Concordia also induces changes in the immune system, SCK•CEN is currently analyzing blood samples obtained from volunteers that stayed for more than 300 days at Concordia. In the blood samples, concentrations of proteins involved in immune responses are measured. In addition, changes at the genetic and cellular levels of white blood cells (cells of the immune system that protects us against pathogens) are investigated. The obtained results can give more insight into immune changes that are observed in astronauts during spaceflight.

In France and Germany, bed-rest studies are performed as an analogue to mimic the effects of weightlessness in space. During long-term bed-rest, volunteers remain lying down in bed in the classical “tilt position,” with the feet raised slightly, and with their heads inclined at an angle of 6 degrees. This particular position induces physiological changes very similar to those encountered by astronauts during space flight including a shift in body fluid, loss of muscle mass, and bone resorption. Whether this particular position also induces changes in the immune system is currently under investigation at the Radiobiology Unit of SCK•CEN. Besides research into physiological changes, bed-rest studies can be useful as well to develop and test

Concordia station- credits: ESA
countermeasures preventing or decreasing the effects of weightlessness. In this context, specific exercises, medication or a specific diet are tested and compared.

The MARS-500 project simulates a manned flight to the red planet Mars. A multinational crew of 2 European, 1 Chinese and 3 Russian team members are currently isolated for 520 days in a bunker in Moscow. The main goal is to understand the psychological implications of long duration spaceflight. In addition, it helps in gathering data, knowledge and experience to help prepare for a real mission to Mars. The Radiobiology Unit of SCK•CEN is involved in the immunological monitoring of the team within the running CoSI (confinement, stress, and immunity) study thereby investigating the impact on the immune system of psychological stress due to isolation. (accompanying picture: MARS500 crew - credits: ESA/IBPM - Oleg Voloshin).

In conclusion, at term, such studies in which SCK•CEN is actively involved will help contributing in the determination of clinical risks associated with space conditions in human physiology, so that appropriate countermeasures may be developed prior to long-term space exploration.

Acknowledgements: SCK•CEN would like to thank the Belspo/ESA/Prodex program for the financial support of these studies as well as Dr. Alexander Choukèr (Munich, Germany), coordinator of the ESA topical team “Stress challenges and Immunity in Space”, and responsible for the three European running space analogue studies.

More info: www.sckcen.be
Contact: info@sckcen.be
Dr Marjan Moreels: mmoreels@sckcen.be and Prof. Sarah Baatout: sbaatout@sckcen.be

SEPTENTRIO AND QINETIQ
PARTNERSHIP DELIVERS FIRST GALILEO PRS SIGNAL RECEPTION

Leuven, Belgium – Another major milestone in the Galileo European Navigation Satellite System’s development and deployment program has been achieved. Septentrio and QinetiQ, working in close partnership with the European Space Agency (ESA) and their industrial partners, achieved the world’s first successful reception of the encrypted Galileo Public Regulated Service (PRS) signal from the first Galileo satellites (launched in November 2011).

The signal was received on the Galileo PRS Test User Receiver (PRS-TUR) jointly developed by Septentrio and QinetiQ under an ESA contract. For the reception test, the receiver was installed in the Galileo Control Centre in Fucino, Italy and operated by technical experts from ESA. This milestone builds on a number of previous major Septentrio/QinetiQ achievements including:

- First ever laboratory demonstration of the PRS signal acquisition and tracking in QinetiQ (Malvern, UK, 2006)
- Successful RF compatibility test between a Galileo payload and the PRS-TUR (Portsmouth, UK, 2010)
- Successful Galileo end-to-end system test including the Galileo Ground Mission Segment (GMS) and its key management facilities, satellite and PRS-TUR (Rome, Italy, 2011)

Septentrio and QinetiQ are proud to be a key, long-term contributor to the Galileo Programme, working closely with ESA, the European GNSS Agency (GSA) and European industrial partners since 2003.

Peter Grognard, Founder and CEO of Septentrio Satellite Navigation, said: “Septentrio is extremely proud of this historic milestone for the Galileo programme. This is the most important milestone for Septentrio since the reception of the world’s first Galileo signal from space on January 12, 2006 with a Septentrio receiver. We are honoured and grateful for the excellent collaboration with ESA. Septentrio is marking another industry-first on the Galileo programme, and will continue playing a key role in this exciting and ambitious European project. Today, together with our partners, we take a decisive step in the early availability of commercial PRS receivers to foster user acceptance and market success of this Galileo service.”

Leo Quinn, CEO of QinetiQ, said: “I am very proud of the part QinetiQ is playing in the Galileo programme. Working closely with ESA and our industrial partners, we are delighted to have been able to deliver real value to the programme as seen by today’s milestone success. This achievement, together with Europe’s recent commitment to a full Galileo constellation, has been a necessary step in giving European industry confidence to start investing in developing commercial PRS receiver products ready for the launch of Galileo navigation services in a few years time.”

MARS500 crew – credits: ESA/IBMP – Oleg Voloshin

Bedrest - credits: ESA
NEWTEC’S YEAR IN REVIEW 2011

This year has been a particularly successful one for the satellite industry... Whilst the global markets in 2011 have been steady but lack lustre in many regions, they have been particularly strong in rapidly developing parts of the world. The satellite industry has been buoyant with connectivity, increasing TV transmissions, IP broadband traffic, a growing requirement for mobile backhaul and also implementation of technological innovations such as Ka-band pushing it forward.

In a recent paper by international telecom market research and consulting firm NSR, analysts predict that 1,600 satellites will be launched in the next 15 years. This will likely be worth $250 billion to the satellite industry over the same time period. With the future outlook for the industry being particularly bright, Newtec has been planning and implementing new strategies in 2011 to align itself and reap the potential rewards. Innovations this year, major contract wins and the decision to improve the way Newtec works with its partners, have assured 2011 has its place in the record books as one of the most transformational in the company’s 26-year history.

Enhanced Partner-Driven Era

In 2011 Newtec unveiled a new strategy that will ensure partners can access the company’s comprehensive and unique range of products quickly and easily across the globe. After a successful unveiling of the new bePART® Business Programme in Asia in June, Newtec launched it globally at IBC 2011 show in September. In the past Newtec had sold its products to end-users directly or through business partners, depending on the region or the specific relationship with the end-user. Today, Newtec’s strategic goal is to fulfil more of its business through key partnerships that will bring added value to end-users locally and reinforce the Newtec brand and sales strengths.

Focus on Key Vertical Markets

Newtec has also set a clear ambition to strengthen its focus onto key vertical markets. The company’s core focus is towards key vertical markets. The company’s core focus is towards Asia bringing more than 25 years’ experience previously working for British Telecom, Inmarsat and Astrosat... Newtec has also expanded its operation in the Europe*Star.

In addition to joining APSCC, Newtec’s team in Asia has also undergone reorganisation and expansion. Anwer Anderson joined as Senior VP for Asia bringing more than 25 years’ experience in the telecommunications and satellite sector, previously working for British Telecom, Inmarsat and Europe*Star.

Newtec has also expanded its operation in the rapidly growing Latin American market. Senior staff additions at the regional headquarters in São Paulo have taken place alongside the roll-out of the new partner-driven business programme bePART® in Brazil and a number of neighbouring countries. According to Bart Van Utterbeeck, Sales Director for Latin America, the regional market for satellite infrastructure is booming. A number of factors are at work, including strong economic growth, the desire to close the ‘digital divide’, and satellite technology advantages when addressing the challenges posed by Latin America’s various terrains and vast expanses.

Successful Partners and Booming Customer Satisfaction

Newtec’s existing partners and customers have also shared some outstanding success stories during 2011. A completed morale, welfare and recreation project in Afghanistan has connected 40,000 with the family and friends back home. There have been efficiency savings on Sky Italia’s DTH platforms, and Red Bull Media House upgrades have been successfully implemented. These are among the many reports that are coming in with other customers including Al Jazeera and Congolese service provider Microcom also confirming successful installations.

In fact Newtec has recently completed its yearly customer satisfaction survey that has outlined how the company further strengthened its customer satisfaction level. As of 2009 and as part of the ISO process Customer Satisfaction Management, Newtec is annually checking its customer satisfaction.

In this context, the overall satisfaction has been very impressive. In 2011 a very significant and positive shift can be noted with a move from “satisfied” to “extremely satisfied”. To dive into details, this is especially true regarding performance and the price/performance ratio, and where the improvement has been very significant. The satisfaction ratio of the sales team also jumped significantly reaching an overall level of “extremely satisfied”. Ordering, delivery, support and marketing communications also passed the “very satisfied” mark. The most positive quantitative result overall though is in Newtec’s competitive positioning which has skyrocketed in terms of product quality and features, technical support and industry leadership. These results really sum up what has been an extremely strong 2011.

Carrier Interference Campaign

In 2011 Newtec has given its unreserved support for the standardisation and adoption of industry-wide counter-measures to combat interference. Interference of satellite carriers is a growing problem in the industry for users of satellite transmissions. There is an industry consensus that counter-measures should utilise the addition of carrier identification to enable the quick location and correction of misconfigured or unauthorised carriers.

DVB has accepted the topic of Carrier ID as a work item and Van Herck believes a solution is necessary. “Whilst an intermediate solution is necessary, we need to look to the longer term. We welcome increasing industry-led momentum to find solutions to these threats. Newtec is very supportive of and active in industry-wide initiatives and efforts to counter and reduce the impact of carrier interference.”

Serge Van Herck, CEO of Newtec, is convinced that Ka-band will play a major role in the future of satellite. Van Herck said: “The future of consumer broadband services over satellite is Ka-band. This is simply because the total capacity offered by other commercial frequency bands cannot possibly cope with new demands. ASTRAC2Connect’s download speed and volume has increased over the years and the new Sat3Play Ka-band terminals will enable a further expansion to its offering.”
“End-user dissatisfaction is unacceptable and so we are pleased to see so many stakeholders in the satcom industry working together. It is vital though that we choose the right solutions that will serve us all well in the years to come.”

What Next for 2012?
The year 2011 has been a very successful one for Newtec in which it has won major contracts and aligned itself successfully with a buoyant industry.

In 2012 Newtec will increase its efforts across the globe but in particular, in Africa and Russia where market penetration will be boosted as new excellent partners combine with innovative new solutions and products.

Now and in the future Newtec is committed to its position in the market as an independent technology provider of choice. Its core belief is to help customers and partners to succeed through innovation and cutting edge technology. With a fine-tuned strategy there is every confidence that 2012 can be equally as successful.

Serge Van Herck, CEO of Newtec
Serge Van Herck holds an electrical engineering degree from the University of Ghent and a MBA degree from the Vlerick Leuven Gent Management School in Belgium.
He has over 17 years of experience in the satellite telecommunications industry. He worked seven years as Head of Satellite Services at Belgacom and was a member of the Eutelsat Board of Signatories until 2001. Before joining Newtec in 2003 he served for two years as Senior Manager in the Communications and High Tech practice of Accenture in Brussels. In 2003 he became Newtec’s Director Business Development for Asia and General Manager of Skyware, a former subsidiary of Newtec in Germany. He was appointed CEO of Newtec on March 1st 2006.
In 2008 he joined the WTA (World Teleport Association) and ESOA (the European Satellite Operator Association) as board member. He currently also serves as a board member at VOKA (Flanders’ Chamber of Commerce and Industry) and Agoria (Belgium’s largest employers’ organisation and trade association).