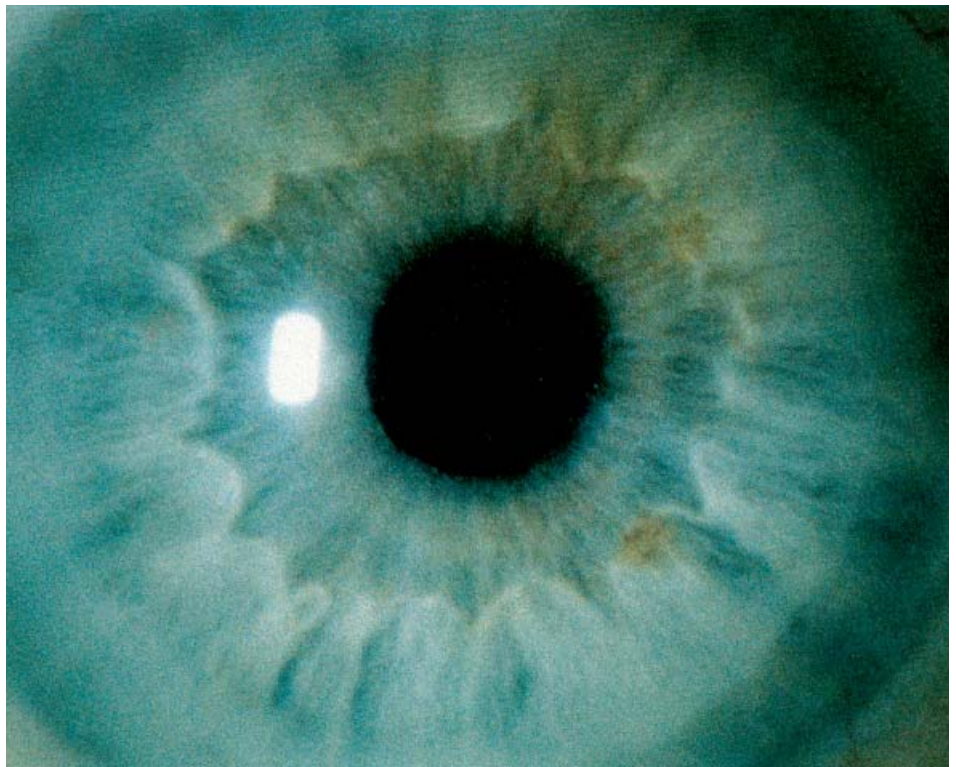


**Inhoud** ▶ Technology Foundation STW creates opportunities for innovation ▶ Various instruments ▶ STW is for both researchers... ▶ ... and potential users of the results ▶ Spiegheiling and Daet ▶ Company takes initiative: 'megamarket for application' ▶ Credits



Financing scientific research since 1981

## Technology Foundation STW creates opportunities for innovation

STW has been funding scientific research at Dutch universities and institutes since 1981. Its working methods bring together, right from the start, researchers and potential users of the results of that research. The 'users' provide input and also financial or other contributions to the project. The consultations during the projects, supervised by STW, ensure that the research groups and users get as much as possible out of these contacts.

This method leads to the birth of not only innovative networks, but it actually also

serves to increase the budget for scientific research. STW therefore creates opportunities for innovation in science, technology and society.

### Preparing the way for innovation

The construction of roads, medical facilities, improvements to software, the production of man-made materials, breeding vegetarian fish: the technological projects to which STW provides guidance and assistance are unlimited in their variety. Nevertheless, they do share some similarities: they are testament to a desire and potential to innovate, they demonstrate their

importance to society, and they are of great scientific quality.

STW works on the interface of science and society. It enables scientists to develop the technology of the future with the help of newly acquired knowledge, while offering businesses the opportunities to use or integrate technology in their new products. Companies participate in research projects in which they have an interest. In order to further promote technology, STW looks for, supports and mediates between the right mix of risk-taking and knowledge, and in the process creates opportunities for technology and society at large.

## Trendspotter

Thanks to its many years' experience and extensive portfolio of 500 different projects currently underway, STW is able to see where social demand and scientific supply can be best brought together. The Perspective Programmes that STW has been running since 2006 serve to bridge the gap between the need for social innovation, scientific trends and the areas of focus named by the Ministry of Economic Affairs and The Netherlands Organisation for Scientific Research (NWO).

## Various instruments

Technology Foundation STW funds excellent, utilisation oriented technology research at Dutch universities and selected institutions. Founded in 1981, STW receives its funding from the Ministry of Economic Affairs and the Ministry of Education, Culture and Science (through the Dutch Organisation for Scientific Research).

- Her decision making process for funding, and the type of support she provides for funded projects, ensure that potential 'users' are involved in the research from day one. These 'users' provide all sorts of valuable input. Thus, STW-supported research leads to optimum return on investment for all parties involved, and offers opportunities for innovation in science, technology and society.
- STW has been running its successful Open Technology Programme (OTP) for many years, within which all kinds of projects can win funding on a competitive basis. Entries can be submitted to the OTP at any time.
- In 1998, the annual Simon Stevin Meester Prize was inaugurated. Selected senior researchers, who have made their mark carrying out STW research, who actively seek out applications and who succeed in bringing and keeping groups together, are entitled to spend no less than half a million euros on one or more scientific research projects with an STW profile.
- In order to help bridge the funding gap that often exists between invention and the market, STW introduced the Valorisation Grant in 2004. Researchers may use funds from STW in two phases to make their inventions ready for the market and to set up and strengthen the organisation that is required to enter the market. The Valorisation Grant is a helping hand for those who need to be in a position to attract suppliers of capital.

- In order to encourage and preserve talent in science and technology, STW set up the Simon Stevin Gezel Prize in 2005. The 5000-euro award is for STW PhD candidates on STW projects who are nominated by their project managers because of their excellent performance in the field of science and application.
- Since 2006, STW has also been running Perspective Programmes, aimed at encouraging collaboration between the academic world and industry, where both scientific excellence and innovation are promoted in specific sectors of industry.
- STW also takes part in other programmes, such as the Innovational Research Incentives Scheme, the NWO Cognition programme, Sentinels, JACQUARD and PROGRESS, while supporting ICTRegie and a number of BSIK (Decree on Subsidies for Investments in Knowledge Infrastructure) projects, like NanoNed and the Dutch Programme for Tissue Engineering (DPTE).

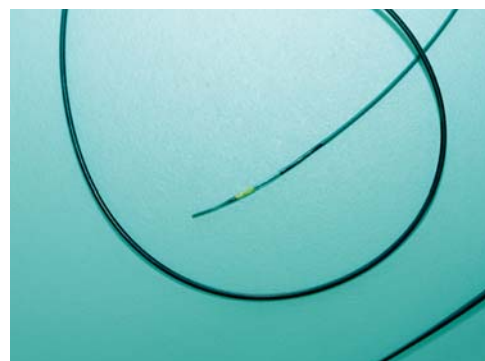
STW provides support in cases where scientists and users from the STW rank and file work to get research programmes up and running by forming preparatory platforms, for example.

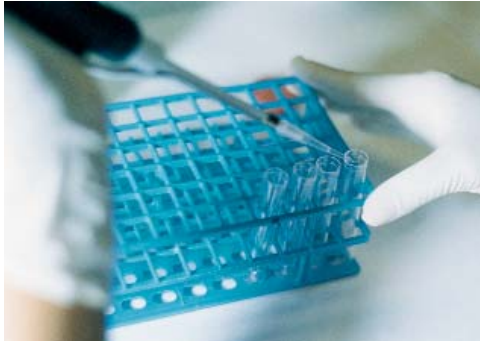
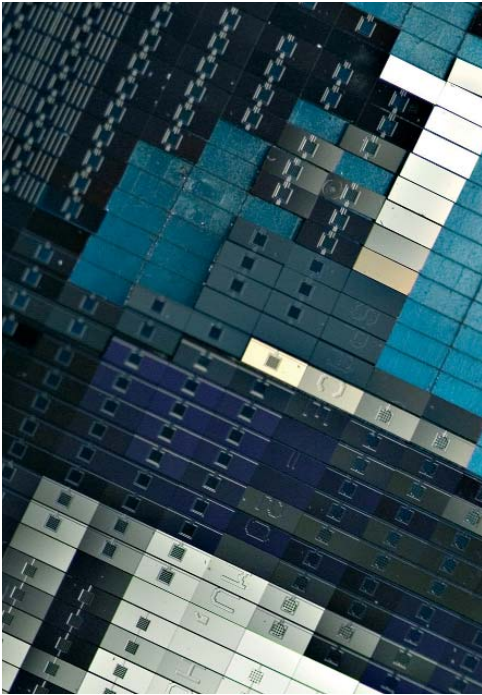
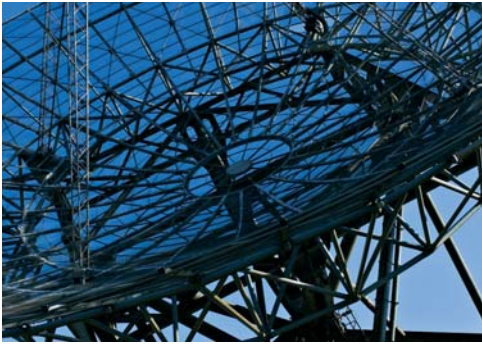


## STW is for both researchers ...

STW offers researchers financial and practical support for application-oriented research projects. Research proposals that are submitted to STW therefore contain the scientific proposition, the method for enacting the proposed solution, the timetable, the necessary personnel, and the equipment that is needed. They should also make clear who will be able to subsequently use the newly-acquired knowledge. This latter aspect should be made clear by the applicant by means of a utilisation section with the proposal, in which possible users of the results of the research are put forward as participants in the project.

Remuneration is always on a competition basis. Assessment procedures differ from programme to programme, and can thus be made by a programme committee, a lay jury or in some cases by the general public: for example, the Simon Stevin Gezel Prize is chosen from a shortlist of three excellent candidates who have recently gained their PhDs.





A user committee is formed by STW for every funded project. The committee consists of the researchers and potential users of the results who are not part of the research group. The 'users' provide input, as well as financial or other contributions to the project. The consultations organised by STW during the course of the projects ensure that the research groups and users get the most out of their activities.

Wherever possible, STW looks for areas of collaboration to achieve successful valorisation, such as with university Technology Transfer Offices (TTOs). The clear IP policies of STW ensure protection of rights and the acquisition of rights by users. In consultation with users and the researcher, STW always considers whether an invention requires protection. STW supports the submission of patent applications if there is a prospect of such a patent being applied commercially.

## ... and potential users of the results

Inventions without users are redundant. It is in the interest of businesses that research results are relevant to their existing activities. New

knowledge leads to innovation and innovation is a precondition to the survival of businesses. The government needs standards that are scientifically backed up, such as building safety regulations or environmental rules. Firms of engineers can use the knowledge in the research projects for their customers. Everyone stands to benefit from new medication and medical equipment. And everyone profits from knowledge that is built into products and services.

All potential users of knowledge – knowledge institutions, large, medium-sized and small businesses, as well as those involved in R&D – are eligible for membership of the user committee that STW sets up for each project.

They are given the opportunity to work alongside the researchers and be the first to learn of the results. The collaboration with industry in user committees represents added value on the part of STW from which both the scientists and the businesses derive a great deal of benefit.

Although the funding provided by STW is directed through a fixed number of universities and organisations, STW also helps businesses and institutions with an interest in scientific development and innovation. They can use STW to come into contact with relevant research groups, who in turn can submit project applications together with the users.

## Spiegheling and Daet

As far as STW is concerned, Simon Stevin embodies the principles of its work. Stevin applied his talents to many fields, from music and political science to defensive work and mathematics (the Dutch term for which originates from Stevin). Contrary to many other engineers of his time, Stevin sought to give his work a theoretical basis – and in contrast to his great example, Archimedes, Stevin believed that any such theory should serve the application.

This led to the publication in 1586 of 'De Beghinselen der Weeghconst' (the elements of the art of weighing, what we now call statics), together with 'De Weeghdaet' (the practice of weighing) among other things. In the De Weeghdaet dedication, Stevin compares his Beghinselen der Weeghconst with a piece of firm ground on which a building is to be constructed; theory and application cannot be considered separately.

Whatever applied to mechanics applied just as much to mathematics. To Stevin, mathematics was not just an abstract activity without any connection to daily life. But nor was it simply a collection of gimmicks for solving certain practical problems. It was a fully-fledged science, whose justification could be found principally in its practical importance.

Stevin's familiarity with practice led to better theory. His watermill, which he designed himself, was used successfully in Delft, several years after the publication of De Weeghconst. However, a similar mill in IJsselstein did not work well – which was very instructive.

A patent was granted for the watermill and several other inventions: no imitations were allowed. It was explicitly stated that Stevin's hallmark, a string of beads, should be engraved onto the roasting spit that also served as a timepiece and scales.

STW pays tribute to this inspirational scientist through the annual Simon Stevin awards, the name of the Perspective – STW's own programmes – and Interval, our periodical.

## Company takes initiative: 'megamarket for application'

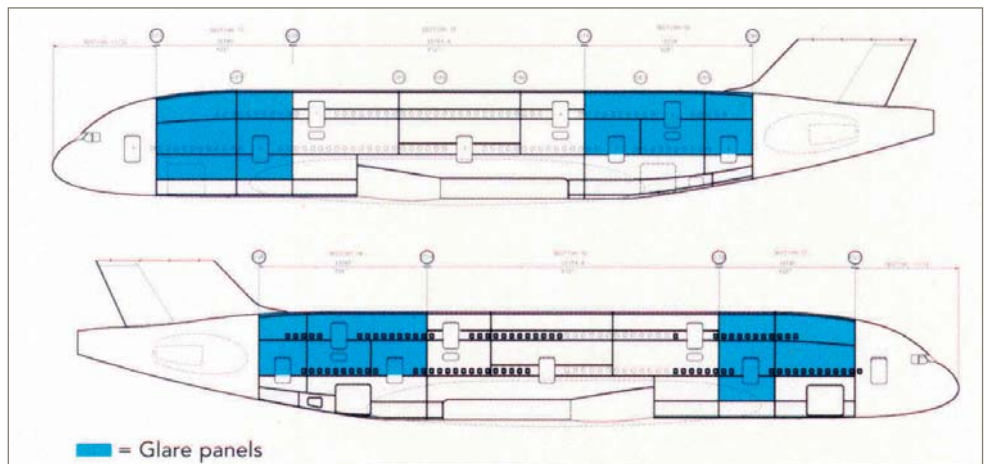
In 1980, KLM approached the TU Delft Aerospace Engineering department. The projects that the department carries out are to a great extent driven by demand from society at large: businesses, institutions, and ideological organizations such as environmental groups can highlight problem areas, whereupon a research project can be set up.

KLM was looking for a design of aircraft that would require less maintenance than the versions that existed at the time, which were generally made of aluminium or fibre-reinforced material. Aluminium had problems with corrosion and cracks, while fibre-reinforced material was sensitive to moisture and impacts. A new type of material was needed that would overcome these difficulties, and which was also light, given the desire to reduce energy consumption, but without any concessions made to safety.

The research group then set to work. It quickly became apparent that a combination of the existing materials – aluminium and the fibre-reinforced material – was 'promising'. As a result, the department immediately approached possible interested parties: a glue manufacturer, and a producer of fibres and aluminium. A number of American companies – Alcoa (aluminium), 3M (glue) and Akzo (plastic fibres) became involved and formed a team with TU Delft. The department decided that a patent application was appropriate, in order to safeguard the independence of the researchers.

The department then applied to STW for more funds and was awarded 1.5 million guilders to enable research and development, which were considered 'controversial but promising', to be continued. The efforts finally resulted in Akzo's success product GLARE, consisting of small layers of aluminium and plastic, stuck to each other. It is thanks to GLARE (GLASS REINFORCED laminate) that aluminium will not corrode because of the presence of the plastic; similarly, cracks caused by fatigue are held together by the fibres. Meanwhile, the disadvantages of the fibre-reinforced material are negated by the intermediate layers of aluminium. GLARE is now used extensively in and outside of the aviation industry. Fokker and Airbus became involved during the development stage of the project, while Stork Aerospace prepared the product for use in industrial applications.

Because the TU Delft Aerospace Engineering department applied for a patent at such an early stage, GLARE has been preserved for the



Dutch market. A patent makes an invention attractive proposition for businesses – without a patent, competitors can produce the same goods without penalty. However, the costs of a patent can be considerable, while the application process requires absolute secrecy regarding any provisional results, adding difficulties to the overall development.

For anyone involved in application-oriented projects it is therefore a good idea to call upon STW for assistance and funding. STW can in some cases not only co-finance the patent application process for promising inventions, but the STW user committee also enables researchers and businesses from many different backgrounds to consult and exchange views in complete confidence.

### Credits

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