

2006 has been a year of change for SCK•CEN. Change in a sad way and change in a more profound manner.

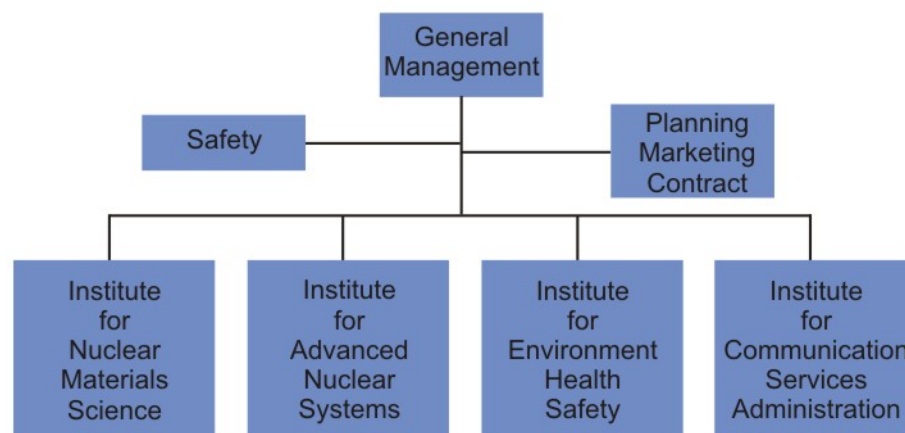
We experienced changes in a sad way because Professor Paul Govaerts, our General Manager for 11 years, passed away on January 25, 2006 after being ill for some time. Paul Govaerts not only stood for stability and broadening of SCK•CEN activities, above all he had a warm personality with an endless devotion to the well-being of our Centre and an open ear for all its members.

Change in a more profound manner because SCK•CEN was confronted with serious financial difficulties in June 2006. With the support of our Minister and his cabinet, the management and the board were able to secure extra income for the coming years with the condition to implement reorganisation plans for SCK•CEN. This reorganisation effort was already well prepared early 2006 and was consequently executed in the fall of 2006. For this reason, the content of this annual report partly follows the former SCK•CEN structure, although we feel the need to introduce the new organisation here.

The aim of the reorganisation is to prepare the centre for its future tasks in an enlarged Europe and to increase its efficiency and striking power. The 'new' SCK•CEN counts 4 institutes as seen from the figure below. Three of them are scientifically oriented and the fourth one handles essentially logistic, including knowledge related matters. The names of the institutes reflect what they stand for:

- the Institute for 'Nuclear Materials Science' (NMS) concentrates its activities on the evaluation of materials used in nuclear applications;
- the Institute for 'Advanced Nuclear Systems' (ANS) uses the information on materials as a support to study and realise engineering capabilities in the field of new (research) reactor systems;
- the Institute for 'Environment, Health and Safety' (EHS) mostly concentrates on the back-end of the fuel cycle and on the possible consequences of nuclear energy for mankind and its environment, and
- the Institute for 'Communication, Services and Administration' (CSA) has, besides the impressive administrative and human resources task the important mission of handling all communication, training and ICT (Information and Communication Technology).

A special business unit incorporates all legal, contractual, national and international marketing, quality assurance and planning activities as well as the control of budgets and scientific deliverables. The overall safety and security implementation and follow-up for SCK•CEN is entrusted to the Internal Service for Prevention and Protection at Work (IDPBW/SIPPT).



The mission of the centre is condensed in one phrase: *'nuclear energy: research towards a sustainable option'* and the programmatic content will be focused in that direction.

Sustainability means persistent safety of present nuclear infrastructures, a continued long-term strategy towards nuclear waste issues, initiatives to support research for future nuclear systems – like fusion or GEN IV that sustain the security and efficiency of supply and demonstrate lifetime reduction of nuclear waste. Last but not least sustainability means the adequate protection of mankind, the public acceptance of nuclear energy, and the appreciation of its societal spin-offs, especially in the field of medical applications.

Already in 2006, SCK•CEN activities had all the ingredients to accomplish our task as will be shown in this annual report. What follows are a few highlights.

The NMS Institute has performed innovative qualification research for future proliferation-resistant Material Test Reactor fuel, proving that the combination of microscopic, chemical and spectroscopic studies provides a powerful tool for nuclear materials assessment. Moreover, the institute has successfully demonstrated the possibility of lifetime extension from 40 to 60 years for the ATUCHA-I nuclear power plant in Argentina. It has also supported ANS by co-developing the TWIN-ASTIR lead-bismuth irradiation experiment in BR2.

The ANS Institute was successful by introducing MYRRHA as the basis for the XT-ADS development in Europe and has secured European funds from IP-EUROTRANS to adapt the VENUS reactor carrying out the GUINEVERE project, the coupling of a 14 MeV neutron generator to a fast lead core in support of the MYRRHA project.

The ANS and NMS jointly completed the detailed design of the POSEIDON-installation as a pool-side facility for BR2 – a system that will allow irradiating up to 8" diameter silicon rods. Initial plans to increase the production and research on medical radio-isotopes at BR2 and in the chemical labs have been established. Moreover, BR2 was recognised with the EN ISO 9001 label for silicon irradiation and medical isotope production.

Within the European FP6 the NF-PRO project, sponsored at SCK•CEN by NIRAS/ONDRAF, looks at the chemical perturbation of the host rock characteristics during construction and operation of the underground waste repository. The EIG EURIDICE has together with SCK•CEN and NIRAS/ONDRAF investigated different options for the backfill material to be placed between the Super container and the geological disposal gallery in the ESDRED project, while the (FP4, FP5) CORALUS project investigates the corrosion of high-level radioactive waste glass in in-situ conditions. For 2007, the EIG EURIDICE prepares the excavation of the PRACLAY gallery.

Within EHS, the radiobiology group took further steps in their research towards gene expression analysis of developing organisms that were subjected to low irradiation doses and the MELISSA project secured its second space flight in September 2006. Collaborative efforts of various groups with the Belgian army led to the qualification of equipment for airborne gamma measurements that can be generally used in case of need for mapping of contaminated areas or in emergency situations. EHS also came in the national news for their low activity capability measurements on urine samples of people involved in the  $^{210}\text{Po}$  incident in the United Kingdom.

The PISA-effort at SCK•CEN links nuclear research to society. In 2006 we intensified the efforts to perform research on methodologies for long term governance of radioactive waste and we continued the investigation on the relation between nuclear energy and sustainable development.

SCK•CEN puts considerable effort in education, training and communication. These activities are concentrated within the CEK Expert Group (Communication, Education and Knowledge management) of the CSA-Institute. Education and training are essential to initiate and maintain high-level standards in any discipline but certainly in nuclear energy, its research and applications. Communication is considered to be an essential tool towards the internal and external world in order to gain trust from our stakeholders and the broader community and we need to excel in this discipline.

Last but not least, this annual report demonstrates the commitment of some 630 people who work towards a mission at SCK•CEN. A mission that envisages the safe use of nuclear energy in our society.