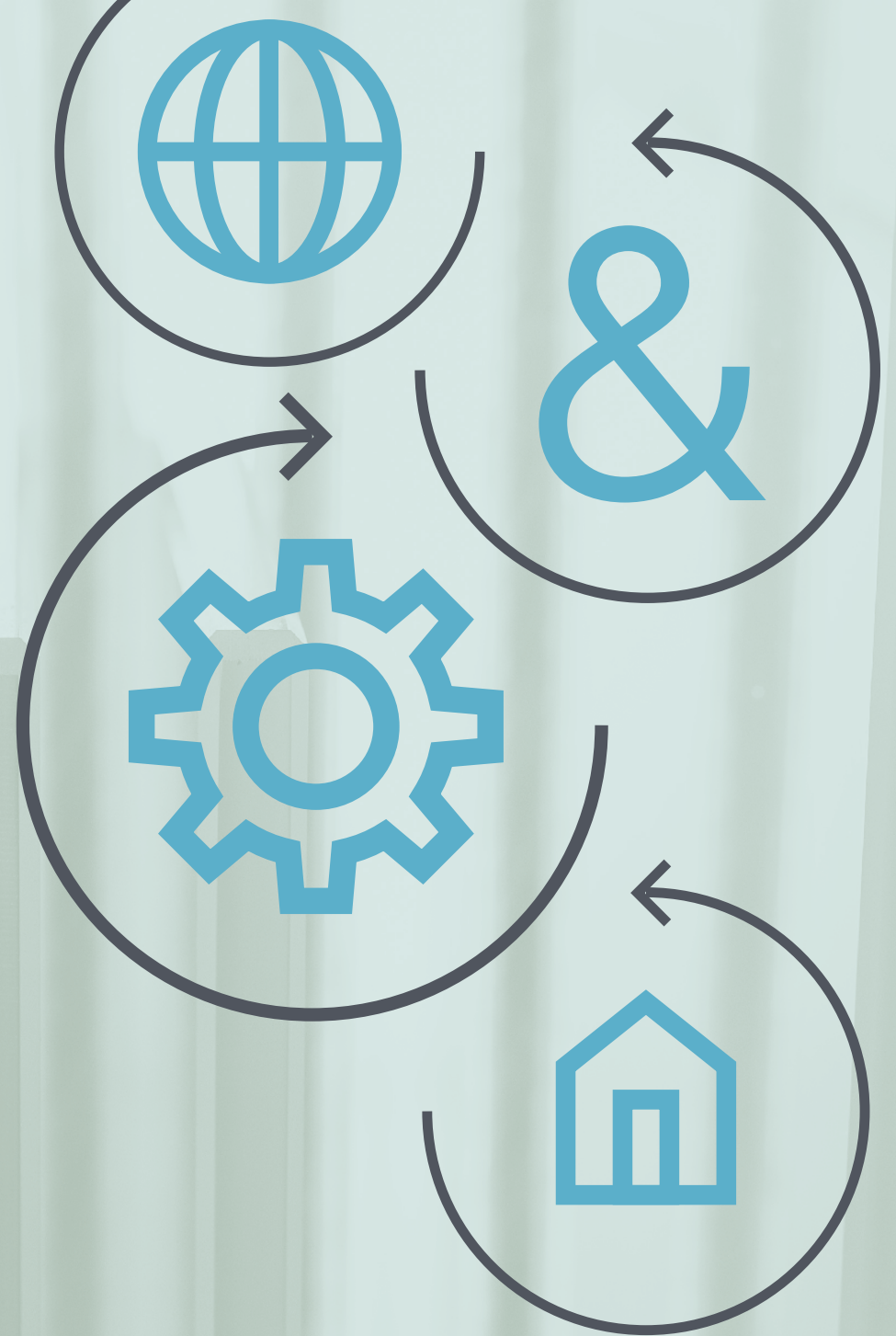


glaston

Corporate
Responsibility
Report 2019



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The frontrunner in glass processing

Glaston's purpose is to build a better tomorrow through safer, smarter, and more energy-efficient glass solutions. As environmental awareness increases, demand for more energy-efficient and environmentally sustainable glass solutions is growing. Energy-efficient double- or triple-glazed insulating glass units and coated, low-emissivity glass processed with Glaston's technology meet the energy-saving needs of buildings. Greater attention is being paid to the safety of buildings, and for glazing solutions this means increasing use of tempered and laminated glass. Tempering, laminating and insulating glass units are Glaston's core expertise, and in these we offer the most advanced technology.

The debate on climate change is also strongly reflected in the glass industry. This has led to rapid development in smart glass, ultra-thin glass and glass used in solar energy solutions. As our industry's innovative technology leader, we are strongly involved in this development, and we are continually launching more advanced technology to meet the changing needs of the market.



A significant acquisition

In 2019, the scope of Glaston's operations changed significantly when, in line with its strategy, the company strengthened its position as a leading player in the glass processing market by acquiring the German-Swiss company Bystronic glass. The acquisition expanded the Glaston's offering from heat treatment technologies and services to insulating glass

technologies in the architectural market and to pre-processing in the automotive and display markets. Glaston has production in Finland, Switzerland, Germany and China as well as sales and service points in eleven countries. From these locations, Glaston serves its customers, who operate in over one hundred countries.

Glaston's factories in Finland and China assemble machines, while its factories in Switzerland and Germany manufacture machines. Of Glaston's purchases, approximately 75% come from EMEA based goods suppliers, 15% from Asian goods suppliers and 10% from American goods suppliers. The most significant materials purchased for machine manufacturing include steel structures, electrical and automation components, power centers and process blowers. Glaston is committed to responsible procurement practices. In accordance with its Code of Conduct, Glaston acts fairly towards its suppliers, service providers and subcontractors. Glaston, in turn, requires its suppliers to respect the principles outlined in the company's Code of Conduct.

Continuous dialogue

Glaston's goal is to be a reliable and responsible partner for its stakeholders. The most significant stakeholders are current and potential customers, current and potential employees, shareholders and investors, suppliers and subcontractors, the media, public authorities and local communities as well as research institutes and universities. Glaston

engages in constant dialogue with its stakeholders on topics of current interest.

Glaston Corporation's share (GLA1V) is listed on the main list of Nasdaq Helsinki Ltd. At the end of 2019, Glaston had 7,112 shareholders. At the end of the year, the company's largest shareholders were AC Invest Eight B.V. (26.39%), Hymy Lahtinen Oy (12.22%), Varma Mutual Pension Insurance Company (7.50%), Ilmarinen Mutual Pension Insurance Company (7.31%) and OP-Finland Small Firms Mutual Fund (6.07%).

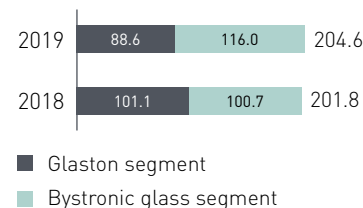
Corporate responsibility management

Glaston is committed to doing business in a responsible and sustainable way. Glaston's day-to-day activities are guided by the Code of Conduct and Glaston's other Group-level policies and local guidelines. Corporate responsibility and its management are the responsibility of the CEO and the company's Executive Management Group and they report to Glaston's Board of Directors on the topic. Information on the members of the Board of Directors and the Executive Management Group can be found on Glaston's website glaston.net/governance/.

Glaston's Communications and Marketing coordinates responsibility measures and communications. The goal is to set up during 2020 a corporate responsibility task force comprising experts from various functions to promote Glaston's sustainability agenda within their own organizations.

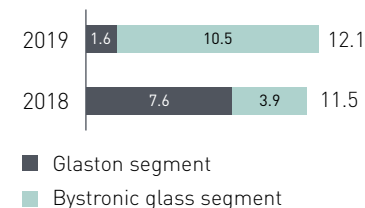
Key figures 2019

NET SALES, EUR MILLION



Figures are pro forma figures

COMPARABLE EBITA, EUR MILLION



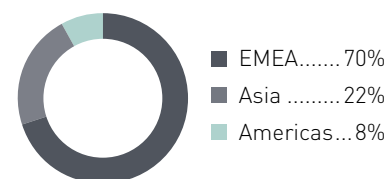
ORDER BOOK, EUR MILLION



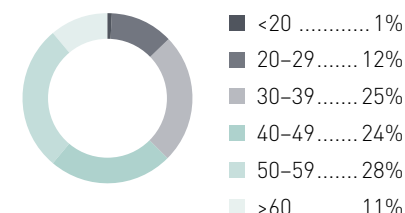
ORDERS RECEIVED, EUR MILLION



PERSONNEL PER REGION



AGE DISTRIBUTION OF PERSONNEL



Scope of the report

This report describes Glaston Group's operations in 2019. It focuses on reporting material issues, based on a materiality analysis conducted in autumn 2019. The report covers the entire Group and is therefore much broader than the previous year's report, which focused on operations in Finland.

PRESIDENT & CEO'S GREETING

A historic year

The year 2019 was a historic year for Glaston, with the acquisition of Bystronic glass, the largest acquisition in the company's history.

In terms of employee numbers, the size of the company more than doubled, and the company's product portfolio expanded into insulating glass technology and automotive industry pre-processing technology. The acquisition supports our goal of further strengthening our position in the glass processing value chain. Through the acquisition, we have a unique product offering that generates added value for our customers. In addition, the acquisition provides us with excellent opportunities for cross-selling new equipment, providing services directly from a single supplier, and the joint development of integrated production lines. The Bystronic glass acquisition was well received by our customer base, and we have already been successful in cross-selling our products. The integration of Bystronic glass with Glaston has continued well and we have

succeeded in combining our operations faster than expected.

In the spring, we updated our strategy

In the spring, we updated our strategy to reflect the company's expanded operations. The foundation of the strategy remains unchanged: we will continue to seek growth in our core business and services through digitalization. Combining the strengths of Bystronic glass and Glaston, as well as leveraging the expertise brought by Bystronic glass, creates for us unique opportunities to further strengthen our machines and services offering and grasp new growth opportunities. Implementing a joint operating model will support us in reaching the strategic goals and in realizing the full synergy potential of combining Glaston and Bystronic glass. The overall goal of our strategy remains the same: our ambition is to be the industry's innovative technology leader, realizing its customers' highest ambitions in glass.



Net sales and profitability developed as expected

In 2019, the market was double-edged. Economic uncertainty continued throughout the year and this was also reflected in the investment willingness of glass processing customers. Activity on the heat treatment machines market, particularly in the EMEA area, continued to be subdued throughout the year.

Energy efficiency and the need to improve the energy performance of buildings is supporting demand for insulating glass, while demand for insulating glass machines, related services and spare parts also continued to be good during the year. Demand for heat treatment machine services was also good. Despite market and other challenges, our pro forma net sales remained at the previous year's

Glaston's purpose is to build a better tomorrow through safer, smarter, and more energy-efficient glass solutions.

level, while comparable (pro forma) EBITA improved in line with expectations.

Climate change and the need for energy-efficient solutions create opportunities

Climate change is a megatrend that also affects Glaston, and through our comprehensive technology offering we have better opportunities to meet global environmental challenges. Improving the energy performance of buildings is one of the driving forces behind the company's business, and this is strongly supporting demand for insulating glass machines in the USA and Europe. We have a strong position in the market, and the Bystronic glass TPS® (Thermo Plastic Spacer) technology promotes the achievement of energy-efficiency targets. In addition, as environmental awareness grows, there is

growing demand for solar energy and smart glass. In addition to solar panels and cells, new applications of the future may include solar panels integrated into façades or windows to provide energy for buildings. In smart glass applications, windows that react to fluctuations in light or temperature, for example, improve the energy performance of buildings. Glaston is strongly involved in this development via our Emerging Technologies unit, which provides engineering and consulting services for the production of smart glass and energy glass windows as well as solar energy applications.

I would like to thank all of our employees for their contribution throughout the year. Last year was a year of change. Our personnel responded well to the challenge and are committed to our success. I also want to

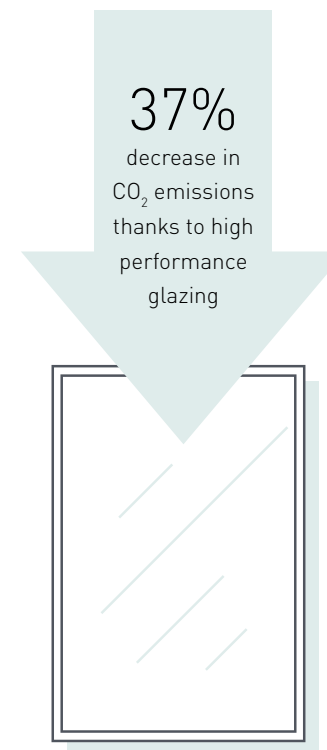
thank our customers for their trust in us and for their positive response to the acquisition. At the same time, thanks are also due to you, our shareholders, for your trust during 2019.

Glaston's anniversary year 2020 – development continues

The current year is equally significant for the company, as we celebrate our 150th anniversary. We will continue to develop our business for the benefit of our customers by investing heavily in innovation and sustainability while enhancing our operating earnings performance.

Arto Metsänen
CEO

Energy savings potential in windows



Source: Glass For Europe



Megatrends supporting Glaston's business

The following megatrends have a particular impact on Glaston's development:

- Urbanization
- Safety
- Energy-efficiency and environmental awareness
- Trends in the automotive industry

Urbanization is one of the world's most powerful forces of change. The UN has estimated that by 2050 nearly 70% of the world's population will live in cities. At the same time, cities will become larger and more densely populated and, particularly in developing countries, megacities with over 10 million inhabitants will arise. Through urbanization, the need for new construction will grow, and the existing building stock, too, will be developed, which will increase demand for glass.

The use of glass in buildings has clearly increased; well-designed use of glass can reduce the energy consumption of buildings, improve their sound insulation and at the same time increase interior brightness. People's preferences are also increasing the use of glass as a building material. This development will create increasing demand for energy-saving glass, smart insulating glass units and solar energy solutions.

As environmental awareness grows and construction laws and regulations become stricter, the energy-saving requirements for buildings will tighten. Insulating and energy-efficient glass is increasingly being used to meet energy-saving targets, and more safety glass is being used due to tighter safety regulations. In addition, various smart glass applications that improve energy performance, for example, are being developed for buildings. Utilization of solar energy in buildings is also on the increase, resulting in growing demand for the glass needed in solar cells. In general, the size, coating and bendability requirements for glass are increasing and the need for highly processed glass is growing.

In the automotive industry, too, requirements for the properties of glass are constantly increasing. In vehicles, the relative proportion of glass is on the rise, and large, panoramic windshields, in particular, are making their way onto the market. Head-up windshield displays and interactive windshields present new opportunities for glass processing. As the proportion of glass grows, however, there is a trend towards minimizing the weight of glass, with the thinness of glass playing a key role. This development is driving the growing demand for glass in the automotive and display glass industry.

Material aspects of Glaston's responsibility

In 2019, Glaston reviewed the most material aspects of its responsibility in collaboration with the company's main external stakeholders and its own personnel. Based on this, the key issues of responsibility were identified, with the most material themes being: responsible own activities (personnel, environment, responsible business), responsible purchases, responsible partner and responsible member of society. The company's Executive Management Group approved Glaston's Responsibility Agenda in December 2019.

Responsible own activities



Human resources

- Health & safety and risk prevention
- Competencies and skills, development and trainings
- Equality, anti-discrimination, anti-harassment
- Anti-corruption and fair competition practices
- Responsible sales



Environment

- Climate impact oversight and scenarios
- Risks and possibilities related to tightening emissions regulation



Responsible Business

- Financial responsibility ensuring competitiveness and profitability

Responsible sourcing



Suppliers

- Supplier requirements, assessments and audit
- Human rights and work place safety within the supply chain
- Anti-corruption in supply chain and sourcing

Responsible partner



Customer

- User experience and customer satisfaction



Products & Services

- Machine quality, reliability and longevity, life-cycle management
 - Machine safety and advising customers in operating the machines
 - Data safety and security
 - Energy / material efficiency and sustainability of the machines and products
- End-product quality, safety and recyclability

Responsible member of the society



Sustainable tomorrow

- Indirect impacts on energy efficient cities and societies
 - Indirect energy and emission reductions
 - Indirect material reductions
- Sustainable end-product applications
- Development of the industry, research co-operation

Some of the Responsibility Agenda topics are still at the development stage and the aim is for them to be reported more comprehensively in subsequent reports. The key indicators of responsibility have been identified and their target setting will be developed in 2020.

Responsibility in Glaston 2020

Development of responsibility work will con-

tinue in 2020 with the implementation of the Responsibility Agenda. Glaston will set up a corporate responsibility task force and create for responsibility work consistent company-wide processes and tools. Information on the themes of the Responsibility Agenda, and on related measures and their progress, will be regularly disseminated via the company's communications channels.

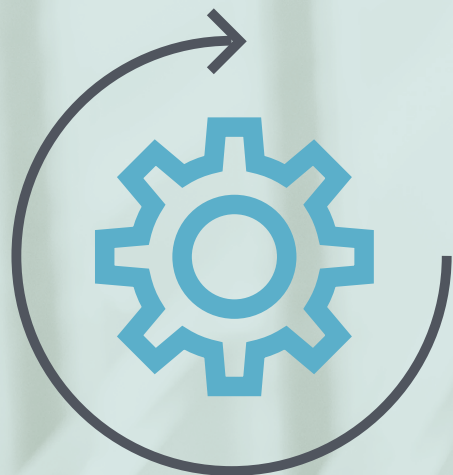
Topic	Indicator	Objective	Timetable
Responsible business	Training of personnel in the Code of Conduct	Training coverage 100%	Continuous
Safe workplace	Number of accidents	No accidents	Continuous
	Reports of workplace harassment	No reports	Continuous
Impacts on the environment	Energy consumption in production units	Decreasing energy consumption, %	Determining starting level and setting savings target in 2020
	Energy efficiency of glass processing machines	Loading capacity and yield +10%	By 2030
Responsible purchases	Responsible procurement training	Training coverage 100%	Continuous
Responsible partner	Industry's best customer experience	Customer satisfaction measurement	Target setting 2020, continuous



UN Sustainable Development Goals

Glaston supports the United Nations Sustainable Development Goals (SDGs), which will guide the sustainable development actions of member states, companies and other organizations up to 2030. Glaston has identified six goals that also emerge from our own strategy and are most relevant to us. These provide a broader frame of reference for our work and support the achievement of these goals in our own activities.

Glaston responsibility theme	UN Sustainable Development Goals	Implementation in Glaston
Responsible operations	 Goal 3: Ensure healthy lives and promote well-being for all at all ages  Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	· occupational health care in all operating countries according to local needs and requirements · minimizing health risks: e.g. in Finland enhanced health checks for the over 50-year-olds, hobby sessions and exercise benefits · eSkills online learning system for all personnel · summer work, diploma work and trainee positions for young people
Responsible member of society	 Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all  Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	· reducing the harmful environmental impact of cities with new glass technology, such as smart glass · Emerging Technologies unit, which provides engineering and consulting services for the production of smart glass and energy glass windows and solar energy applications · GlastonAir™ air flotation technology for glass tempering meets the needs of solar panels and solar cells · Enabling the introduction of resource-efficient, clean and environmentally friendly technologies and processes · Participating in the development of society by paying taxes, wages and dividends
Responsible partner	 Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation  Goal 12: Ensure sustainable consumption and production patterns	· Efficient use of energy and materials and minimizing waste and material waste · ISO 9001 quality management system and ISO 14001 environmental management system · glass processing machine energy-efficiency at heart of product development, long life cycle, high utilization rate and real-time quality control iLook · proactive and regular maintenance by utilizing cloud services and opportunities offered by IOT



Responsible own activities

Professional and devoted personnel foundation for success

A responsible employer

Professional, committed and healthy personnel are the foundation of Glaston's success. Glaston is committed to continuously evolving the skills of its personnel and providing its personnel with an inspiring work environment where they have the opportunity to learn and develop. In accordance with its operating principles, the company pursues equality and diversity.

In 2019, Glaston's personnel grew by 121%, and there were 790 (357) Glaston employees at the end of the year. The increase was due, in particular, to the acquisition of Bystronic glass in April 2019. At the end of 2019, Glaston had operations in 11 countries, of which the three largest, by employee numbers, were Germany, Finland and China.

At Glaston, employee turnover is low and most employment relationships are permanent.

Of Glaston's personnel, 83% were men and 17% were women. At the end of the year, 20% of Glaston's Executive Management Group were women.

Towards a common corporate culture

With the acquisition of Bystronic glass, Glaston's employee numbers have more than doubled. The

integration of Bystronic glass into Glaston began at a brisk pace. Operations have been combined efficiently, and in 2019, for example, sales and service points were merged, overlapping operations were removed, integration of various IT and customer management systems was launched, and the foundation was laid for a common digital product platform. The merger of operations did not result in many redundancies.

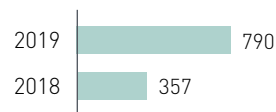
Creating a common corporate culture and identity requires long-term work. Glaston's values were renewed in May. Via training and communications, information on the products, business policies and practices of Glaston and Bystronic glass has been disseminated throughout the company. In addition, cooperation has been promoted at joint service locations, for example in the UK, Singapore and Russia. Comprehensive product training has been arranged for sales, service and production personnel.

In 2020, the integration of information management systems used by HR will continue.

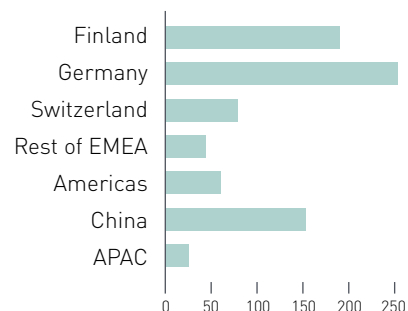
Skills development

In Glaston, personnel training is mainly organized internally and according to local needs. In 2019, due to the acquisition of Bystronic glass, one area of focus in training was cross-selling of products. Another

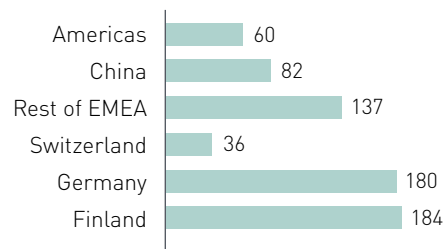
EMPLOYEES AT END OF YEAR



EMPLOYEES PER COUNTRY 2019



TRAINING DAYS 2019



SICKLEAVE AND ACCIDENTS 2019

Alue	Sickleave	Accidents
Glaston total	5,221	22 ^{*)}
Per employee	7	

^{*)}The accidents figure covers both accidents resulting in an absence and accidents not resulting in an absence. The most common accidents are hand injuries, such as cuts.

FIXED-TERM AND PART TIME EMPLOYEES

The share of fixed-term employees among all employees, %

Finland	11%
Germany	3%
Switzerland	0%
Rest of EMEA	0%
Americas	5%
China	0%
APAC	0%

The share of part time employees among all employees, %

Finland	4%
Germany	11%
Switzerland	25%
Rest of EMEA	1%
Americas	5%
China	0%
APAC	0%

EMPLOYEE AGE DISTRIBUTION 2019

	<30	30-49	>50
Finland	14%	46%	40%
Germany	18%	36%	46%
Switzerland	8%	46%	46%
Rest of EMEA	-	76%	24%
Americas	8%	58%	34%
China	13%	81%	6%

area of focus was various IT, software and digitalization training, which took place extensively throughout the organization. In addition, team development workshops were organized in Finland and supervisor training arranged in Switzerland.

The company's eSkills online learning platform was expanded in the autumn, both in terms of target group and content, to include Bystronic glass. Thanks to eSkills, training is flexibly available online, and all our personnel can develop their skills independently. The eSkills platform provides training related to products, processes and operating practices.

Performance appraisals are conducted annually within Glaston and all employees are covered by the appraisal process. In the development appraisals, targets are jointly agreed for the coming year and an evaluation is made of performance during the previous year and of the achievement of targets set for the previous year. Particular attention is paid to the planning of each person's own skills development.

Bystronic glass has previously applied its own performance appraisal model. During 2020, the intention is to implement a joint performance appraisal model.

Wellbeing and safety at work

At Glaston, we invest in the health, working capacity and safety of our personnel in many ways, and we actively monitor occupational safety. Our target is zero accidents at work. The day-to-day management and development of occupational safety is the

responsibility of the company's various units in line with local legislation. Occupational safety training primarily takes place in the company's assembly and production units. On average, occupational safety reviews are conducted every three months and, based on them, development measures are agreed upon. Occupational safety training is regularly arranged in all production units. Occupational safety issues are discussed in local occupational safety committees. In Germany, supervisors arrange annual safety training for their subordinates. The most common injuries are hand injuries, such as cuts.

The company encourages its personnel to exercise. In Finland, Glaston offers its employees joint activities and exercise benefits. In Germany, personnel have an opportunity to use a company bicycle.

Remuneration

As a rule, all of Glaston's personnel are covered by an annual bonus scheme and, in addition, the reward scheme also includes Glaston Way awards. The annual bonus is based on Glaston's financial performance, and the Glaston Way monetary awards are based on good work performance supporting the achievement of strategic goals in line with the company's values. Since 2014, the company has had a share-based incentive scheme for the Group's key personnel. The scheme is linked to the company's financial performance.

Glaston renewed values:
We are committed to our customers,
We share the passion for glass,
Together we build the future and
We learn from each other.

Anti-corruption work and responsible sales

Glaston has operating locations in eleven countries, and from these we serve our customers in over 100 countries. The company's own operations are complemented by a global agent network. Glaston recognizes that there is a risk of corruption and fraud in some of the company's operating areas.

Glaston's activities are guided by our Code of Conduct, which specifies how the company conducts its business ethically and responsibly. Responsible sales and anti-corruption work are important issues for Glaston, and the company ensures that the principles described in the Code of Conduct are implemented in practice.

Glaston regularly arranges training on its fair business issues (bribery, conflicts of interest, fair competition) to ensure compliance with its Code of Conduct. In addition, the training materials are always available on the company's intranet. In 2020, Glaston will update its Code of Conduct in relation to bribery, corruption and money laundering, and training in the updated Code of Conduct will be arranged for all of the company's personnel during the year.

Sustainable development as an opportunity

Promoting sustainable development has become a global norm. Discussions on measures to combat climate change are also under way in the glass industry. Glaston views the promotion of sustainable development as a business opportunity, and as a frontrunner in our industry the company is involved in creating the corporate responsibility standards and practices of our industry.

Of Glaston's customer segments, the architectural and construction segment is the biggest. New energy standards, stricter legislation and supranational programs such as the EU's Green Deal and campaigns such as Renovate Europe, for example, are steering societies towards more environmentally-friendly and energy-efficient solutions.

Buildings will play a significant role in combating climate change. In the EU, for example, buildings account for 40%*) of total energy consumption, and 36% of carbon dioxide emissions come from buildings. The greatest potential for reducing energy consumption lies in the renovation of existing buildings. If, for example, windows

of buildings in the EU were replaced by energy-efficient window units by 2030, the energy consumption and carbon dioxide emissions of the buildings would be approximately 30% lower than today**).

The glass processing industry has actively developed types of glass that can be used effectively to optimize the need for heating and cooling in buildings and thereby reduce energy consumption. Of these, energy-saving glass causes heat radiation to be largely reflected back indoors, while solar protection glass reduces the transmission of solar energy and thus reduces the need for cooling. In addition, double or triple insulating glass units further improve the energy efficiency of windows. Large glass surfaces also facilitate the use of daylight in buildings, reducing the need for artificial lighting.

Glaston contributes to the construction of a more energy-efficient society by offering its customers a wide range of products and services that enable them to manufacture more energy-efficient windows and insulating glass units. In 2019, Glaston's offering expanded into insulating glass technology through the acquisition of Bystronic glass.

As environmental awareness grows, demand for solar energy and smart glass is growing. In addition to solar panels and cells, new applications of the future may include solar panels integrated into façades or windows to provide energy for buildings. In smart glass applications, windows that react to fluctuations in light or temperature, for example, improve the energy performance

of buildings. Glaston is strongly involved in this development, providing via its Emerging Technologies unit engineering and consulting services for the production of smart glass and energy glass windows as well as solar energy applications.

Impact on the environment

Glaston continuously strives to reduce the environmental impacts arising from its activities, use of machines on customers' premises, and its end products. Glaston's most significant environmental impacts in its own activities come mainly from energy consumption, waste and transportation. In the use of machines, the main environmental aspect is the energy consumption of the machines.

Glaston's continually develops the quality, reliability and energy-efficiency of its products. At Glaston's assembly and production units, the company operates in accordance with the ISO 9001 quality management system. In Finland, Glaston manages environmental issues in accordance with the ISO 14001 environmental management system.

Glaston is constantly improving the energy efficiency of its properties, and these measures are also assessed from the perspective of environmental impact. During 2019, the Tampere property managed to reduce oil consumption by approximately 70% when heat pumps were installed instead of oil as a heating source. An energy review conducted in autumn 2019 highlighted the replacement of lighting as having significant

*) Source: Renovate Europe **) Source: Glass for Europe

energy-saving potential, and the gradual renewal of lighting with LEDs will begin in 2020. In Germany, part of premises lighting was replaced with LEDs during the year. Thanks to the new LED lights, energy costs fell by 50% and carbon dioxide emissions were reduced. In 2020, the light replacement project will continue in Germany. In Germany, the compressed air system is inspected annually for possible leaks, thereby preventing unnecessary carbon dioxide emissions. The introduction of solar energy is being explored in both Germany and Finland.

In its waste management, Glaston's goal is to keep environmental loading as low as possible, which in turn correlates positively with waste costs. Sorting and recycling of waste is arranged taking into account the activities of each operating location. The aim is to keep to a minimum the amount of waste in general as well as the amount going to landfill. Much waste arises from packaging materials; this is sorted and either recycled or used as energy waste. In Germany, however, goods suppliers' packaging materials are recovered and suppliers make very effort to reuse them. In China, recyclable material is sold to an external recycling company. In Finland, Glaston's waste volumes increased in 2019. The proportion of metal waste, in particular, grew due to the decommissioning of large old machines used in product development. The metal waste was sold for recycling.

TIANJIN FINANCE CENTER

Creating a sustainable masterpiece in glass

The recently opened Tianjin Finance Centre in China's northeast port city stands tall as the 7th highest building in the world. Not only is it a work of art in glass, steel and design, it is a tribute to how skyscrapers can promote sustainability.

The architecture and engineering firm Skidmore, Owings and Merrill LLP (SOM) was awarded the work to make a truly memorable building and one that could positively contribute to sustainability.

Sustainability lies at the core of the Tianjin Finance Centre's design. The choice of materials, its engineering prowess and glass glazing solutions create an architectural masterpiece that combines carbon emissions reduction with stunning innovation.

With its curved, tapering form, the original plan was to include over 1,000 unique glass panels. However, the design team cut this back to 476 to facilitate manufacturing efficiency and ease of

replacement. This same optimized approach with structural design also saved 19,000 tons of steel, 10,500 cubic meters of concrete and 3,900 tons of rebar, significantly minimizing the overall environmental impact of the building with its lighter footprint, over an earlier design of the same size.

The glass windows provide expansive views and maximize daylighting to save on energy costs for the building. To further cut back on emissions, SOM utilized high-performance, double-glazing with a low-E coating and incorporated an insulated panel, integrated with the mullions between each glass pane, thereby cutting heating and air-conditioning costs.

The glass for the façade was supplied by CSG Holding, the largest manufacturer of architectural glass in China, using high-quality glass processing technology from Glaston.



©Seth Powers

The transport of machines to customers is done either by land or sea. Transports are handled by forwarding companies by the shortest routes.

Glaston's glass processing machines have operating lives. The machines are designed to withstand constant use at high utilization rates. Glaston pays special attention to the quality and durability of the materials used in its machines. Glaston's production and assembly processes and installation methods are designed to promote product quality and reliability as well as the safety of installers and customers.

Energy-efficient technology

In Glaston's operations, the most significant environmental impacts arise when customers use machines purchased from Glaston. The operating life of Glaston's tempering machines is fairly long, up to more than 20 years. A significant part of the operating costs of the machines comes from the price of energy. Glaston's product development has therefore long focused on improving the energy-efficiency of the machines. As a result of this work, we have been able to substantially reduce the energy consumption of the most significant products in our tempering machine portfolio. For example, in the tempering process of low-emissivity glass, energy consumption has been reduced by around 30% over the last decade.

Electricity consumption in the manufacturing of glass pre-processing machines and insulating glass units is low and, as a

result of product development, consumption has been reduced even further. Development has focused on, for example, conveyor control and optimization of washing machine ventilation.

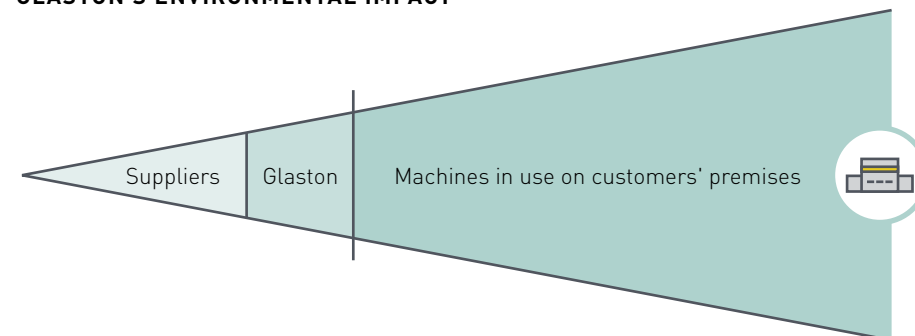
In product development, Glaston utilizes new technology and the opportunities created by digitalization. With the aid of cloud services and the industrial internet, the company helps its customers to use their machines as efficiently as possible. A real-time quality measurement system detects deviations in the quality of processed glass immediately, thereby minimizing material waste.

Energy saving opportunity

The architectural and construction industry is Glaston's largest customer segment. Therefore, the environmental impact of the glass installed in buildings is highly important for Glaston.

Energy is the biggest cost item in the lifetime of buildings, and heat generation and loss through windows accounts for 25–30% of the energy used for heating and cooling buildings. New energy standards and stricter legislation are driving demand for more energy-efficient and environmentally conscious solutions in both new and renovation construction. The energy-saving potential is enormous, because in the EU area up to 86% of buildings' glass surfaces consist of outdated and less energy-efficient single or double glazing. The glass processing industry has actively developed types of glass that can be used to optimize the need for heating

GLASTON'S ENVIRONMENTAL IMPACT



WASTE PROCESSING 2019



WASTE, TONS ^{1*}



ENERGY CONSUMPTION, KWH ^{1*}



^{1*} Germany, Finland, China, comparable

and cooling in buildings and thereby reduce energy consumption.

Through its Emerging Technologies unit, Glaston provides engineering and consulting services for the production of intelligent glass and energy glass windows. Demand for solar energy is growing, and strict quality

requirements, for example in relation to glass thickness and curved surfaces, are set for the glass used in solar panels and cells. In smart glass applications, windows that react to fluctuations in light or temperature, for example, improve the energy performance of buildings.

Responsible business

Glaston's financial responsibility is centered on maintaining the company's profitability and competitiveness, and its key objective is to ensure profitable growth.

Financial responsibility is reflected in Glaston's responsible, long-term and sound financial management. In addition, responsibility from a financial perspective means that the Group's operational and financial risks are recognized and managed so that business targets are achieved and continuity of the company's operations is safeguarded. Glaston applies a risk management policy approved by the company's Board of Directors.

Glaston is committed to complying with local tax laws and regulations as well as the OECD Transfer Pricing Guidelines. Glaston is committed to pay direct and indirect taxes and other tax-like charges based on current laws and to report and disclose its tax information in accordance with applicable legislation.

Professional operations

Glaston strives to ensure high quality management of its tax affairs in all countries of operation and to maintain accounting systems and controls that support tax compliance. The company operates transparently, professionally and appropriately with all tax authorities.

Through profitable operations, Glaston ensures that the company is able to fulfill its obligations towards its key stakeholders. Personnel salaries, payment of goods and

service providers, social taxes, and potential dividends and returns of capital for shareholders are our most important obligations.

In 2019, Glaston's pro forma net sales totaled EUR 204.6 million and comparable EBITA was EUR 12.1 million. In financial year 2019, Glaston paid interest and financial

expenses totaling EUR 2.6 million. Based on the decision of the Annual General Meeting, a return of capital of EUR 0.014 (share issue adjusted) per share was paid to the company's shareholders for financial year 2018.

Glaston paid EUR 0.6 million in income taxes during financial year 2019. Salaries

and bonuses paid to personnel totaled EUR 42.3 million and pension expenses EUR 4.2 million. Glaston had an average of 689 employees in 2019. Glaston's investments in tangible and intangible assets totaled EUR 4.6 million in 2019.

Distribution of economic impact

EUR million		2019	2018	2017	2016
Customers	Profits	181.0	101.1	109.7	107.1
Suppliers	Purchases, materials and services	130.9	68.8	67.6	68.1
Employees	Salaries, bonuses and other social costs	51.4	23.4	24.4	26.2
Financiers	Financial costs	2.7	0.7	0.8	1.0
Owners	Dividend/Return of capital	1.7	1.2	1.9	0.0
Public sector	Taxes	0.9	0.2	0.2	0.4
Community investments	Beneficactions	0.0	0.0	0.0	0.0
Investments to the development of business	R&D	6.4	4.1	3.8	2.5

EUR million	Purchases				R&D				Salaries				Taxes			
	2019	2018	2017	2016	2019	2018	2017	2016	2019	2018	2017	2016	2019	2018	2017	2016
Finland	47.8	47.3	47.6	43.9	4.3	4.0	3.6	1.3	14.9	13.1	12.8	12.8	0.0	0.0	0.2	0.0
Other EMEA	50.3	4.0	2.9	3.8	2.0	0.1	0.1	0.1	23.7	3.2	3.5	3.4	0.5	0.2	0.1	0.1
Americas	20.2	9.3	9.3	14.0	0.0	-0.2	-0.2	0.9	6.5	3.8	4.7	6.0	0.4	0.0	0.0	0.3
Asia	12.7	8.2	7.7	6.3	0.2	0.2	0.3	0.3	6.3	3.2	3.4	3.9	0.1	-0.1	0.0	0.0



Responsible purchases

Fair and honest business

Responsible procurement

Suppliers of goods and services play an important role in Glaston's value chain. Glaston selects its sub-contractors carefully; the selection criteria are quality, reliability, security of supply and price. Glaston seeks close, long-term and good relationships with its most important suppliers. In this way, Glaston ensures that our partners understand and comply with our requirements, in relation to both processes and products.

Most of Glaston's approximately 2,500 active sub-contractors operate in Europe, where the company's largest assembly and production units are located.

Only companies that have not violated the law are selected as suppliers in Europe. Suppliers are selected so that they have the right, under EU law, to supply products and services and are not subject to sanctions of any kind. Quality and purchasing organizations audit the most significant suppliers regularly in order to monitor the safety and quality of supplied parts and products. In 2019, 55 suppliers were audited. All new suppliers go through an audit process before being approved. In addition, visits are made to suppliers, if necessary.

Glaston's Code of Conduct includes a commitment to respect human rights. In accordance with its Code of Conduct, Glaston acts fairly towards its suppliers, service providers and subcontractors. Glaston, in turn, requires its suppliers to respect the principles outlined in the company's Code of Conduct.

Fair business

In its Code of Conduct, Glaston undertakes to promote fair competition and to comply with the law in all of its activities. No direct or indirect payments can be made, nor can the company's funds be conveyed directly or indirectly to any party to gain an inappropriate advantage. The Code of Conduct requires the avoidance of conflicts of interest and the refusal of any inappropriate payments or benefits.

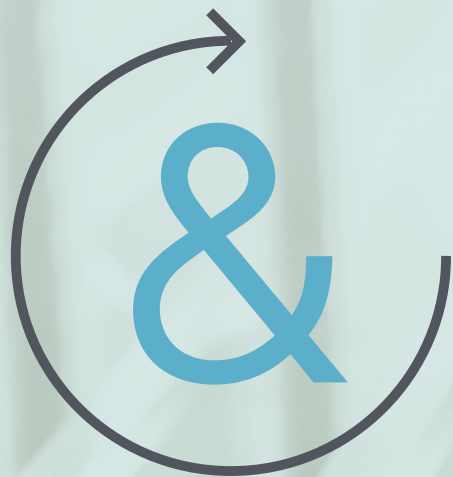
Glaston regularly arranges training for its personnel on its Code of Conduct and fair business issues to ensure compliance with guidelines. In addition, the training materials are always available on the company's intranet.

Purchases by supplier operating country

EUR million	2019	2018	2017	2016
Finland	49.8	42.1	44.7	41.6
Germany	37.7	3.2	0.8	1.3
Switzerland	13.3	0.1	0.0	-
United States	4.3	7.5	6.0	6.1
Italy	4.3	3.3	3.6	5.4
China	4.4	4.2	3.5	2.7
Others	17.2	8.5	9.0	10.9
Total	130.9	68.8	67.6	68.1

Active suppliers by operating country

	2019	2018	2017	2016
Finland	784	772	792	731
Germany	914	33	21	31
Switzerland	254	2	2	-
United States	181	200	225	215
Italy	264	112	138	132
China	62	211	222	200
Others	194	159	155	143
Total	2,653	1,489	1,555	1,452



Responsible partner

Industry's best customer experience

Customer experience

Glaston wants to be the most customer-oriented, reliable and high-quality player in the industry. By creating more customer-oriented operating practices, the company adds customer value, thereby continuously improving the customer experience. As the operating environment changes, the requirements of production technologies also increase.

Higher quality and more versatile features are continually required from customers' end products. Glass processing machines must be able to produce larger, more uniform and thinner glass surfaces. Production must also be able to adapt flexibly to making different types of glass. As a glass industry frontrunner, Glaston develops technologies and solutions that meet these changing customer needs, and product development is often done in partnership with customers.

Glaston uses customer satisfaction surveys to determine how successful the company has been in its deliveries and service visits. Customer surveys are currently being conducted in heat treatment machine delivery projects and service visits, but the goal is to extend surveys to the other main product groups.

Customer support throughout the life cycle

Glass processing machines are long-term investments for their owners as, depending on the machine, they have fairly long operating lives, of up to 20 years. The machines are designed to withstand constant use

Glaston has approximately

4,500

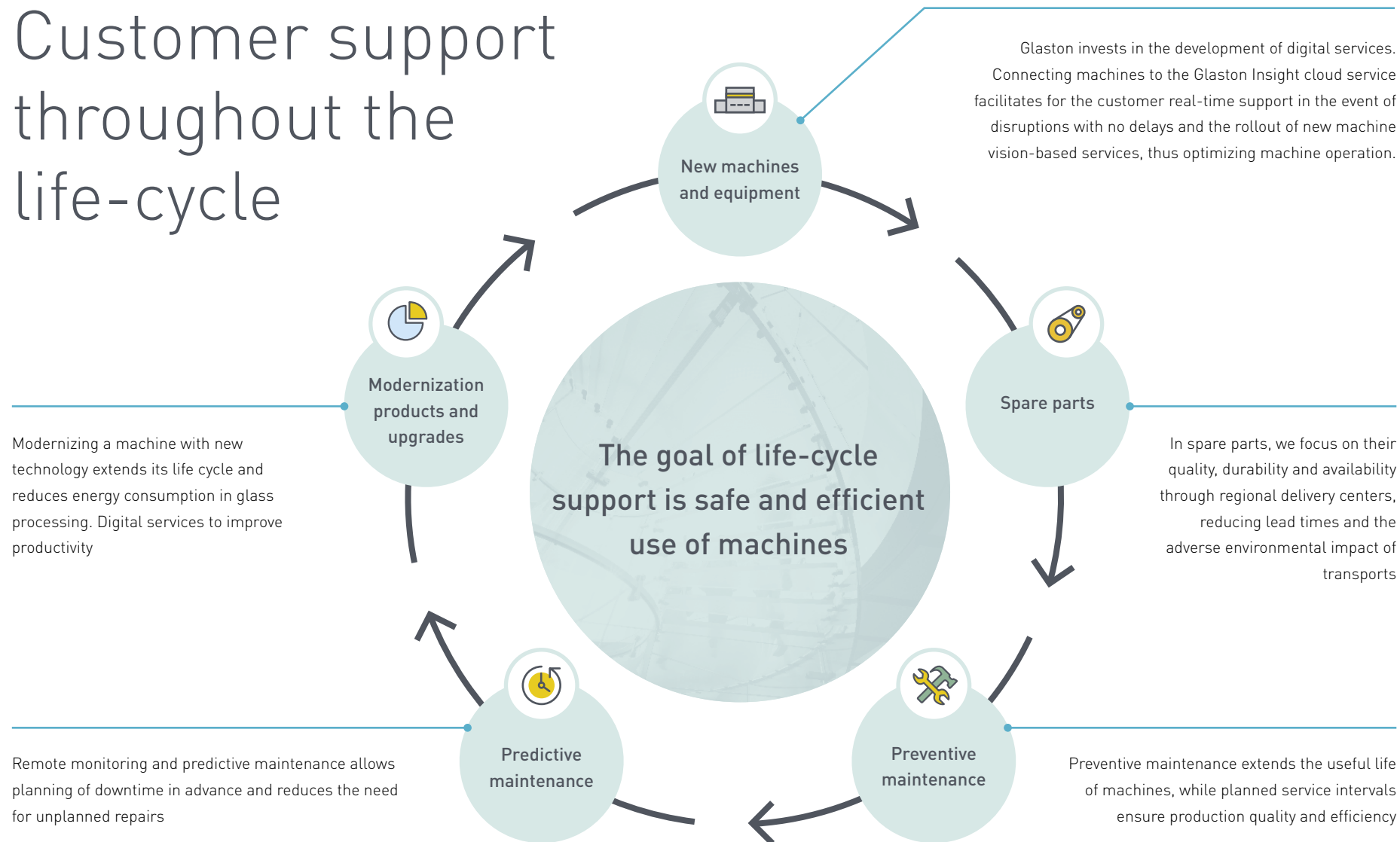
installed and operating machine lines

at high utilization rates. Glaston pays special attention to the quality and durability of the materials used in its machines.

Glaston's production and assembly processes and installation methods are designed to promote product quality and reliability as well as the safety of installers and customers.

Safety in the use of Glaston machines delivered to Europe is based on the EU Machinery Directive and the EN standards mentioned therein. The Directive requires manufacturers to carry out, among other things, a risk analysis of the machine, describing possible risks to personnel during the various stages of using the machine, and measures to reduce risks as well as information on any residual risk, which must be mentioned in operating instructions and in which the user must be trained. In addition, the company is also responsible for ensuring that the machine is constructed of items and components according to a parts list, for which specific requirements are set.

Customer support throughout the life-cycle





I was very impressed at how quickly we were able to install the new ProL-zone upgrade on our existing lamination line – only 3.5 days – and I’ve been equally impressed with the high-quality output. And energy savings with the new oven has been phenomenal. With our old line, we were running at 350 amps, whereas we’re now down to 44 amps with our new one.

– **Rob Carlson**, Mechanical Engineer at Tristar Glass, Inc.’s Tulsa, Oklahoma facility.
Tristar Glas installed a ProL-zone upgrade on their exiting laminating line.

In accordance with its life cycle model, Glaston has been actively developing its maintenance services, as regular service intervals increase product life and safety. Glaston has a total of approximately 4,500 installed and operating machine lines. Glaston has over 100 different upgrade products for different machine models. Modernizing machines with new technology, such as a new control system, a new tempering chamber or the ability to process low-emissivity glass, extends the life of the machines and reduces energy consumption in the glass processing process. In 2019, around 100 customers ordered upgrade solutions for their heat treatment machines. During 2020, the range of upgrade and modernization products will be expanded, particularly with regard to digital services.

Preventive maintenance extends the useful life of machines, while planned service intervals ensure production quality and efficiency. In addition, Glaston is investing in the development of digital services. The MyGlas-

ton customer portal contains all information between Glaston and the customer, such as project tracking, machine service reports, technical manuals and operating instructions, and links to the Glaston Insight cloud service. Connecting machines to Glaston Insight enables the customer to monitor and report on production in real-time, provides real-time customer support in the event of disruptions with no delays or travel that burdens the environment, and facilitates the rollout of new machine vision-based services.

At the end of 2019, more than 150 tempering machines had been connected to the Insight service, and more than 2.5 million glass processing loads had been registered. The first laminating machines were also connected to the Insight ecosystem, and the first test connections of insulating glass machines to the cloud service were made.

Developer of demanding products

Glaston is a frontrunner in its field, and known in the glass industry for its technology

leadership and high quality. The company’s position is particularly strong in developing technologically demanding products. Glaston invests in continuous customer-oriented product development, emerging glass technologies and new business opportunities brought by digitalization. During 2019, the company purposefully set out to strengthen its product development investments in the Bystronic glass segment. The company carries out product development in close cooperation with its customers and partners, such as research institutes, universities and other higher education institutions.

At the forefront of Glaston’s product development are new digital and IoT-based products that enable the optimization of machine performance and the transition to fully automated glass processing. By utilizing cloud services and the opportunities provided by IoT, Glaston helps its customers use their machines as efficiently as possible. As a by-product of efficiency and reliability, optimized energy consumption is also achieved.

As part of the MIDAS project, Finland’s first machine learning project in the industry, Glaston succeeded in 2019 in introducing several artificial intelligence applications to improve the quality and control of the tempering process.

The increasingly visible consequences of climate change will also affect the glass industry and demand for different kinds of products. The demand for solar energy is growing, and the glass used in solar cells and panels is subject to exacting quality requirements, for example with respect to glass thickness and curved surfaces. Glaston has taken this into account in its product development, and the GlastonAir™ tempering machine developed by Glaston responds well to this need. In 2019, Glaston delivered a GlastonAir™ machine to a Chinese customer for solar power production.

Emerging glass technologies and glass products providing added value, such as smart glass, are also increasingly entering the market, and the energy-saving potential of smart glass products, for example, is boosting demand for them. In 2017, Glaston established the Emerging Technologies unit, which provides consulting and planning services for smart glass and energy glass window production as well as solar energy applications.

Glaston has been involved in a nanotechnology project in California since the latter part of 2015. Glaston’s partner is developing for the market a new electrochromic smart glass technology that adjusts the thermal and light transmittance of glass precisely and quickly.



Responsible corporate citizen

Technology leader, developing the glass industry

Glaston is actively and diversely involved in developing its industry. We promote the development of both the industry and its technologies in our operations and with our partners.

Glaston is actively participating in international glass industry organizations:

- NGA/GANA in the United States
- China Glass Association in China
- ABRAVIDRO in Brazil
- Verband Deutscher Maschinen- und Anlagenbau glass technology forum in Germany
- Flat glass associations in Germany and Finland

In addition, Glaston is an active member, authorized by the Finnish national working group, in glass industry committees of CEN (European Committee for Standardization) and ISO (International Organization for Standardization) as well as in working groups preparing safety glass (tempered and laminated glass) standards. Through these, the company's representatives can influence the creation of industry standards and communicate through their practical experience the needs and requirements that the standards should cover.

Glaston works closely with various research institutes and higher education institutions. Key partners

include VTT Technical Research Center of Finland, University of Tampere, Business Finland, Fraunhofer Institute in Germany, and universities in Switzerland. The company also actively offers summer, graduate thesis and trainee job positions. The German unit operates an apprenticeship program, in which 20-25 young students are participating. The program lasts 3-4 years, depending on the training. During the program, students complete the theoretical part of





their training in an educational institution and practical work training takes place in the company.

In product development, Glaston actively utilizes new technology and the opportunities created by digitalization. As a result, the company's partner network has expanded. In 2018, Glaston joined the MIDAS project on industrial artificial intelligence, led by DIMECC. In 2019, Glaston and the University of Tampere received the DIMECC Prize for exemplary cooperation between an industrial company and a university.

Glaston's Emerging Technologies unit conducts development and engineering

projects in emerging glass technologies. Companies operating in this area are typically frontrunners in their field, which means that requirements for new glass technology and its development and application in practice are very high. Through its technological expertise and extensive contact network, Glaston has achieved the status of a reliable partner for companies developing and commercializing smart glass inventions.

To boost the industry's development and increase innovation, Glaston has twice organized a start-up event for the glass industry, Step Change. The event is a forum for innovators, potential partners, customers

and investors. The event is organized in conjunction with the Glass Performance Days (GPD) conference.

The GPD expert conference, organized by Glaston, brings together all of the various stakeholders in the glass processing chain, and it is the glass industry's most prestigious event. The conference aims to gather together and disseminate the latest information among sector actors and to promote the development of new areas of application and technological features. The conference has been organized since 1992 and over the years it has attracted more than 15,000 glass industry professionals.

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