

0 1

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



Annual Report

Value Creation

Partnership

Innovation

Creativity

Attitudes

In the heart and mind of FORCE Technology

Integrated Solutions

Globalization

Precision





Contents

The Best Year Yet for FORCE Technology 5

Highlights of the Year's Activities 10

Board of Directors 23a

Managerial Staff 23a

Auditor's Report 24

Accounting Policies 25a

Profit and Loss Account 28

Balance Sheet 30

January

February

March

April

May

June

July

August

September

October

November

December

Challenges call for visionary thinking





The Best Year Yet for FORCE Technology: An Excellent Platform for Continued Development and Growth

FORCE Technology fulfilled expectations for 2001 by posting its best financial year yet, a year with impressive gains on all fronts. This confirms our belief that our planned and controlled shift in strategy – from service-oriented and more standardized work to more knowledge-intensive jobs – is now really beginning to bear fruit. FORCE Technology was not affected by the general slowdown in the Danish and international economies in 2001, nor was our business affected by the global economic aftermath of the tragic events of 11 September 2001 in the United States.

We ended the year 2001 with group turnover totalling DKK 490m, a gain of DKK 99m, or more than 25%, from the year before.

Consolidated profit for 2001 amounted to DKK 25.4m, an increase of DKK 17.6m, which was more than double the consolidated profit from the previous year.

Turnover from operations in Denmark rose from DKK 317m in 2000 to DKK 408m in 2001, a 29% increase.

In Sweden, turnover grew from DKK 80m in 2000 to DKK 89m in 2001, or 11%. FORCE Technology's Swedish subsidiary contributed a profit of DKK 3.8m in 2001, versus the previous year's loss of DKK 2.2m, a total gain of DKK 6.0m.

The average number of people employed in the group in 2001 was 665, up from the 2000 average of 623.

Reasons for success

Naturally, there are several explanations why 2001 was a year of gains and growth for the FORCE Technology group. One of these reasons is our acquisition, effective 1 January 2001, of the Carl Bro group's testing, inspection, welding and certification operations, a move which strengthened our core business areas.

Much of the growth in turnover and profit is a direct result of targeted FORCE Technology efforts to change our services and products so that they fulfil customer business requirements 'higher up' in the value chain.

In other words, we have shifted our focus to promoting FORCE Technology core competencies and other services that are of greater value to our clients and which add value to their business.

Our annual accounts and profits also reflect the fact that FORCE Technology received some of its largest-ever contracts, e.g. in connection with major equipment breakdowns in several sectors. With our strong competencies in inspection and testing, we were able to provide excellent solutions, often under extremely difficult working conditions.

Turning point in Sweden

In spite of a highly variable business climate in Sweden which was hit harder by the international market shifts than in Denmark, FORCE Technology made impressive gains in both turnover and earnings through its subsidiary FORCE Technology Sweden AB, which was able to maintain its position as one of the three largest players on the market, especially in testing and inspection.

In 2001, our Swedish subsidiary functioned as an integrated part of the FORCE Technology organization to a far higher degree than ever before, and was thus able to help utilize and market our cross-disciplinary competencies to clients in the Swedish market.

All in all, the past year reflected the fact that we have benefited from our endeavour to systematically shift the focus of our organization as a whole in order to become more business- and market-oriented. As just one of the results of this effort, FORCE Technology today receives a higher number of contracts for consultancy in the entire client process, contracts that span all the way from the generation of ideas and design to production and operations.

Focus on four strong competencies

The year 2001 was also one of an intensified focus on developing four new, high-priority business concepts for FORCE Technology:

- Production Excellence
- FORCE Maintenance Excellence
- Validation/qualification
- Sensor-based process control

These four concepts all have in common that they each draw upon the competencies of our entire organization and that they are based on acknowledged needs of the market. At the same time, these concepts support our strategy to contribute our services higher up in a client's value chain, and this may then also lay the foundation for the development of a real business partnership between the client and FORCE Technology.

The four concepts, described below, take their starting points in business processes that are vital to many FORCE Technology clients.

Production Excellence

Production Excellence is a new concept that gathers together FORCE Technology's many competencies in simulation, process optimization and utilization of advanced technology. Production Excellence can be employed in the planning, analysis, and optimization of production and logistics systems.

FORCE Maintenance Excellence

Maintenance Excellence is a new concept that brings FORCE Technology's many competencies in maintenance, management and inspection to bear upon optimizing the maintenance programme of a client. The objective is to provide the best possible combination of and co-ordination between engineering services, administrative services and the human resources connected with maintenance and production in a client's business.

Validation/qualification

Validation/qualification is a new concept that can improve the quality of a company's products. Among other things, the validation/qualification concept involves documenting the safety and reliability of a specific process with respect to previously determined specifications and the stipulated quality standards. This new concept is directly aimed at providing compliance with regulatory requirements for validation of the production systems of companies that manufacture pharmaceuticals, diagnostics and/or utensils for use in the health care sector. However, validation/qualification and the principles can also be directly applied in the foods industry, the processing industry and in many types of highly automated manufacturing in which companies need to document safe and completely reliable production processes.

Sensor-based process control

Sensor-based process control is a concept that is directly applicable in many different types of manufacturing companies that compete on quality and price. With this concept, a manufacturer can discover faults and errors at exactly the time and place they arise to ensure a consistent level of quality and stable production operations. Application of this concept also minimizes waste production and resource-heavy troubleshooting; factories with sensor-based process control also enjoy the advantage of fully automatic documentation of all manufacturing processes.

We have already come a long way in developing these four new concepts: not only do we have business and development plans that will ensure the shortest possible 'time to market'; we are also developing our in-house competencies and introducing certain elements of our concepts to selected clients.

2002 and beyond

The last few years have seen discussions in professional circles about the need for and value of research funded by the public sector, e.g. within the framework of what is known in Denmark as GTS institutes, or authorized technological service institutes.

However, new legislation about GTS institutes will probably be passed sometime in 2002. We at FORCE Technology expect that the new act will open the door to a more liberal attitude towards the types of organizations that will be permitted to offer 'authorized technological services'. For this reason, it is vital that FORCE Technology continues to focus on its goal to be the preferred partner of the business community and the energy sector wherever there is a need to create value – for clients and for society in general.

We will continue working to optimize our own organization – both commercially and with respect to competencies – in order to maintain our ability to meet changing demands and needs for technological innovation within our four core areas. Thus we wish to continue to differentiate FORCE Technology from our research- and knowledge-based competitors in Denmark and abroad.

The year 2001 has proved that FORCE Technology has a flexible and dynamic organization that adapts to its market, and that we are already well on our way to becoming the preferred partner for leading companies in Denmark and abroad, providing technological advancement, consultancy and service at any or all stages from idea to finished project.

To continue along this path, we must continue to develop and improve in all areas, and in this our strategy is clear: FORCE Technology desires growth: in competencies, in business size and in results. This will help ensure that we will continue to be a sought-after partner for leading enterprises and knowledge centres in Denmark and on the international markets by offering value-creating consultancy and solutions for clients on the global market based on the market's best and most highly skilled staff and executives.

New steps on the path

Effective 1 January 2002, the FORCE Institute changed its name to FORCE Technology, which will be the name of our companies in both Denmark and Sweden.

This name change is an important landmark in the development and history of our organization, and it is the result of intensive and targeted work to change and grow our business.

The foundations of FORCE Technology remain unchanged, strong and solid: 60 years of experience and 820 highly motivated employees. We also, of course, retain and are maintaining our specialized knowledge and our key competencies.

With the name change, we wish to signal that we have intensified our business focus and modernized our organization, so that today FORCE Technology can function as a collaborative partner and well-qualified consultant in far more cross-disciplinary contexts than ever before and at all phases of a project, from generating ideas to handing over a final result.

DMI joins the FORCE family

Finally, it is with great pleasure that the Board of Directors and Management announce that, with retroactive effect to 1 January 2002, FORCE Technology has merged with the Danish Maritime Institute (DMI), with FORCE Technology as the continuing company. DMI is an international leader in consultancy and a broad range of services aimed especially at the maritime sector; its competencies and resources are a perfect fit with FORCE Technology and with our strategic and business plans for the future. With this merger, FORCE Technology embarks upon an exciting new year, with 120 new colleagues and a DKK 85m increase in turnover.

Ernst Tiedemann
Managing Director

Erik Søndergaard
Chairman of the Board



- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December





The challenge lies in the ability to innovate



Highlights of the Year's Activities

Sharing new knowledge opens the door to new business areas

In a collaboration with the Risø National Laboratory and the Danish Academy of Technical Sciences (ATV), FORCE Technology began in 2001 a more formalized and systematic accumulation of knowledge within the first commercial-partner post-doctoral project of its kind.

The research project investigated the use of direct ultrasonic imaging in materials inspection. This lightning-quick technology makes it possible to form a video image of the interior structures of a material. The result is new, improved inspection techniques that can, for example, be used to monitor the condition of production lines, containers with interior corrosion, or bottoms of storage tanks.

More traditional and complex random spot checking can now be replaced with a new system featuring this high-speed inspection technique that provides greater security and lower-cost operations. This new method will also make the inspection of large areas less expensive, freeing up resources that can then be used to improve maintenance.

The research project itself ended in 2001, but FORCE Technology continues to work with the research results in several different projects and business areas. We expect to make additional progress with rapid online process control as a promising new business area as early as in 2002.

FORCE Technology can certify cement

In 2001, FORCE Technology received EU notification as an inspection body in the field of cement: we can now – in collaboration with the Danish Standards Association – offer certification of cement, which is necessary for cement manufacturers before their products can receive the CE stamp.

The manufacture of cement is currently a field regulated by the EU, and the Building Materials Directive will eventually also be extended to include many other construction materials as well. This will ensure both manufacturers and consumers better products, greater safety and a more flexible European market.

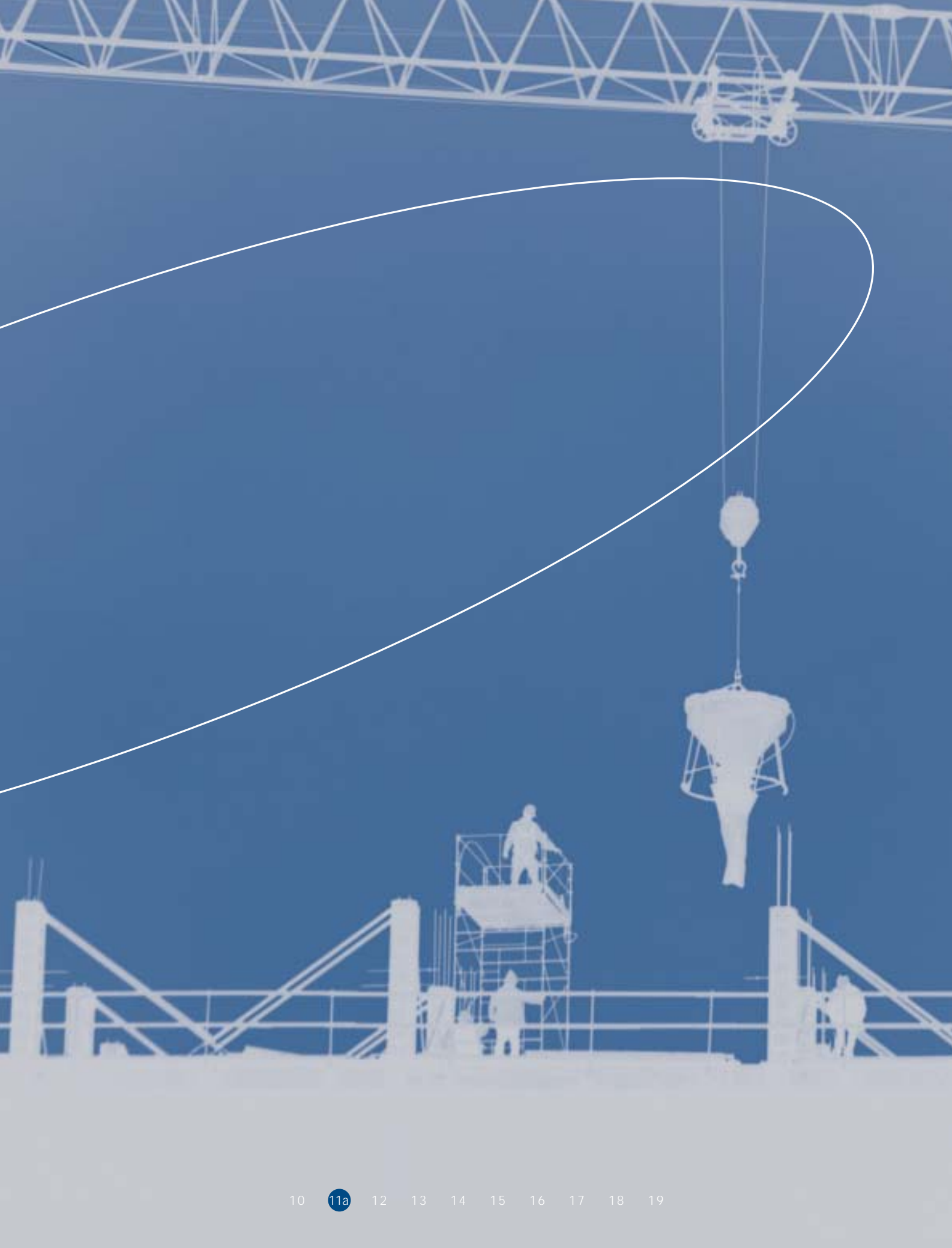
This new notification is a valuable addition to FORCE Technology's existing range of qualifications as a certification body – and we are looking forward to receiving notifications for other building materials as well once the EU regulations are ready.

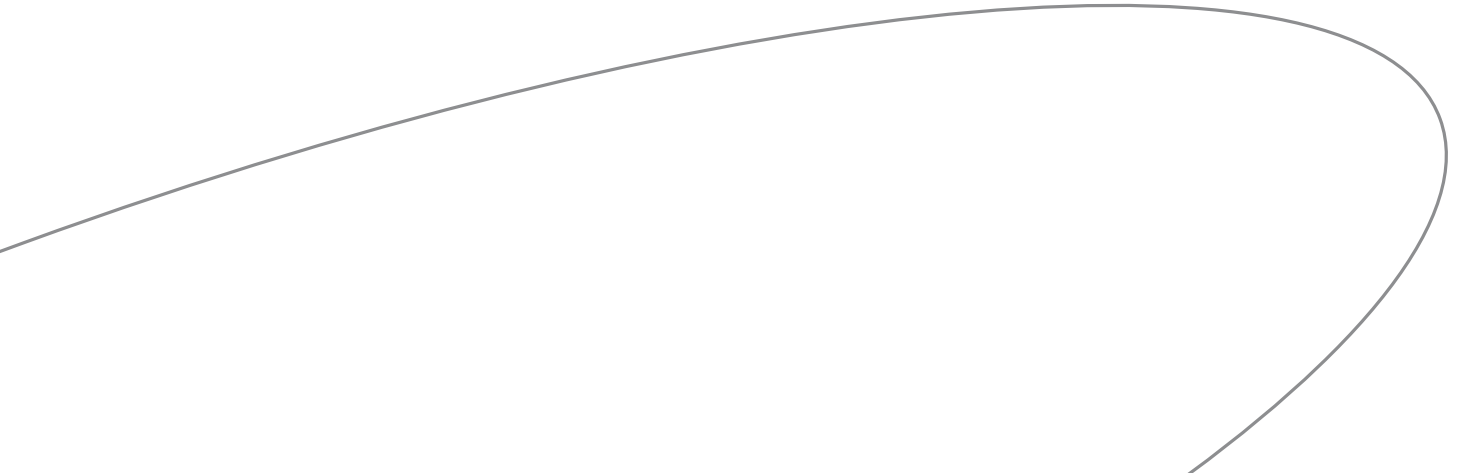
Pan-European weights and measures

FORCE Technology is taking part in two EU projects aimed at helping Latvia and Lithuania become an EU member state by adapting the legal metrology – how weights and measures are handled – of the two countries to bring it to EU level. FORCE Technology's contribution is based on its many years of experience and knowledge in the field, also with respect to e-labelling of packaging.

Both countries must be able to implement the applicable EU directives themselves, train their own inspectors and introduce the e-labelling system in the business sectors of their countries. In Lithuania, FORCE Technology is also helping introduce the e-labelling system. Enabling the utilization of this knowledge makes FORCE Technology an attractive partner for both public- and private-sector enterprises anywhere in Europe.

We are also making a number of useful contacts in these future member states and thus expect to utilize the experience we gain from this project in several other applicant countries.





New electronic eye can monitor critical processes

Using a combination of digital radiography and true colour photography, FORCE Technology and DELTA have developed an advanced electronic eye in the form of a spectral imaging multisensor.

As part of the so-called 'Sensor Technology Programme' headed by Danish company STC A/S, FORCE Technology helped computer-automate this electronic imaging system. The exciting new technology was demonstrated for the first time in 2001 on antique art objects at the Royal Danish Academy of Fine Arts School of Conservation, when conservators used the electronic eye to check, among other things, hidden repairs made in a wooden crucifix and the colour authenticity and layers of paint in paintings, with highly satisfactory results.

The artificial eye can also be used for inspection and quality control in many other areas, e.g. inspecting materials and manufactures. For example, a number of complex welding processes can now be automated, because the artificial eye can both monitor the process and check the final results. The electronic eye can also save manufacturers and others a great deal of money by discovering flaws and errors much earlier on in a production process.

Improved food safety without lowering quality

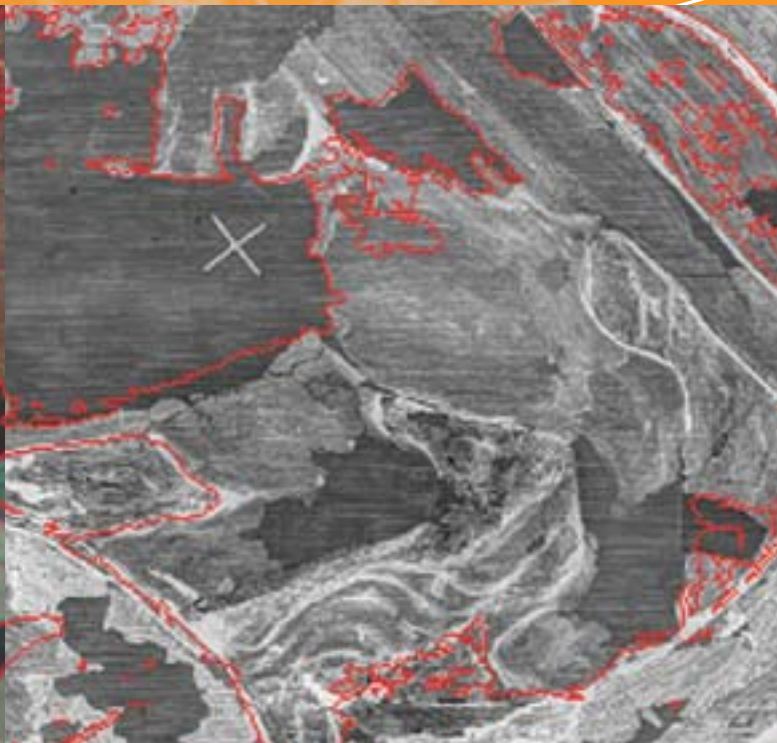
There is nothing new in the fact that steam can kill bacteria. For a long time, steam treatment has proved to be an enormously effective and very environmentally friendly method of doing just that. Up until now, however, using steam to protect food products was not possible: it certainly eliminated bacteria effectively, but unfortunately it also cooked the food.

Fighting bacteria with ultrasound

In a new EU project, FORCE Technology has now developed a revolutionary method to combat bacteria in food products. This new technique combines steam with ultrasound to provide a dramatic improvement in the effectiveness of steam treatment.

Working together with the Danish Technological Institute, FORCE Technology obtained a 99.9999% eradication of the organisms on the surface of cut vegetables and bean sprouts in just a few seconds. The new technique thus represents a marked improvement over previous results in terms of both time and effectiveness.

The steam passes through nozzles that cause it to vibrate at ultrasonic frequencies. This ensures a heating process that is so rapid that the cleaning process is finished before the heat has penetrated more than a few micrometres below the surface of the food. As a result, this technique reduces the number of bacteria found on the surface only. On the other hand, however, this short yet effective treatment means that the cleaning process has a minimal impact on the food itself: appearance, structure, taste and vitamin content are retained, while bacteria – and any vira as well – disappear from the surface.



For the food industry, this new technique represents a major step forward with respect to improved food safety and longer product life. For example, the consumption of fresh and cut vegetables is on the rise, and using this technique will increase the value of these foods to both producers and consumers.

Several applications

The new method can also be used in many other areas where there is a need for an environmentally friendly method of disinfection, e.g. of instrumentation or packaging or in production or transport systems. Another potential application is in the hospital sector, since the method has also proved effective in destroying vira.

FORCE Technology staff are currently working on a portable version of this equipment, which will look somewhat like a pressure washer. Obviously, a portable version will be more flexible and thus easier to use in factories and hospitals, but it will also increase the applicability of the new technique in agriculture, an industry that also wishes to reduce the spread of bacteria and vira.

FORCE Technology already has a great deal of expertise in using ultrasound together with other technologies; this new ultrasound method will also pave the way to new business areas. The entire development process proceeded so rapidly that we were able to submit a patent application for the technique and equipment in Denmark on 28 March 2001. We are continuing our work on developing equipment, procedures and test methods while also readying the product for the market and integrating it into various types of manufacturing systems.

Thus in 2002, FORCE Technology will be working to establish the right contacts in its potential markets and to lay the commercial groundwork for the utilization of this new technology to improve food safety.



- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Breakthrough in non-contact laser-based ultrasound

The inspection systems of the future must be able to test and reveal the interior structures of materials quickly and without touching with the test subject.

In a collaboration with the Risø National Laboratory, FORCE Technology succeeded in 2001 in using laser technology to generate and test ultrasound in metals. This means that it will in the future be possible to conduct a rapid and very precise ultrasonic examination of metals and other materials without mechanical contact with the object being tested. FORCE Technology is thus helping prepare the way for a new, advanced inspection system.

Non-contact ultrasonic testing – in Denmark called 'BIPS', the Danish acronym for online, non-contact control of industrial processes and systems – is an area of special focus for FORCE Technology, which also functions as the project manager of a research centre contract in this field. Also part of the project are the Risø National Laboratory, the Technical University of Denmark, the Danish National Railway Agency, and Danish companies Coloplast, Juncckers and SCITEQ-Hammel.

Combination of several technologies

The new technology combines laser technology with ultrasound. Short, high-power laser pulses are fired at the surface of the test material. The high power of the laser creates heat, which leads to the formation of ultrasonic waves which then propagate within the object or material being tested. Another laser system measures the vibrations at the surface of the test piece, and this shows how the ultrasonic waves are affecting the test material.

This test method has great potential – also because it is quick and effective. It can be used for rapid inspection of train rails, for example. The technique currently in use is a slow process that can cause delays in train schedules. Equipment employing the new method can be run along the rails at normal train speed while testing and collecting data, thus increasing inspection efficiency and representing less of a problem for train traffic.

New online non-contact methods can also reveal the interior structure of and moisture levels in wood, thus allowing raw material with hidden defects to be removed before production.

As a result, many different flaws in the finished product can be avoided, flaws that are difficult to find with spot checking. Not only can this save a great deal of money on correcting defects; it also reduces waste and the number of production interruptions necessary.

Wide range of applications

The technology can be used in any process which would benefit cost-wise from a fast and effective quality control early on. Many Danish manufacturers would be able to detect poor-quality or defective raw materials, thus saving large sums on repairing defects in finished products. Others would be able to increase the speed of their quality control process dramatically. The new technology could also replace random spot checking and enable an efficient process control that could optimize the productivity of Danish businesses.

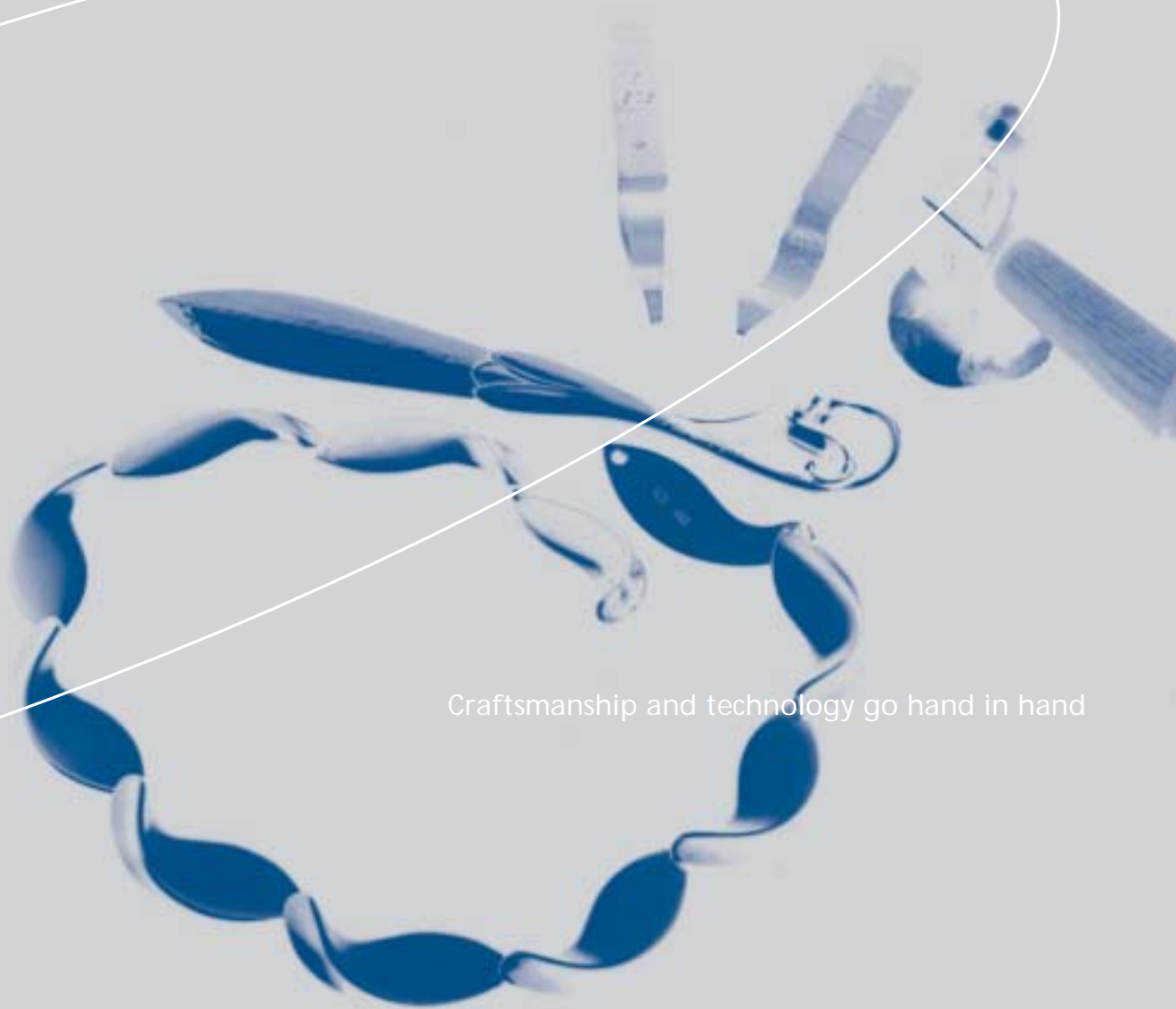
FORCE Technology is continuing work on developing this pioneering technology and expects to reveal new technological breakthroughs in 2002 as well.

Stamping Danish silver art safeguards export

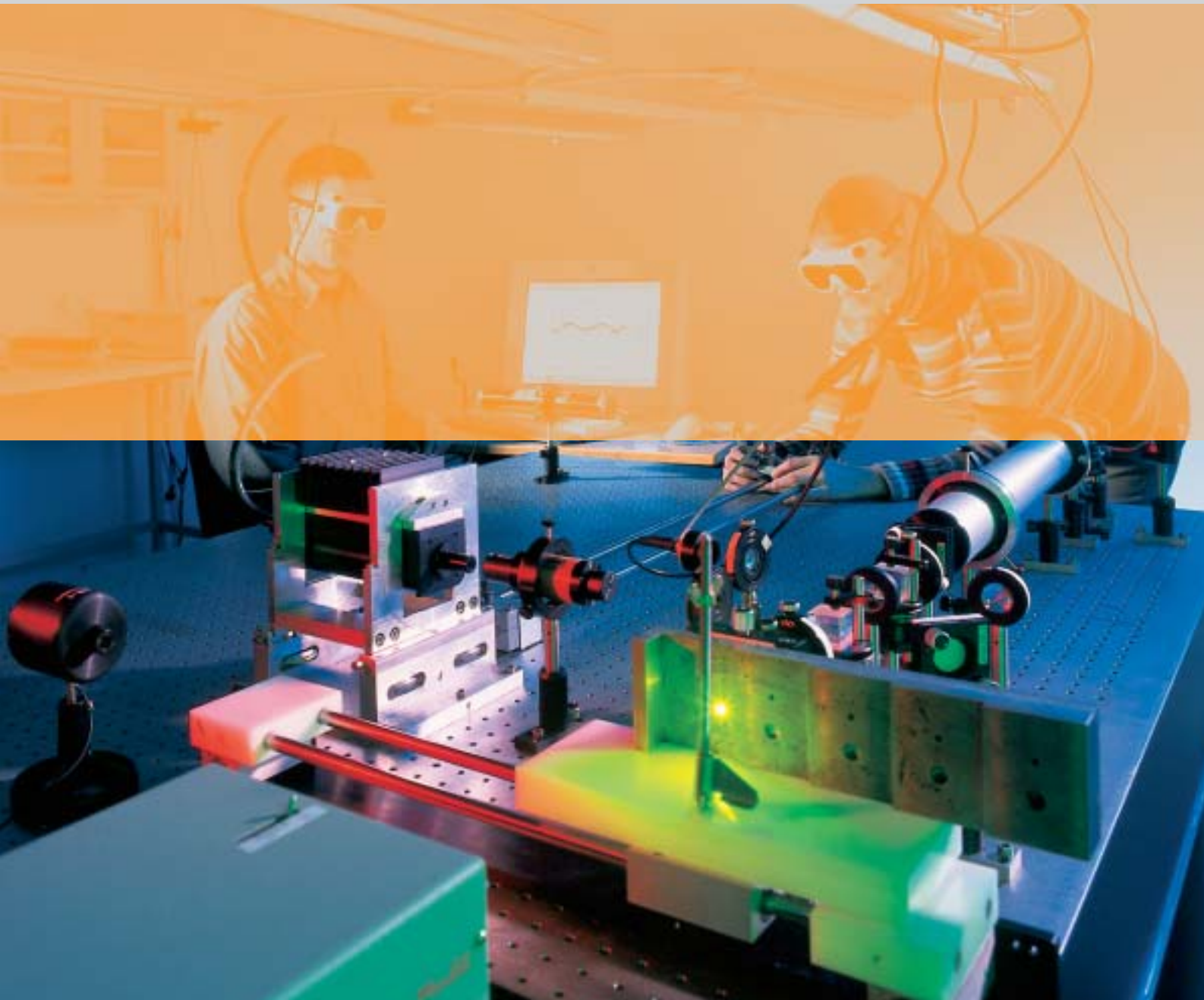
Precious metals have always been the subject of a great deal of interest – but also subjected to a great deal of testing. Even in ancient times, precious metals were used to make coins and jewelry, and as investment objects. Today, all precious metals are governed by special international regulations for stamping and testing. In Denmark, the Danish Agency for Trade and Industry has appointed FORCE Technology to perform precious metals testing.

In 2001, silversmiths Georg Jensen A/S signed a contract with FORCE Technology for the testing and stamping of silver products intended for export to the UK. The contract is for the testing and analysis of raw materials and finished products, as well as for the inspection of the stamping process itself. By allowing FORCE Technology to supervise the important process of hallmarking, Georg Jensen ensures that its products meet its high artistic and aesthetic standards with respect to both the stamping process and the locations of the hallmarks.

For Georg Jensen, inspection and stamping also ensure that their products comply with British regulations on industrial art products, thus clearing the way for problem-free export.



Craftsmanship and technology go hand in hand



Quality control of concrete-lined tunnels in the Hallandsåsen ridge

Construction is underway by the Swedish National Rail Administration of train tunnels through the Hallandsåsen, a ridge that since the last Ice Age has cut its way through the hilly countryside of southern Sweden. In December 2001, FORCE Technology inspected about 600 metres of concrete lining in one of the two tunnels currently being built in the northern part of the ridge.

FORCE Technology was hired to check the tunnel for casting flaws and other inhomogenities in the concrete to ensure its quality and an optimal operations reliability. The importance of this work was underlined by the fact that a leak had sprung in 2000 – due to a casting flaw.

In its inspection, FORCE Technology used a completely new type of test equipment that employs an ultrasonic pulse-echo technology. In 2002, FORCE Technology will be paying the Hallandsåsen ridge another visit, this time to give the second tunnel the same thorough inspection.

International teamwork in the North Sea

From June to August 2001, FORCE Technology conducted a very thorough inspection of the pipe systems in the Gorm Field in the North Sea for Mærsk Olie og Gas A/S, inspecting a total of about 7000 areas for all known types of corrosion.

Of course, FORCE Technology had to do the job quickly, since oil production at the field had to be stopped while the testing was going on. Each day without production caused Mærsk considerable loss, so the time factor was critical.

By gathering together an international group of specialists in non-destructive testing, FORCE Technology was able to undertake the largest and most demanding inspection job yet in the history of the organization. Technicians and inspectors from Denmark, Sweden, Norway, Finland, Britain, Germany, Italy and the United States provided the necessary personnel and expertise to conduct the inspection – and conduct it faster than expected.

Along with extensive ultrasound testing, FORCE Technology also provided corrosion cause assessment and suggestions as to how to make the necessary repairs.

Photo: Staffan Andersson



New corrosion mechanism for stainless steel in wastewater

Taken one at a time, wastewater treatment processes are relatively simple. However, they have to be put together in a complex interaction to produce the best results, i.e. clean water. Small leaks may result in extensive disruption of the entire operation of a plant. That is why understanding and preventing corrosion damage takes a great deal of time and effort – but it is worth it.

In a three-year research and development project, FORCE Technology – working together with Krüger A/S and the Helsingør local authorities – discovered not only a previously overlooked biologically initiated corrosion mechanism, but also new knowledge about the connection between stainless steel and water.

The background for the project was multiple instances of inexplicable corrosion damage to stainless steel in Danish wastewater treatment plants. Stainless steel is normally considered to be an almost maintenance-free material that lasts forever if used correctly. However, a survey of 62 Danish wastewater treatment plants found 29 cases of corrosion damage to stainless steel, and 80% of the damage was to equipment that came into contact with treated wastewater, which is otherwise considered harmless.

Bacteria at work

The three-year research project revealed a previously undetected bacterial corrosion. It was a biological deposit of manganese dioxide, which can form a strong oxidizing agent with the same effect as, for example, ozone or hypochlorite. This combined with the content of chloride in the wastewater dramatically increased the risk of local corrosion.

With this new information about the cause and effect of the corrosion mechanism, it is possible to select the right materials to use in building new wastewater treatment plants. Design diagrams in the handbook published at the end of the project show how a sensible selection of materials can minimize the risk of corrosion.

It is not yet possible to make changes in existing treatment plants that would prevent this type of corrosion, but cathodic protection can effectively prevent additional damage of this nature.

The handbook published at the end of the project (in Danish only) is entitled *Rustfrit stål i renseanlæg*, and it is distributed by Danish publishers Industriens Forlag.

Quartz crystals 'colourize' odour

The human sense of smell is unique and impossible to imitate – but we can come close.

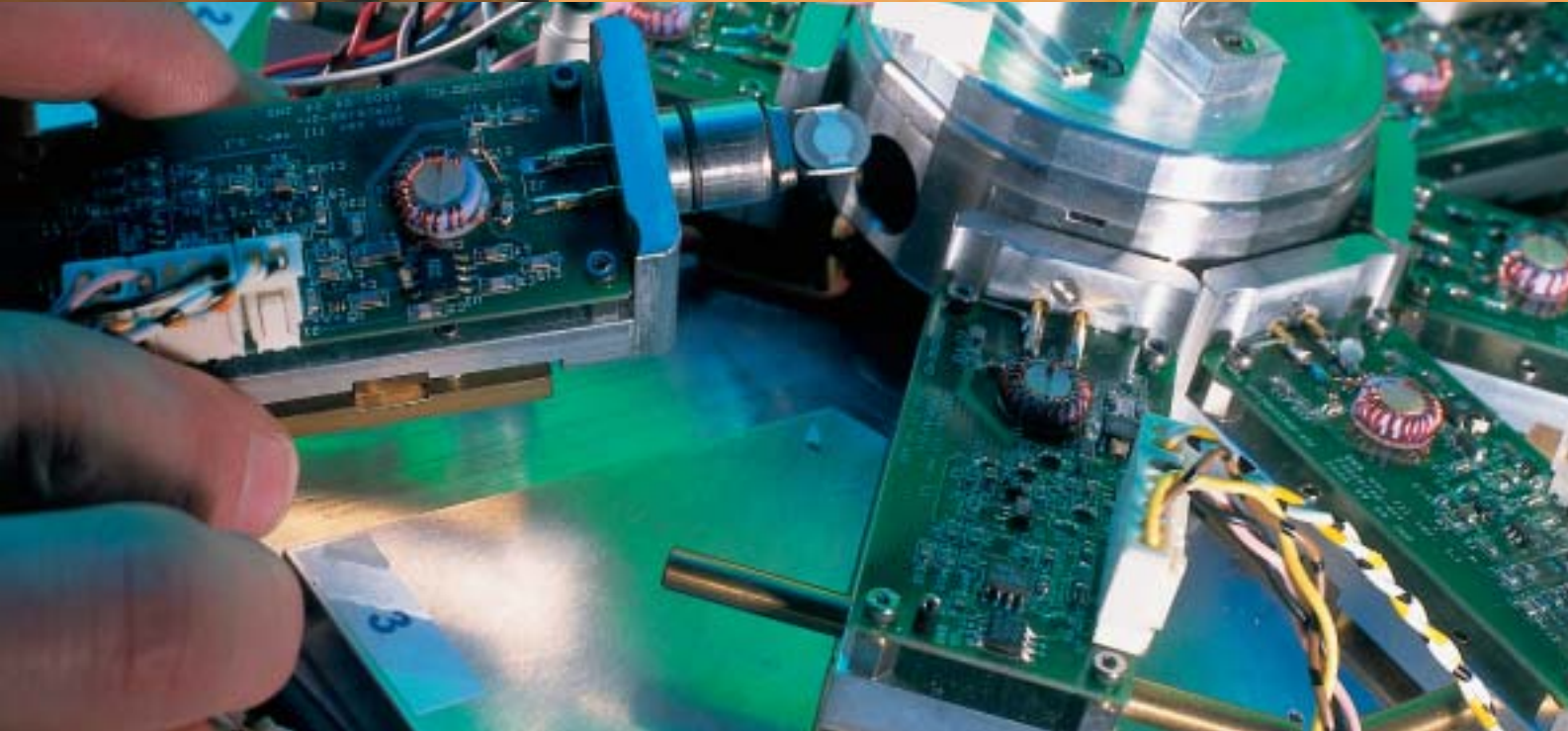
As part of a research centre contract, FORCE Technology helped develop a new generation of quartz crystal sensors that can measure different smells and together form an image of an odour. Putting them together with sensors that measure oxygen content, carbon dioxide content and other parameters, an effective instrument can be constructed for the automated monitoring and quality control of odour.

The new detector employs 12 selected sensors – out of the more than 50 possible – to create a customized solution for a company that needs automatic odour detection, e.g. in foods or flue gases.

With this detector, industry has gained a new and highly popular tool for monitoring production processes and waste. It is a tool that can be used to optimize continuous quality and environmental control systems in industries in Denmark and abroad that are dependent on uniform product quality and full control over the environmental aspects of odours emanating from a production process.

Danish company PBI Dansensor will be manufacturing and marketing the new 'artificial nose' test and monitoring systems.

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



New European friction stir welding project

Friction stir welding is a relatively new welding process invented at the beginning of the 1990s that has since attracted a great deal of international attention. With friction stir welding, two pieces can be welded together without melting the base metal, which means that the technique can be used to weld completely new types of materials, since it produces virtually no deformation. This alone could increase productivity and raise the level of quality in industry. The process is already being used in the ship- and aeroplane-building industries and by European train and car manufacturers.

FORCE Technology has been appointed head of 'Weld Properties', one of a total of six sub-projects under the EuroStir project. Weld Properties involves building up a Web-based knowledge database containing all relevant recordable parameters for this advanced friction stir welding process, including materials properties. As part of the project, it is hoped that all European companies and institutions interested in friction stir welding will contribute their knowledge and experience.

This assignment puts FORCE Technology in the centre field once again in an international research project in welding technology and materials use, both of which are among FORCE Technology's core competencies.

FORCE Technology gathers knowledge on aluminium

Competition is tough on the market for simple steel structures, and Danish companies are thus increasingly turning to more sophisticated and productive manufacturing methods.

To gain an overview of alternatives to traditional steel structures, the Danish Maritime Authority launched a project intended to shed light on the feasibility of using aluminium. The project, named 'SASAK' (the Danish acronym for the joining of large aluminium structures), was assigned to FORCE Technology, which finished the job in the autumn of 2001.

During the project, FORCE Technology – in a collaboration with other Danish companies and universities – held annual seminars and drafted a large number of technical reports. Each seminar attracted about 100 people interested in the new knowledge gleaned about the design, welding, gluing, fatigue, corrosion and quality management of aluminium.

FORCE Technology concluded the project with a new handbook about aluminium structures and the manufacture of aluminium, currently the most extensive of its kind in the world. The 800-page handbook and the 92 technical reports – most, unfortunately, in Danish only – can be viewed at www.sasak.dk or purchased from FORCE Technology.



Inspection of new cranes for Aarhus

Aarhus harbour is on its way to becoming the largest container port in Denmark. It is vital that its cranes function smoothly, efficiently and without problem 24 hours a day, for the loads they handle are enormous and safety is crucial.

FORCE Technology is supervising the construction in Poland and Finland of three new 90-metre-high cranes for the Port of Aarhus. We inspect and check the welds, structure and surface finishes to ensure that the Port receives thoroughly tested machines, supplying a regular quality control and a process-oriented correction of defects and errors that provides financial advantages on delivery and during operation.

Playing it safe at LEGOLAND

Amusement park rides are fun – but they should also be taken quite seriously. All load-bearing structures at one of Denmark's premier amusement parks, LEGOLAND, are inspected and tested by FORCE Technology annually to find any type of error or flaw that could affect the safe operation of the rides.

In 2001, LEGOLAND was busy expanding its park, which meant that FORCE Technology was also busy inspecting the new rides. We were also able to help LEGOLAND draw up specifications for hard-wearing paint that better suits the Danish climate and makes maintenance of the popular rides easier. FORCE Technology employs all kinds of non-destructive testing at LEGOLAND, and the test results are incorporated into the efficient maintenance and safety programmes that form the basis for the work on new LEGOLAND parks in Europe and the United States.



Online sensor-based inspection of plastic pipes

Working together with SCITEQ-Hammel A/S, FORCE Technology has developed an online radiographic sensor system that measures the thickness of each individual layer of a multi-layer plastic pipe during the production process. One example of a multi-layer pipe is a PVC pipe that features a layer of foam between a hard inner wall and outer shell.

The new test equipment was launched at the 2001 trade fair for plastics and rubber manufacturers held in Düsseldorf in October, and it attracted a great deal of attention from pipe manufacturers. With this new technology, manufacturers can learn new ways to optimize their manufacturing processes and reduce their consumption of raw materials, and it allows them to monitor and document their product quality even better than before.

FORCE Technology and SCITEQ-Hammel will continue working together to develop test methods for other types of piping as well, which will ensure that the new equipment and technology can be widely used in the international pipe manufacturing industry.

SCITEQ-Hammel expects that the new production equipment for the plastics industry will be an important part of its future product range.



Simulation for better manufacturing

Flow simulation provides a solid foundation upon which to base important decisions. A detailed simulation of a company's manufacturing processes, stock flow and logistics can provide an overview of all the factors that determine and influence the lifeblood of the company.

At FORCE Technology, we work with flow simulations that employ our Production Excellence concept. A complete simulation can define problems a client may have, e.g. in their current production equipment or their production or stock control systems, and clarify the opportunities that would be the result of certain modifications. It is easier, faster and much cheaper than trying out different solutions in reality.

In this business area, our job is typically to identify and assess the bottlenecks, stock flow, necessary buffer sizes, and functionalities of alternative production systems. With our models, clients obtain a well-prepared and well-documented basis upon which to take decisions that are crucial in production planning, optimization and reorganization.

With Production Excellence, our clients learn more about their potential. At the same time, FORCE Technology has a great deal of experience in simulation, and this means that we can make the models and simulations as detailed as necessary.

Our expertise in production engineering also means that we can limit the project to the degree of detail necessary for the job at hand. A very simple model, for example, could be suitable for use by specialists, whereas a highly realistic one could be used for more open demonstrations or competitions. In addition to its value as a tool in analysis, simulation can thus also be used to communicate new methods and their consequences to a client's employees, customers, collaboration partners or investors.

In 2001, FORCE Technology supplied flow simulation services to Vestas A/S, Tulip International and Novo Nordisk Engineering A/S in a number of different projects dealing with manufacturing, stock control, capacity assessment, materials handling and buffer analysis.

For Tulip International, we designed a simulation model to determine the necessary buffer size for a new production line, which was subsequently implemented in their production process. We also developed a model to optimize their supply chain, i.e. to minimize their stocks without affecting their ability to deliver.

Tulip International gained a tool they could use to optimize their stock control system and adjust their production system to make it more profitable.

For Novo Nordisk Engineering A/S, we analyzed an existing stock and materials handling system for a factory in Hillerød, north of Copenhagen. A relatively simple model provided Novo Nordisk Engineering A/S with a greater insight into their production capacity and expansion options.

Improvements are made in flow simulation technology every day. Even complex simulations can be constructed within a very short time, which makes them a practical and valuable tool for Danish companies now and in the future. With FORCE Technology flow simulations, Vestas A/S, Tulip International and Novo Nordisk Engineering A/S gained effective and efficient instruments for making crucial decisions on a solid basis.

New way to recirculate welding ventilation air

Denmark is the only EU country that still prohibits the recirculation of welding ventilation air. The Danish Environmental Protection Agency requires that ventilation air from welding work areas is 99% purified before being pumped outdoors. Naturally, compliance with this requirement is both complicated and consumes a great deal of energy, and a review of the Danish ban on recirculating the exhaust air was thus inevitable.

With the Danish Energy Agency as its client, FORCE Technology carried out an environmental project entitled 'Recirculation of ventilation air in the welding industry'. The project report concluded that there are new technological ways to limit the environmental impact of welding, and that recirculating welding area air would save the industry up to 105,000 MWh per year and substantially reduce Danish CO₂ emissions as well.

The Danish Working Environment Service and IBAR are currently assessing the results of the now-concluded project, and the industry can look forward to a re-evaluation of the relevant Danish regulations.



- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



Board of Directors, 2002

Erik Søndergaard, Managing Director
(Chairman of the Board)

Mogens Arndt, Director
(Deputy Chairman)

Svend Bruun, Director

Ole Høg, Executive Vice President

Preben Terndrup Pedersen, Professor, Ph.D.

Peter Tang-Jensen, Director

Per Thrane, Director

Villy Andreasen, M.Sc. (Mech. Eng.), Ph.D.
(Employee Representative)

Søren Jensen, Inspector
(Employee Representative)

Bugge Torben Jensen, M.Sc.
(Employee Observer)

Managerial Staff, 2002

Management:

Ernst Tiedemann, Managing Director

Willy Damgaard Kristensen, Technical Director

Arne Hasle Nielsen, Director, Special Assignments

FORCE-Dantest CERT:

Bent Larsen, Director

Sales and Marketing:

Jens Roedsted

Quality Assurance:

Birger Hansen

Finance and Administration:

Jette Heideby

Information and Communication Technologies:

Lars Vesth

Sensor and NDE Innovation:

Leif Jeppesen

Inspection and Testing, East:

Arne Henrik Jensen

Inspection and Testing, West:

Niels Aage Giversen

Materials and Analysis:

Nils Linde Olsen

Industrial and Maritime Technologies:

Stig Sand

Quality and Metrology:

Gunnar H. Østergaard

FORCE Technology Sweden AB (subsidiary):

Hans Andersson, Managing Director

Number of employees, end of 2001

696

Engineers, scientists, etc.

186

Inspectors, technicians, assistants, etc.

402

Administrative staff

108



Auditor's Report

This statement of account is an extract of FORCE Technology's consolidated accounts and parent company accounts for 2001 bearing the following Auditor's Report:

Auditor's Report

We have audited FORCE Technology's consolidated accounts and parent company accounts for 2001 as presented by its Board of Directors and Management.

Basis of opinion

We have planned and performed our audit in accordance with Danish auditing standards and provisions and with the auditing regulations in force for approved technological service institutes, to obtain reasonable assurance that the consolidated and parent company accounts are free of material errors or omissions and that the normal financial considerations were taken in the operation of the company. Our audit included, based on an assessment of materiality and risk, an examination of the basis and evidence supporting the amounts and other disclosures in the consolidated and parent company accounts. Furthermore, we have assessed the accounting policies applied and estimates made by the Board of Directors and the Management as well as evaluated the overall adequacy of the presentation in the consolidated and parent company accounts.

Our audit did not give rise to any qualifications.

Opinion

In our opinion, the consolidated and parent company accounts have been prepared in accordance with Danish accounting legislation and give a true and fair view of the assets and liabilities, the financial position, and the result for the year of the group and the parent company.

Copenhagen, 19 April 2002

PricewaterhouseCoopers
State Authorized Public Accountants

Hans Primdal
State Authorized
Public Accountant

Jan Russel
State Authorized
Public Accountant

Accounting Policies

This statement of account is an extract of FORCE Technology's consolidated accounts and parent company accounts for 2001.

Accounting policies

FORCE Technology's consolidated and statutory annual accounts have been prepared in accordance with the Danish Annual Accounts Act.

Consolidation policies

The consolidated accounts comprise the parent company, FORCE Technology, and the 100% owned subsidiaries, FORCE Technology Sweden AB and Sveriges Tekniska Kontrollinstitut Förvaltning AB, along with their interests in other companies.

The consolidated accounts have been prepared on the basis of the audited accounts for the parent company and the subsidiaries, by combining items of equal nature.

In the combination process, eliminations were made of internal income and expenses, share holdings and intergroup balances, and internal gains and losses included in the book value of the assets.

The accounts used in preparing the consolidated accounts were rendered in accordance with the accounting policies of the group.

In the consolidated accounts, the book value of the parent company's interests in the consolidated subsidiaries was set off against the parent company's share of the subsidiaries' net book value calculated at the time the group was established.

Conversion of foreign currency

Transactions in foreign currency were in the course of the year converted at the rate of exchange in force on the transaction date.

On the balance sheet, debtors, creditors and foreign currency holdings were converted at the rate of exchange in force on the balance sheet date.

Realized and unrealized foreign currency gains and losses are included in the profit and loss account under financial items.

With conversion in connection with foreign subsidiaries, the profit and loss account and balance sheet items are converted at the exchange rate in force on the balance sheet date.

Profit and Loss Account

Turnover

The criterion for revenue recognition is the percentage-of-completion method.

Basic and project subsidies are recognized as income as they are consumed at approved rates, corrected to account for any own financing share.

Development costs

Development costs are expensed in the year in which they are incurred.

Corporation tax and deferred taxes

Corporation tax pertains to the Swedish subsidiaries.

The tax related to the year's accounting profit in subsidiaries is charged to the profit and loss account, regardless of the date of payment of the taxes and of any adjustments of prior years' taxes.

A provision for deferred tax liability is made insofar as tax depreciation and write-downs deviate from the accounting depreciation and write-downs.

Balance Sheet

Tangible fixed assets

Land is stated at cost. No depreciation is calculated for land.

Buildings are stated at cost less accumulated depreciation. Depreciation is charged under the straight-line method over 25 years.

Special installations are stated at cost less accumulated depreciation. Depreciation is charged under the straight-line method over 12 1/2 years.

Plant and machinery, other fixtures and fittings, tools and equipment are stated at cost less accumulated depreciation. Depreciation is charged under the straight-line method over the expected useful lives of the assets, but the maximum is ten years.

Minor purchases under DKK 10,000 are charged to the profit and loss account in the year of their acquisition.

Financial Fixed Assets

Participating interests in associated companies

Shares in the consolidated subsidiaries are stated under the equity method in the parent company, FORCE Technology.

The share of the profit or loss of the subsidiaries is included in the parent company profit and loss account under the item entitled "Profit or loss of subsidiaries".

The equity value of the subsidiaries calculated according to parent company accounting policies plus or minus unrealized intergroup gains or losses is included in the parent company balance sheet under the item entitled "Participating interests in associated companies".

Commissioned work in progress for third parties

This item is stated at sales price. If work in progress has been invoiced, the work invoiced is considered to be finished. Thus 'work in progress' constitutes the non-invoiced part of projects in progress. Advance payments and invoicings are entered as liabilities. Write-downs are charged according to an individual assessment of each project.

Stocks

Stocks are valued at the lower of cost/cost price according to the FIFO method and net realization price. Cost of goods for resale and of raw materials and consumables comprises invoice price. Cost price of finished goods and work in progress comprises cost of materials and direct wages.

Projects in progress for third parties

This item is included at sales price. Advance payments and invoicings are entered as liabilities. Write-downs are charged according to an individual assessment of the individual jobs.

Debtors

This item is stated at nominal value less write-downs to meet losses in accordance with an individual evaluation.

Securities

This item is stated at cost or lower stock exchange price. Write-downs are charged in the profit and loss account once adjustment to cost price is booked as income.

Subsidies

Subsidies to cover, in full or in part, expenses incurred must be deducted from those expenses.

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December







Profit and Loss Account

1 January - 31 December 2001

	Note	Consolidated Account		Parent Company Account	
		2001	2000	2001	2000
		DKK 1,000	DKK m.	DKK 1,000	DKK m.
Consolidated turnover	1.	491,433	392.6	408,736	317.6
Expenses directly related to projects, outlays		42,031	27.2	33,187	20.2
Other external expenses		105,518	77.6	89,376	63.0
Personnel expenses	2.	296,015	257.4	245,439	202.5
Depreciation and write-downs		21,671	25.1	19,008	21.1
Profit or loss of subsidiaries		0	0.0	3,779	-2.2
Profit before interest etc.		26,198	5.3	25,505	8.6
Financial income and expenses, net		-323	-1.6	-111	-0.9
Profit before extraordinary items		25,875	3.7	25,394	7.7
Extraordinary items		0	4.0	0	0.0
Profit before tax		25,875	7.7	25,394	7.7
Tax	3.	481	0.0	0	0.0
Profit for the year		25,394	7.7	25,394	7.7

Notes on Profit and Loss Account

		Consolidated Account		Parent Company Account	
		2001	2000	2001	2000
		DKK 1,000	DKK m.	DKK 1,000	DKK m.
1	Turnover	491,433	392.6	408,736	317.6
	of this turnover abroad	144,456	139.5	61,237	64.6
2	Personnel expenses				
	Wages and salaries	271,537	234.0	237,135	195.3
	Social security costs	17,995	16.2	2,150	1.6
	Other personnel expenses	6,483	7.2	6,154	5.6
		296,015	257.4	245,439	202.5
	The average number of employees	665	623	536	471
3	Tax				
	Current tax	0	0	0	0
	Reduction of deferred tax	481	0	0	0
		481	0	0	0



- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December

Balance Sheet

as at 31 December 2001

Assets	Note	Consolidated Account		Parent Company Account	
		2001	2000	2001	2000
		DKK 1,000	DKK m.	DKK 1,000	DKK m.
Fixed assets	4.				
Land and buildings		87,179	89.6	81,769	83.8
Furniture and equipment		46,339	48.4	36,841	36.3
Total tangible fixed assets		133,518	138.0	118,610	120.1
Participating interests in associated companies		517	0.6	17,856	14.5
Total fixed assets		134,035	138.6	136,466	134.6
Current assets					
Stocks		14,015	7.8	12,727	7.4
Debtors, work in progress and completed work		83,681	67.8	67,290	52.6
Intergroup balances		0	0.0	6,948	4.3
Other debtors		14,957	22.2	8,505	11.1
Securities		33,934	35.0	33,934	33.9
Cash and bank balances		11,028	0.2	10,983	0.1
Total current assets		157,615	133.0	140,387	109.4
Total assets		291,650	271.6	276,853	244.0

Liabilities	Note	Consolidated Account		Parent Company Account	
		2001	2000	2001	2000
		DKK 1,000	DKK m.	DKK 1,000	DKK m.
Capital and reserves	5.	158,767	134.1	158,767	134.1
Deferred tax		481	0.0	0	0.0
Provisions	6.	6,500	2.0	6,500	2.0
Total provisions		6,981	2.0	6,500	2.0
Mortgage debt	7.	21,468	26.6	21,468	26.6
Total long-term debt		21,468	26.6	21,468	26.6
Mortgage debt	7.	5,140	5.0	5,140	5.0
Bank loans		2,564	17.0	0	4.7
Creditors and accrued costs		21,167	15.2	18,402	10.8
Advance payments and invoicings		5,890	6.7	5,890	6.7
Other liabilities		69,673	65.0	60,686	54.1
Total current liabilities		104,434	108.9	90,118	81.3
Total debt		125,902	135.5	111,586	107.9
Total liabilities		291,650	271.6	276,853	244.0
Contingent liabilities	8.				
Mortgaging and secured loans	9.				

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December



		Consolidated Account	Parent Company Account
		DKK 1,000	DKK 1,000
5	Capital and reserves		
	Capital and reserves at 1 January 2001	134,161	134,161
	Exchange translation of participating interests at 1 January 2001	-788	-788
	Profit of the year	25,394	25,394
		158,767	158,767
6	Provisions		
	This provision pertains to the ongoing reorganization of administrative systems.		
7	Mortgage debt		
	TDKK 0 in mortgage payments falls due more than 5 years after the end of the financial year.		
8	Contingent liabilities		
	Leasing commitments do not exceed	7,009	6,100
	Guarantee commitments amount to	320	0
9	Mortgaging and secured loans		
	The Swedish subsidiary has loans secured for	12,293	0
	Security for the mentioned mortgage has been given in mortgage deeds totalling	19,650	19,650

- January
- February
- March
- April
- May
- June
- July
- August
- September
- October
- November
- December







Park Allé 345
DK-2605 Brøndby
Tel. +45 43 26 70 00
Fax +45 43 26 70 11
e-mail force@force.dk
www.force.dk

FORCE Technology
Sweden AB
Tallmätargatan 7
S-721 34 Västerås
Tel +46 21 18 02 70
Fax +46 21 18 02 02
e-mail info@forcetechnology.se
www.forcetechnology.se

2 0



In the heart and mind of FORCE Technology

2002