

# VTT 2017, key performance indicators and financial statement



## Table of contents

Key performance indicators 2017	3
President & CEO's review	4
Strategy 2016–2020	5
Organisation and Leadership Team	7
Business areas	8
Subsidiaries	9
Customers	11
Personnel	12
Financial statement	15
Review by the Chairman of the Board: Reforms beginning to bear fruit	16

# Key performance indicators 2017

Net turnover and  
other operating income\*

**258 M€**

Invention disclosures received

**237**

45 priority patent applications\*\*

Patent families\*\*

**364**

Patents or patent applications\*

**1,324**

751 patents granted,  
573 pending patent applications\*\*

Publications

**1,345**

In VTT's own publication  
series 61\*\*

International scientific  
articles\*\*

**610**

Personnel 31.12.2017\*

**2,368**

Doctors and licentiates\*

**27%**

University-level degree\*

**80%**

\*VTT Group

\*\*Parent company

# President & CEO's review

The year 2017 was a positive one for VTT in many respects. For years now, we have been working persistently to build VTT into a more customer-oriented and relevant partner for business life and society. We seek to understand the needs of companies and society better and to create business opportunities together, even in the face of great challenges. Last year, we consequently witnessed improvements in customer feedback, trust in VTT and our attractiveness as an employer. For this, we are proud and thankful.

It is also noteworthy that, once again, we were one of the most successful applicants in the EU's Horizon 2020 framework programme and received significant support for our scientific research, with which we are seeking to respond to global challenges, such as climate change, resource sufficiency and safety and security, renew Finland's industries and improve lives in every respect.

The year involved some challenges as well. The grants budget of Tekes (now Business Finland) has decreased dramatically in the past few years. VTT has traditionally been one of the largest implementers of Tekes projects, and the drastic drop in funding has been clearly reflected in our operations. We believe that we will be able to make up for the decrease in Finnish innovation funding by being more active in other types of operations. In the long term, however, we are concerned for the future of Finland's innovation system. The seamless cooperation between companies, research institutes and universities has been one of the "secret weapons" for ensuring Finland's international competitiveness. For years, Tekes played a significant role as a funder of these innovation ecosystems and technology platforms, and a Finnish replacement has not been found to date. I hope that a solution will present itself in the future.

We also invested more in the development and well-being of our personnel in 2017. We are competing for the best experts with business life and the academic world. On the one hand, our work requires a high degree of academic merit, in addition to which we need to be able to operate according to the laws and management methods of the private sector. We are committed to the training and occupational well-being of our personnel. In recognition of our work for increasing the well-being and activeness of our personnel, VTT received the Finnish Olympic Committee's "Most Active Workplace in Finland" award at the Urheilugaala sports gala in January 2018.

I would like to extend my heartfelt thanks to all VTT employees, our customers and our partners for the past year. It is a great joy to build a brighter future with you.

President & CEO  
Antti Vasara



# Strategy 2016 - 2020

## Vision

A brighter future is created through science-based innovations.

## Mission

VTT helps customers and society to grow and renew through applied research.

## VTT strategy: we make an impact through scientific and technological excellence

Challenge-driven way of working and excellence in science and technology are at the core of VTT's strategy.

VTT aims at understanding customers and society's needs and opportunities by working in a challenge-driven way. VTT co-develops impactful solutions to match these needs. In this way we help customers to succeed and promote sustainable growth and wellbeing in the society.

Scientific and technological excellence in all our work is the basis for VTT's impact. To further develop our competencies and identify new growth opportunities, we work with demanding customers and challenges around the world.

People at VTT make us unique. Wellbeing and competence development ensure that VTT people succeed in their work for customers. Built on our knowledge, partnerships, unique research infrastructure and IPR, we collaboratively develop timely and commercially competitive innovations.

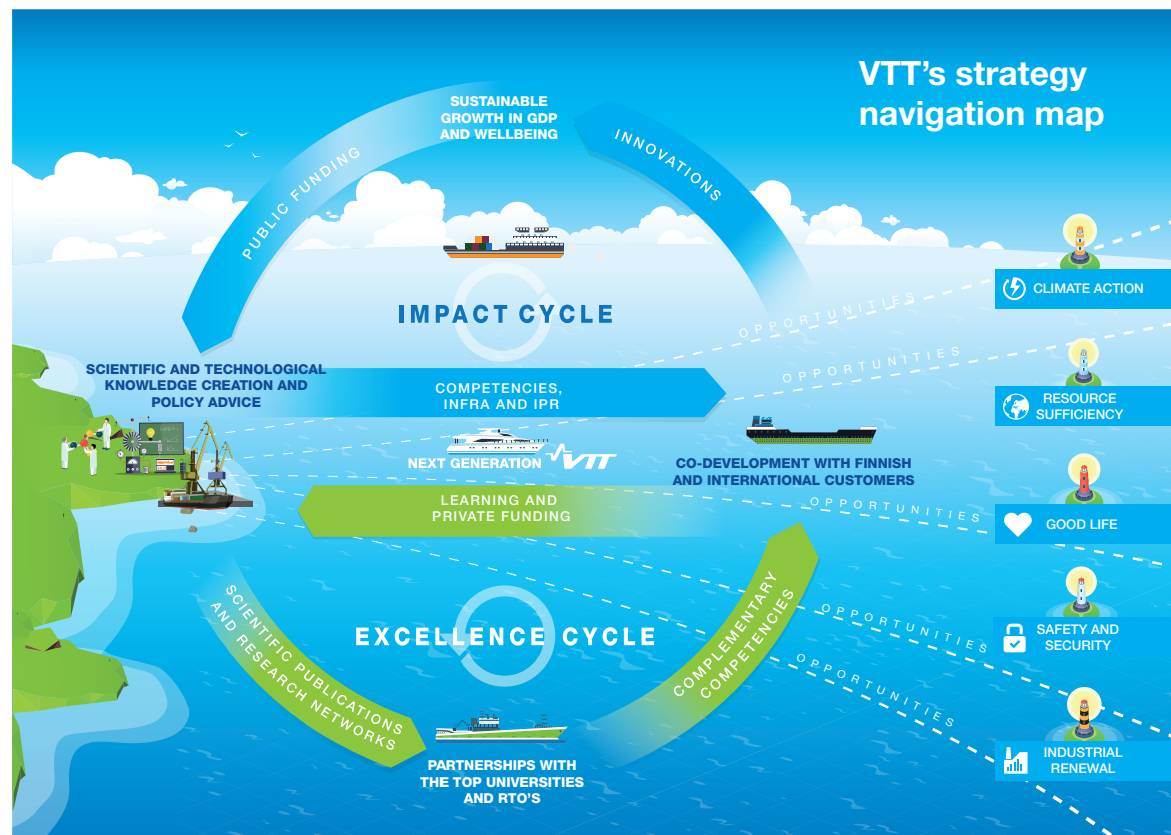
VTT achieves world class research and development by focusing its research on the following societal challenges and growth opportunities for Finland. We call these VTT Lighthouses:

- **Climate action**
- **Resource sufficiency**
- **Good life**
- **Safety and security**
- **Industrial renewal**

## How we work at VTT?

Our impact and excellence in science and technology are concretised in eight strategic choices that rise from market trends and customer needs. They describe how and on what grounds we make choices at VTT.





## IMPACT FROM VTT

- 1 We work in a challenge-driven way to create solutions to the current and future needs of our customers and society.
- 2 We formulate our research agenda based on future market growth opportunities (lighthouses).
- 3 We co-develop with customers according to differentiated service models matching their needs.
- 4 We proactively bring different customers and partners together around ambitious innovation initiatives.

## EXCELLENCE FROM VTT

- 5 We want to learn and improve. That's why we continuously evaluate the impact of our work.
- 6 We always improve our way to lead people and substance to ensure excellence and continuous competence development.
- 7 We work with leading international customers and partners to further develop our competencies and identify new growth opportunities.
- 8 We invest in excellence through funding from multiple public and private sources.

# Organisation and Leadership Team

## 1.3.2018



# Business areas

We work in close cooperation with domestic and global customers and partners. We create diverse ecosystems and bring different operators, capabilities and competencies in the value chain together in order to achieve common goals.



## Knowledge-intensive products and services

The digital revolution of society provides an opportunity to create growth stemming from new innovations, business models and their combinations.

Utilising the changes brought by digitalisation, particularly in the manufacturing industry and health care sector, will require visionaries and new technological solutions. Indeed, our research focuses on disruptive technologies linked to digitalisation: sensors, data communications, information security, data analytics, digital platforms and safe autonomous systems.

We have unique research facilities and pilot environments available for our scientific work. From successful pilot projects, we have built the PrintoCent and 5GTN innovation ecosystems, making use of printed functionalities and the 5G test network, and a nano and micro electronics business ecosystem that leverages the micro and nano technology research centre Micronova. The pilot environments are also open to our customers and partners for the quick and cost-effective development and demonstration of new and innovative products, services and solutions.

## Solutions for natural resources and the environment

The transition to a sustainable economy requires society and companies to be able to increase the value production of material flows, extend the life spans of products and materials and replace fossil-based raw materials with renewable alternatives.

The nascent bio and circular economies need sustainable, value-adding products, resource-efficient technologies and efficient process management. Our areas of expertise include industrial biotechnology and innovative food solutions, biomass processes and products, along with sustainable energy solutions and chemical technology. By combining these key areas of expertise with our VTT-wide expertise in digitalisation and manufacturing technologies, we can help the process industry renew itself.

We have demonstrated experience in the development of new processes and product concepts from ideas, through the laboratory phase and into industrial pilot production. Our versatile pilot facilities, modelling expertise, techno-economic assessments and environmental impact assessments help accelerate the R&D process.

## Smart industry and energy systems

Our goal is to create a new competitive edge by developing smart solutions for industrial and energy systems. Wide-ranging changes in industry, energy production and the energy system are a particular focus of our research.

The business area works closely with the industry, with innovation ecosystems in fields such as autonomic systems, intelligent industry, energy and transport as essential aspects of this cooperation. The constantly increasing importance of digitalisation plays a major role in all of the research conducted by the business area. The challenge-driven parallel development of technology and business models is at the heart of our R&D.

Our research activities emphasise the development of low-carbon and intelligent solutions for the production, transfer and distribution of energy as well as for consumers; solutions related to intelligent transport and an intelligent built environment; solutions and networks for the circular and minerals economies; security of supply and design and simulation methods that support the renewal of the manufacturing industry; along with dispersed production solutions and the supporting new manufacturing and automation solutions.



# VTT subsidiaries

## VTT Ventures Ltd

VTT's spin-offs are early-stage, technology-intensive growth companies. Technological and commercial innovation, team competencies and international potential are the key criteria when selecting target companies.

VTT Ventures' mission is to develop commercialisation-ready prototypes from the most promising technologies. Its activities are one of the keys to creating a flow of projects with investment potential.

VTT Ventures Ltd works in close collaboration with other actors in the innovation network. Its investments in portfolio companies are market-based and follow the same principles as venture capital investors.

In Finland and internationally, VTT Ventures has an extensive partner network with private equity investors. In 2017, VTT Ventures made investments worth a total of EUR 2.6 million, with 20 companies in the portfolio at the end of the year. In 2017, these companies attracted around EUR 27 million in new capital. The financial year was profitable for VTT Ventures.

## VTT Memsfab Ltd

VTT Memsfab Ltd operates as part of Micronova's manufacturing services in the 'Knowledge-intensive products and services' business area.

The company is engaged in the contract manufacture of micro and nano-electronics components and materials.

Production activities began in early 2011. The final product is typically a silicon disk which has been further processed and characterised in line with the customer's specifications, and contains sensors and detectors or the related parts.

Future growth is primarily expected to come from optical components.

## VTT Expert Services Ltd

Together with its subsidiary, Labtium Ltd, VTT Expert Services Ltd is one of the leading providers of testing, inspection and analysis services in Finland. The companies' service offering also includes expert assessments and analyses, along with calibration services. The majority of these services have been accredited by Finland's national accreditation service, FINAS. Our accreditations cover over 1,300 standards. Labtium and VTT Expert Services Ltd have the necessary notifications to act as a Notified Body. In addition, VTT Expert Services Ltd is a certified product approval body.

VTT Expert Services Ltd is a market-based, independent, third-party testing, inspection and certification organisation, while Labtium Ltd offers chemical analysis services.



Customer assignments are executed fairly, impartially and confidentially. Independence is ensured, while taking account of personal, financial, organisational and operational aspects on a project-by-project basis.

Diverse services help customers respond to the challenges posed by rapidly changing markets. The services provided by VTT Expert Services Ltd support the product development, launch and maintenance of the products of its customers over their whole life spans. The company offers a wide variety of services for different sectors, with a focus on construction and real estate management services. Comprehensive testing opportunities enable the production of reliable data to support modelling, assessments and decision-making. For its part, Labtium Ltd produces data for its customers' production processes and quality control, particularly through the methods of geological, fuel and environmental analysis. Demand for the two companies' services arises from regulations as well as deficiencies and development needs in production and products. The services are also needed in production process management.

The need and demand for the services of these companies has increased steadily. In order to fulfil customer needs, we have expanded our service offering and developed their customer communications and methods for executing assignments. The positive development of the Finnish economy has supported the organic growth of the companies. Many of the services are sectoral, and special expertise is required in order to provide them. The demand for various certification and testing services has been growing slightly, and the companies have responded to new demand by developing and expanding their accreditations, with the objective of providing the most comprehensive services possible for their customers.



At the end of the period, VTT Expert Services Ltd's accreditation services comprised testing, inspection, calibration and certification activities covering 33 accreditations, and 9 authorisations as a Notified Body. The company's quality management system has been certified according to standards ISO 9001 and ISO 14001. Nearly all of the testing and analysis functions of Labtium Ltd have been accredited.

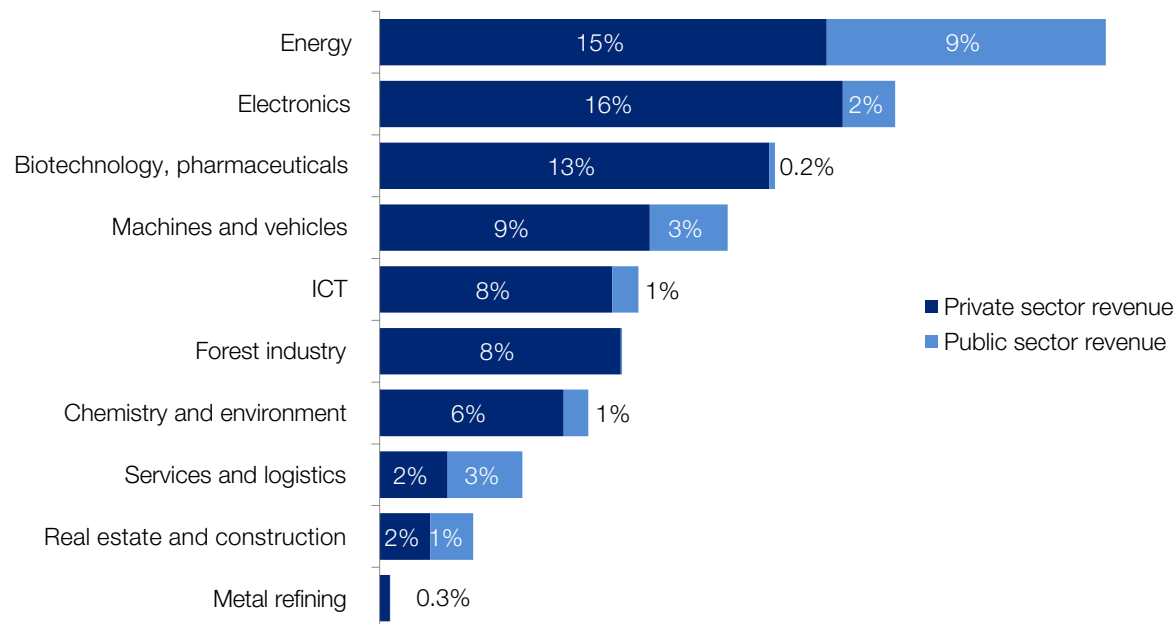
VTT agreed on the sale of VTT Expert Services Ltd and Labtium Oy to Eurofins Scientific Group on 15 December 2017. The transaction is subject to the approval of the FCCA and is expected to be closed in the second quarter of 2018.

# Customers



\*Parent company

VTT's sales revenue from commercial activities\*



\*Parent company, classification according to VTT's customer segments

# Personnel

## Development of a shared culture and way of working

The commitment of personnel and implementation of strategy are key issues for VTT. Launched in the summer of 2017, the VTT Experience programme brings new and long-serving VTT employees together to discuss matters of shared importance. A total of five VTT Experience days were held, with a total attendance of 130 employees, and the feedback was excellent.

The VTT Compass personnel survey was carried out in December 2017, with a response rate of 76.5%. The results and development measures will be discussed in the spring of 2018 with the help of workplace community games.

## We invest in the development of management and leadership

Excellent leadership and managerial work help VTT to succeed even better. The VTT Transformers coaching programme for managers was launched in the spring and the first LEAP manager coaching course in the autumn. The two coaching programmes will be attended by a total of 185 persons. Two training days for managers were held in the autumn on the theme of account management; more than 240 managers attended the training. Managers also received training in the active care model.

Personnel\*

2,368

Doctors and licentiates\*

27%

University level degree\*

80%

\*VTT Group 31.12.2017



## **Well-being at work is an important success factor for VTT**

VTT's well-being target for 2017 was to highlight a more diverse selection of alternatives and methods for improving the occupational well-being of individuals and groups. To this end, well-being workshops with various themes were organised for all VTT personnel. These were supplemented with a variety of events: the Heart Week tour, Dream Exercise Day, Step Competition and national exercise day "One Hundred Movements for Finland".

VTT organised two human resource coaching groups in 2017 for preventing coping issues and arranged a mindfulness training course that attracted 140 participants.

We also supported our personnel with Academy of Brain online courses and a pilot project for obtaining help for various crises at an earlier stage.

In 2017, VTT's actions for promoting well-being and activeness were recognised with the Finnish Olympic Committee's "Most Active Workplace in Finland" award, presented at the Urheilugaala sports gala held in January 2018.

## **Personnel development by a range of means**

VTT's success is based on continuous learning and the development of excellence by all staff. In 2017, the focus areas of development included on-the-job learning, project coaching and development programmes related to the execution of the strategy. VTT also launched an internal mentoring programme and development discussions were renewed to support the implementation of the strategy.

## **Good employer image the key to attracting talent**

In order to improve VTT's employer image and recruitment communications, we carried out an internal employer image survey and selected themes for supporting communications based on the results. In the employer attractiveness survey conducted by Universum, we achieved rank 6 among technical and natural sciences professionals and rank 8 among students. Awareness of VTT was increased through a summer job campaign, student events, recruitment fairs and social media communications.

## **Rewarding is an important part of a good employee experience**

The development of VTT's overall reward criteria and processes continued in 2017, with the objectives of increasing impact and excellence. Recognition rewards, used to reward personnel for excellent performance, were adopted as the principal short-term incentive.

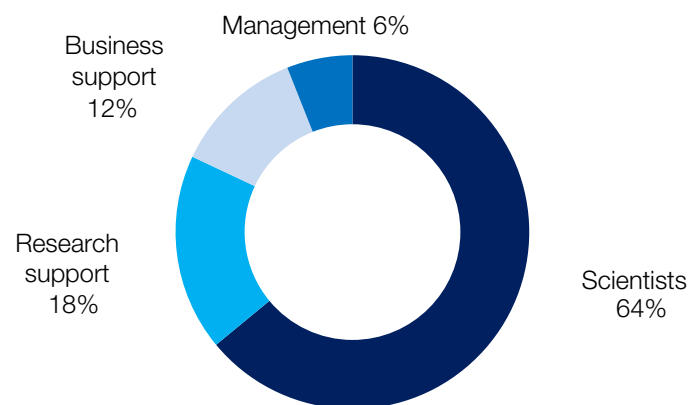
Other forms of reward included promoting occupational well-being, the diverse development of competencies and flexible working hour arrangements.

## Personnel 2017

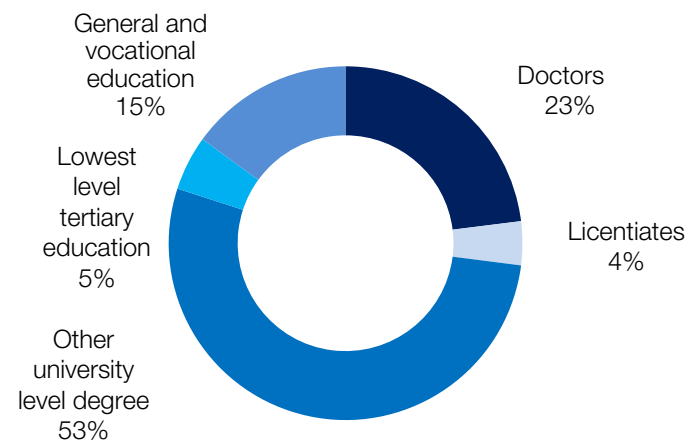
VTT Technical Research Centre Ltd had an average of 2,109 employees during the financial year. Around 1,947 person years were worked during the same period.

VTT Technical Research Centre of Finland Ltd						
	VTT Group			Parent company		
31.12.2017	2017	2016	2015	2017	2016	2015
The average number of employees	<b>2,398</b>	2,439	2,532	<b>2,109</b>	2,159	2,252
- Management 31.12.	<b>144</b>	132	145	<b>121</b>	110	123
- Scientists 31.12.	<b>1,513</b>	1,577	1,609	<b>1,387</b>	1,454	1,487
- Research support 31.12.	<b>385</b>	387	384	<b>253</b>	253	258
- Trainees 31.12.	<b>42</b>	36	45	<b>42</b>	36	45
- Business support 31.12.	<b>284</b>	282	287	<b>278</b>	275	279
Fixed-term contracts 31.12.	<b>184</b>	182	166	<b>170</b>	175	155
Part-time contracts 31.12.	<b>244</b>	238	205	<b>214</b>	211	182
Male 31.12.	<b>1,459</b>	1,483	1,521	<b>1,271</b>	1,300	1,351
Female 31.12.	<b>909</b>	931	949	<b>810</b>	828	841
Personnel costs (1 000 €)	<b>145,748</b>	152,298	155,880	<b>130,415</b>	136,986	140,858

Personnel structure\*



Education of personnel\*



\*VTT Group

# Financial statements

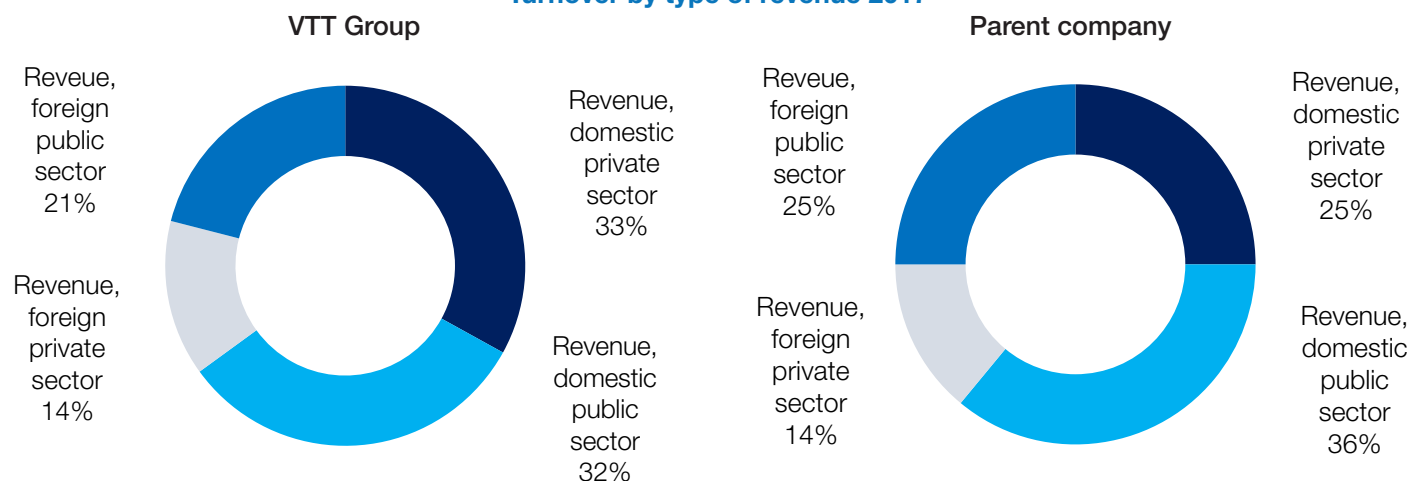
## Key figures 2017

VTT Technical Research Centre of Finland Ltd						
	VTT Group			Parent company		
	2017	2016	2015	2017	2016	2015
Net turnover (1 000 €)	<b>180,219</b>	188,378	184,538	<b>153,183</b>	162,572	157,915
Other operating income (1 000 €)	<b>77,345</b>	80,875	87,357	<b>82,372</b>	86,430	92,577
Government grant	<b>73,154</b>	77,235	85,384	<b>73,154</b>	77,235	85,384
Other	<b>4,191</b>	3,640	1,973	<b>9,218</b>	9,195	7,193
Operating profit before special items (1 000 €) (operative, unaudited)	<b>-2,245*</b>			<b>-2,883*</b>		
Operating profit (1 000 €)	<b>-17,536*</b>	-244	3,333	<b>-18,175*</b>	1,442	2,729
Operating profit (%)	<b>-9,7%</b>	-0,1%	1,8%	<b>-11,9%</b>	0,9%	1,7%
Return on equity (%)	<b>-11,7%</b>	-1,1%	2,6%	<b>-13,9%</b>	1,0%	2,1%
Equity ratio (%)	<b>59,6%</b>	67,3%	65,5%	<b>58,3%</b>	66,9%	65,2%

VTT Technical Research Centre of Finland Ltd's net turnover consisted of 61% public sector revenue and of 39% private sector revenue. The domestic revenue accounted for 61% and foreign revenue for 39% of the net turnover. Of the foreign revenue 75% came from Europe, 15% from North and South America, 10% from Asia and 1% from elsewhere.

\* Operating loss for the financial year 2017 includes 15.3 million euros special item costs due to decommissioning of FIR1 research reactor and restoration of old hotcell premises. The sum includes also estimated future costs. Until 2016 the state of Finland has financed these costs. During 2017 VTT did not receive a positive funding decision on its application for additional funding for the updated total costs of decommissioning. Estimated total costs have increased due to external expert opinion on total costs and due to increased uncertainty on the disposal site. VTT continues the negotiations with the State on the funding for these costs.

### Turnover by type of revenue 2017



# Reforms begin to bear fruit

It has been three years since VTT's legal structure changed from a government agency into a limited liability company and VTT Ltd was born. A key reason in doing this was to enable faster renewal of VTT, allowing it to be quick and agile in responding to changes in customer needs. The goal was to have greater impact and create renewal and growth in Finland. VTT became a limited liability company in order to change from a public-sector approach to modern business and customer driven management practices. Now is a good time to look back on our achievements.

- The incorporation clarified the responsibilities and roles of VTT's Board of Directors, CEO and Leadership Team. This laid the foundation for starting the renewal in VTT.
- The new company structure enabled VTT to seek a President & CEO with expertise in the Finnish and international research and business sectors. Antti Vasara, DSc (Tech.), took up the post two and a half years ago. Under Antti's leadership, VTT has renewed its Leadership Team, streamlined its objectives, improved management practices and made them more transparent.



- VTT's strategy was renewed together with the employees and is now more customer driven and more focused on scientific expertise. The rapid renewal of our organisation and practices has drawn attention within and outside VTT. In most cases the changes have generated fresh excitement among people when they have seen the positive results.
- We have turned the decline in customer financed business operations around, i.e. we now have growing numbers of joint development projects with companies. Our changes in personnel and operating methods are achieving clear results.
- Our Horizon 2020 research funding and the programme's acceptance rate of VTT projects have grown. VTT, which has long been one of Europe's most successful EU funding applicants, has further improved its reputation in the EU, where it is even more highly regarded than in Finland.

In other words, the renewal process is bearing fruit. However, our work in improving VTT has just begun.

The next key goals are ramping up R&D&I activities and increasing our Finnish private and public-sector funding. On behalf of the Board of Directors, I would like to thank our customers and all VTT employees for their help and support in our aims to build agile VTT. I wish you many inspiring moments in the days ahead.

Aaro Cantell  
Chairman of the Board, VTT

### VTT Board

						
<b>Aaro Cantell</b> Chairman, Normet Oy M.Sc. (Tech.)	<b>Matti Hietanen</b> CEO Terrafame Group Oy M.L., M.Sc. (Econ.)	<b>Kari Knuutila</b> CTO Outotec Oyj D.Sc. (Tech.)	<b>Harri Leiviskä</b> CFO Suunto Oy MBA (CU), M.Sc. (Econ.)	<b>Petra Lundström</b> VP, Nuclear Development Fortum Power and Heat Oyj M.Sc. (Tech.)	<b>Tuija Pulkkinen</b> VP, Prof., Research and innovation services Aalto University	<b>Kaija Pehu- Lehtonen</b> SVP, Business Development Metsä Fibre Oy M.Sc. (Tech.)