

# Troldekt A/S Corporate Social Responsibility

Communication on Progress for the UN 2019

# About this report

Troldtekt A/S's CSR reporting is based on the sustainable Cradle to Cradle design concept and the UN Global Compact.

This report relates to the calendar year 2019. In publishing this report, Troldtekt A/S confirms its continued support for the UN Global Compact. At the same time, the report describes the progress we have made within CSR, while also providing a status on our objectives and initiatives.

This is the sixth consecutive year that our CSR reporting is based on the Global Reporting Initiative (GRI) methodology, which has significantly enhanced the structure of our reporting and our data collection. In practice, we are inspired by the earlier GRI G4 reporting framework, which in mid-2018 was replaced by GRI Standards. This report is based on the same methodology and structured in the same way as recent reports, making it easier to compare the data.

The areas reported on have been identified following a thorough materiality analysis, which we have carried out in collaboration with the consultancy firm Carve Consulting. Troldtekt A/S's CSR reporting is based on the sustainable Cradle to Cradle design concept and the UN Global Compact.

## Report structure

The report is divided into five sections. First, we describe Troldtekt's CSR work in general, providing a status from the Board of Management and selected highlights from 2019. In the second section, we focus on our strategic work with the Cradle to Cradle sustainable design concept – while the third section is about our focus on four of the UN's Sustainable Development Goals.

The fourth section contains several examples of specific activities in 2019. And finally, the last section of the report contains the actual data reporting under four headings: environment, labour conditions, society and human rights.

## Focus on the UN's 10 principles

Troldtekt's CSR activities are anchored in the management as a strategic focal point for our business strategy which is based on the Cradle to Cradle principles. In our internal CSR policy, we have introduced requirements for our daily activities based on the ten principles of the UN Global Compact. Our CSR policy is available online at [troldtekt.com](http://troldtekt.com) under the menu item 'Environment & CSR'. Troldtekt's co-operation with its suppliers is based on our Code of Conduct, which is also available at [troldtekt.com](http://troldtekt.com).

## Want to know more?

If you have any questions about the report, please contact Tina Snedker Kristensen, Head of Marketing and Communications at Troldtekt, by phone (+45 8747 8124) or email ([tkr@troldtekt.dk](mailto:tkr@troldtekt.dk)). All Troldtekt's CSR reports can be found online at > [www.troldtekt.com](http://www.troldtekt.com).





One of the sustainable forest plantations where trees used to produce Troldekt are felled.

# Contents

**About Troldekt** **Page 3**

- Editorial
- Highlights of the year
- Company profile
- Troldekt, the story
- Troldekt and the UN Global Compact

**Troldekt and Cradle to Cradle** **Page 12**

- Certification and objectives

**Troldekt and the UN Sustainable Development Goals** **Page 14**

- Our choice of goals
- Goal 3: Good health and well-being
- Goal 12: Responsible consumption and production
- Goal 15: Life on land
- Goal 17: Partnerships for the goals

**Troldekt's CSR activities in 2019** **Page 28**

- Sustainable laboratory has opened in Berlin
- Sustainable offices for green think-tank
- Increased focus on safe workflows
- Colleagues learning Danish at work
- Student project sparked idea for new solution
- Sponsorship for tomorrow's architects
- Byens Hus brings light to Mørke

**Data from Troldekt** **Page 38**

- Environment
- Labour conditions
- Society
- Human rights
- Content index

# New objectives pave the way for new initiatives

In 2019, we took the next steps in our strategic work with the UN Sustainable Development Goals. We broadened our focus to include two more goals – which has already spawned several concrete initiatives. At the same time, we reaped green benefits from our massive investments in more energy-efficient production.

At Troldekt, we work with CSR at a strategic level. Since 2012, this work has been based on the international Cradle to Cradle design concept, and year after year we have realised milestones that create value for the world around us – and for our business.

In recent years, we have extended our focus to include the UN Sustainable Development Goals (SDGs). We have done so because Cradle to Cradle and the Sustainable Development Goals have many principles in common. It makes sense, for example, to work with the SDG on good health and well-being when, with our Cradle to Cradle certification, Troldekt is documenting how its acoustic panels contribute to a healthy indoor climate.

For us, it is crucial that we translate the SDGs into concrete action so that they become more than just colourful intentions. Read more about our specific work with four of the SDGs in this report.

## **We are using less energy per unit**

In recent years, we have made investments in our factory running into triple-digit millions of kroner – and now they are beginning to pay off. The largest chunk of the money has been spent on an additional production line, which we inaugurated in February 2019. But we have also upgraded our existing line with new technology in order to be able to produce acoustic panels as energy-efficiently as possible. Two major upgrades were a new drying oven and a biomass boiler.

As can be seen at the end of this report, the investments are reflected in our data. In 2019, we managed to reduce our energy consumption per unit produced by approx. 14% compared to the previous year. At the



same time, we have converted fossil fuels into green energy – for example, our trucks run on electricity from wind turbines instead of diesel. Over the next few years, we will continue to minimise the environmental impact of our production.

Another important focus area in the near term is to further strengthen safety standards in our production. We already follow thorough and precise procedures, but with five industrial accidents in 2019, new measures are needed. The goal is clear: We want to reduce this figure to zero. You can read about our strengthened focus on this issue in the report.

## **Ready for a new decade with Global Compact**

This year's CSR report is our tenth report since we joined the UN Global Compact in 2010. The Global Compact principles have served as important

guidance over the past decade. We have come a long way in implementing measures which benefit both people and the environment. And which at the same time give us competitive advantages in a market where it is becoming increasingly important to act responsibly and transparently. Let me take this opportunity to reiterate that we will, of course, be fully supporting the 10 principles in the decade ahead.

Finally, I would like to thank all my colleagues. Without their wholehearted support, our CSR activities would not have made anything like half the difference in our everyday lives.

Peer Leth, CEO, Troldekt A/S

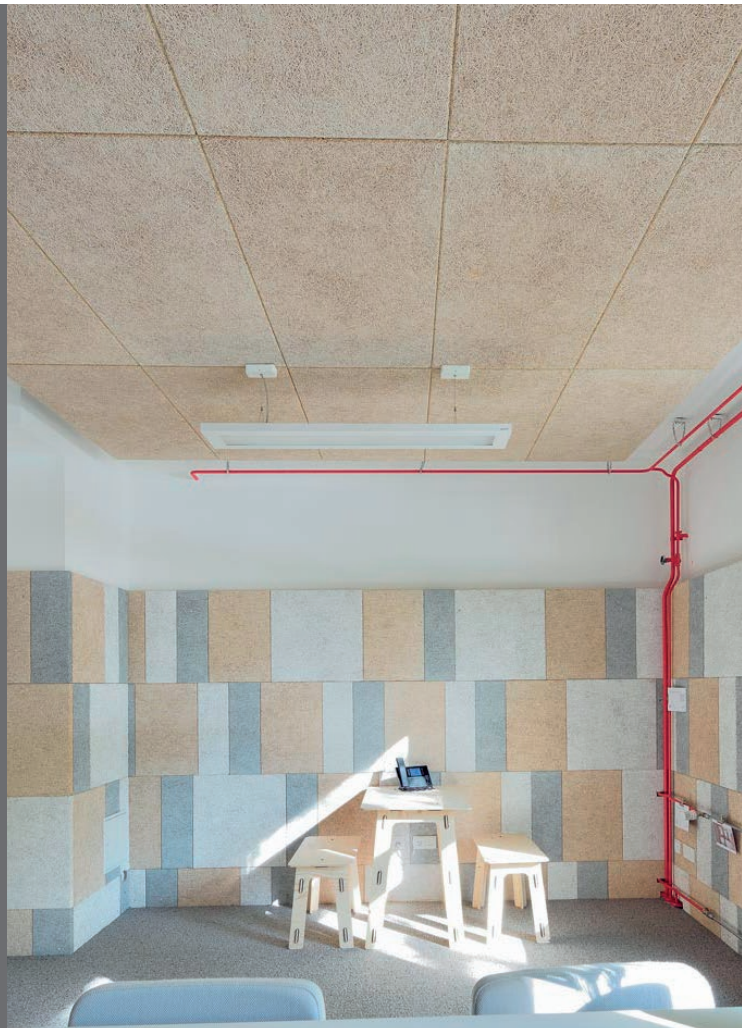




## New knowledge about healthy construction

In 2019, we – together with Rambøll – prepared documentation for Troldekt's contribution to WELL-certified and Nordic Swan Ecolabelled construction, where the focus is on health and well-being. In doing so, we have supplemented our documentation packages for Troldekt's contribution to the DGNB, LEED and BREEAM certifications. Troldekt is also part of the newly opened C2C LAB in Berlin, a knowledge centre for healthy, Cradle to Cradle-certified building materials.

➤ **Pages 17-19 and page 28**



## Less energy per unit

In 2019, we inaugurated our brand new factory line. Fully automated processes and the latest technology now enable us to manufacture our panels etc. more energy-efficiently. While we used 25.47 MJ (megajoules) per produced square metre in 2018, in 2019 we used only 21.95 MJ. This equates to a 13.8% reduction. Over a two-year period, the reduction has been 20.9%.

➤ **Page 40**



# Choose between FSC® and PEFC™

In 2019, we supplemented our FSC® certification (FSC®C115450) with a PEFC certification™. All our acoustic panels are now certified according to one of the two leading standards for responsible forestry. All the wood we use is PEFC-certified, and much of it is also FSC-certified. Customers can therefore choose between the two standards when buying Troldekt.

➤ **Pages 23-24**

17 PARTNERSHIPS FOR THE GOALS



## Leading the way for more certified forests

In partnership with FSC Denmark, in 2019 we launched a public call concerning the need for more FSC-certified forests in Denmark. The joint initiative comprised several activities, and has now resulted in, for example, the Municipality of Ringkøbing-Skjern FSC-certifying its woodland areas.

➤ **Page 26**



# Social responsibility is a fundamental value

At Troldekt, a sustainable indoor climate is one of our guiding principles. We want to be innovative, credible and socially responsible in our work.



Troldekt has produced cement-bonded wood wool products since 1935, and today Troldekt is one of Europe's leading suppliers of acoustic solutions. Troldekt acoustic panels are still manufactured from the same sustainable materials as 80 years ago: Danish Norway spruce and Danish cement.

All production takes place in Denmark under modern, environmentally friendly conditions.

Troldekt's business strategy is founded on the Cradle to Cradle design concept, which plays a key role in securing environmental improvements towards 2022. Sustainability thus plays a crucial role in our work – because we believe that it will pay off in the long term.

## Vision, mission and guiding principle

- Troldekt's vision is to be a trendsetting supplier of intelligent acoustic solutions.
- Our mission is to be a creator and communicator of innovative acoustic solutions.
- Our guiding principle is sustainable indoor climates.

## Activities

Troldekt's principal activity is the manufacture and sale of acoustic cement-bonded wood wool wall and ceiling panels for all types of buildings – from private homes, schools, institutions, offices and industrial buildings to sports halls and swimming pools. The company supplies complete ceiling and

## Values



**We are innovative**

We create results through development. Innovation must ensure that Troldekt is a trendsetter within intelligent acoustic solutions that focus on a sustainable indoor climate.



**We are credible**

We do what we say, and we keep our promises. We also communicate openly about our sustainable objectives and results.



**We are socially responsible**

We act responsibly in all parts of our business, including in relation to the environment, society and employees. Corporate responsibility is rooted in our strategic work with Cradle to Cradle.





wall cladding solutions which integrate good acoustics, fire protection and a healthy indoor climate with ventilation, unique design options and loudspeaker systems.

Troldtekt's production takes place at state-of-the-art facilities in the small town of Troldhede in western Jutland.

Sales, administration, marketing and technical support functions are located at the company's head office in Tranbjerg, a suburb of Aarhus. In 2015, Troldtekt opened an office in Hamburg, Germany, and in 2016 an office in Malmö in Sweden.

Troldtekt also works with a number of distributors abroad, mainly in northern Europe.

#### **Troldtekt's role in construction**

Troldtekt's direct customers are builders' merchants and DIY stores, while the company's indirect customers comprise building consultants, architects and private clients.

#### **Markets**

In Denmark, Troldtekt is a leading supplier of acoustic panels, and the domestic market plays an important role together with the Swedish and

German markets. In addition, Troldtekt is primarily present in our neighbouring European markets.

#### **Suppliers**

Troldtekt's Code of Conduct forms the basis for the company's cooperation with its suppliers. This Code of Conduct is based on the general principles contained in international conventions. All Troldtekt's key suppliers are Danish, and supply either certified wood, cement, paint, packaging or wind power.

#### **Organisational changes**

Troldtekt is a fast-growing company, and the number of employees increased again in the past year. For example, we have employed colleagues in newly created positions such as technical manager (Vibeke Pedersen), logistics manager (Lise Kirkegaard) and PTA manager (Ole Busk Sørensen). We have also recruited a new Danish sales manager (Ole Tønning Villumsen), as our previous sales manager (Bo Pedersen) was keen to move on to a project consultant role. In addition, 2019 saw the appointment of a new Chairman of our Board of Directors (Kurt Bering Sørensen), and a new member of our

Board (Sven-Eric Nilsson). Moreover, throughout the year we have taken on new colleagues in Tranbjerg, Troldhede and at our international subsidiaries in Germany and Sweden.

#### **Community activities**

CSR is rooted in Troldtekt's corporate culture, and it was therefore natural for the company to join the UN Global Compact. In continuation of this commitment, Troldtekt has integrated the Cradle to Cradle concept in its business strategy.

Troldtekt plays an active role on a number of committees, in organisations and associations, including:

- Green Building Council Denmark
- The board of BIPS
- DI's special building policy committee
- Committee work in Danish Standards
- Deutsche Gesellschaft für Nachhaltiges Bauen (DGNB)

#### **Information**

For more information on Troldtekt A/S and its products, CSR activities and technical documentation, please visit [www.troldtekt.com](http://www.troldtekt.com).

# Troldtekt, the story

Louis Hammerich takes over the business and expands the range to include wholesale products and begins to import building materials from abroad.

The business has grown, and A/S L. Hammerich & Co. moves into modern new premises in Grønnegade in central Aarhus. Poul Hammerich, Louis' son, takes over management of the company.

Poul Hammerich decides to establish the 'Grosserer L. Hammerich og Hustru Ellen, f. Lisbergs Legat' foundation to support families and staff facing financial hardship. Poul Hammerich dies young, but the foundation is subsequently set up.

The fourth generation of the Hammerich family, Peter Hammerich, joins the company management.

Thorkild Bjerglund Andersen, who has been a member of the company's board of directors since 1973, purchases A/S L. Hammerich & Co.

Outgrowing its premises again, A/S L. Hammerich & Co. moves to the old Østergaard manor in Malling, which Thorkild Bjerglund Andersen has renovated while farming the adjoining land. Huge investments are made in streamlining and modernising production in Troldhede.

A/S L. Hammerich & Co. and A/S Troldhede Pladeindustri merge under the name A/S L. Hammerich & Co., with sales and administration in Malling and production in Troldhede.

Following the business succession, A/S L. Hammerich & Co. moves to more modern premises on Sletvej in Tranbjerg outside Aarhus, and the company name is abbreviated to L. Hammerich A/S.

Troldtekt qualifies for Cradle to Cradle certification in the Silver category and prepares a roadmap for developing Cradle to Cradle quality at Troldtekt through to 2022.

Troldtekt Deutschland GmbH is established in Hamburg, the company's first foreign subsidiary.

After several years of expansion and modernisation of the existing factory, Troldtekt constructs a brand new additional factory line in Troldhede. The new production line enables Troldtekt to double capacity from early 2019.

**1855**

**1884**

**1911**

**1931**

**1935**

**1936**

**1947**

**1977**

**1982**

**1988**

**1993**

**1998**

**2000**

**2003**

**2005**

**2008**

**2010**

**2012**

**2014**

**2015**

**2016**

**2019**

J. C. Seidelin, a grocer, opens the first dedicated store for building materials at Fredens Torv in Aarhus.

L. Hammerich Specialforretning i Bygningsartikler is renamed Aktieselskabet L. Hammerich & Co. The public limited company has registration number 645, and is thus one of the oldest surviving public companies in Denmark.

A/S L. Hammerich & Co. acquires A/S Troldhede Pladeindustri in Troldhede. Fibreboard and the cement-bonded wood wool Troldtekt® panels are manufactured here, and a registered trademark is acquired in 1936.

Svend Hammerich joins the company management and helps to rebuild the company's position following the Second World War.

The product range is extensively restructured, with a 100% focus on Troldtekt and a few goods for resale. All warehouse facilities are moved to Troldhede, while sales and administration are moved to new offices on Klamsagervej in Åbyhøj, a suburb of Aarhus. Peter Hammerich leaves the company.

A/S L. Hammerich & Co. moves to the former premises of the sawmill Aarhus Savværk at Søren Nymarks Vej in Højbjerg, south of Aarhus.

The new millennium marks the beginning of a period of strong product development. Troldtekt is no longer just acoustic panels, but acoustic solutions with integrated lighting, sound, ventilation and decoration.

Thorkild Bjerglund Andersen's heirs take over the company and carry on the family-owned enterprise under the management of a professional advisory board.

The 75<sup>th</sup> anniversary of the production of Troldtekt acoustic panels is marked by changing the company name to Troldtekt A/S. Troldtekt receives the Danish Building Industry Environment Award the same year for its focus on the environment and sustainability throughout the product's entire life cycle.

The CSR Foundation awards Troldtekt A/S the CSR Awards' Strategy Prize for its solid and strategic approach to CSR and for having rooted CSR in all parts of the business, including at executive level and in the business strategy.

The company's second foreign subsidiary, Troldtekt AB, is established in Malmö, Sweden.

# Global Compact: CSR based on UN principles

Corporate social responsibility is a fundamental value for Trolldtekt, and we have signed up to the UN Global Compact. Thus, we adhere to the UN's ten principles – based on defined objectives in the areas of environment, labour conditions, society and human rights.

## Environment

At Trolldtekt, we are committed to ensuring that our activities contribute positively to our shared resources. Even though Trolldtekt acoustic panels are now produced using robot technology, the ingredients are still the same all-natural materials as were used in 1935: wood and cement.

Our environmental focus is manifested through concrete initiatives within material health, reutilisation, energy and water. The four categories carry weight in the sustainable Cradle to Cradle concept, which is a cornerstone of our business strategy. Read more about Cradle to Cradle and our environmental initiatives on the following pages.

## Society

At Trolldtekt, we play an active role in society and engage in dialogue with the outside world. This applies both to the immediate neighbours of our factory in Trolldhede and to our suppliers. In our Code of Conduct, which suppliers are obliged to observe, we state that corruption and bribery are completely unacceptable.

We also support several associations and organisations, among others the Danish Association of the Hard of Hearing, the Danish Asthma and Allergy Association, the Danish Acoustical Society (DAS) and the German Cradle to Cradle NGO.

## Labour conditions

Respect, co-determination, support and diversity in the workplace are key aspects of our daily working lives.

We make a priority of retaining employees who are on sick leave, and of preventing industrial accidents and injuries. Furthermore, we support



inclusion in the labour market, among other things via work experience schemes and by taking on flexitimers.

In 1936, the then managing director and owner, Louis Hammerich, established a staff fund which provides financial support for employees past and present who are facing difficulties. The fund exists to this day.

## Human rights

Trolldtekt's Code of Conduct is at the heart of our focus on supporting human rights and working actively to promote them. We maintain a keen focus on the issue at all times in our dealings with suppliers and partners.

This applies not only to our suppliers for production, but also to suppliers of services such as cleaning and waste handling.

## Want to know more?

Read Trolldtekt's CSR policy at [trolldtekt.com](http://trolldtekt.com) under the menu item 'Environment & CSR'. On our website, you will also find our CSR reports from previous years.

# Cradle to Cradle points the way

Our roadmap brings together the objectives and results of our work with the circular economy from 2012 to 2022.

Troldtekt's business strategy is based on the sustainable and internationally recognised Cradle to Cradle concept, which is all about creating healthy products that benefit people and the environment.

The aim is that the products can either be reused in the biological cycle, where the materials return to nature, or in the technical cycle through being turned into raw materials for new products – without wasting resources.

### Troldtekt in closed cycles

We work systematically with the circular economy, for which closed resource cycles are a central tenet. Via our Cradle to Cradle certification, we can document that Troldtekt acoustic panels can be safely returned to

nature as soil conditioner. Additionally, dust from the production of Troldtekt panels is used as a resource in new cement from Aalborg Portland.

### Results and the way forward

Cradle to Cradle requires the continual improvement of products and processes. Through focusing on sustainability, and through massive investments in our production, we have achieved a number of value-creating milestones since Troldtekt's products first achieved Cradle to Cradle certification in 2012.

The specific results are part of our Cradle to Cradle roadmap, which is an ambitious and publicised plan for our work with the circular economy. For each of the five Cradle to Cradle criteria categories, we have drawn up








concrete action plans to ensure that we achieve the defined objectives towards 2022.

In 2020, we will prepare new long-term objectives which are in line with our Cradle to Cradle strategy. The new objectives will be described in next year's CSR report.

## Cradle to Cradle scorecard

Theme \ Tier	Basic	Bronze	Silver	Gold	Platinum
 Material health			✓		
 Material reutilization				✓	
 Renewable energy				✓	
 Water stewardship					✓
 Social fairness				✓	

# Cradle to Cradle roadmap

	Results 2012-2018	Results 2019	Objectives 2020/22
<b>Material Health</b> 	<ul style="list-style-type: none"> <li>✓ Troldekt acoustic series in natural and standard colours C2C-certified.</li> <li>✓ Product development based on C2C principles.</li> <li>✓ Trade goods produced as private label for Troldekt screened <b>C2C SILVER level.</b></li> </ul>	<ul style="list-style-type: none"> <li>• The wooden strips for Troldekt® contrast have, as the first trade goods to be produced as private label for Troldekt, been given a Material Health Certificate.</li> </ul>	<ul style="list-style-type: none"> <li>• Optimise paint recipe so that Troldekt acoustic panels in natural and standard colours can advance to C2C GOLD level.</li> <li>• Trade goods produced as private label for Troldekt must have a Material Health certificate.</li> </ul>
<b>Material Reutilisation</b> 	<ul style="list-style-type: none"> <li>✓ Production waste sorted into a number of fractions to ensure that resources from production waste are recovered at the highest possible value level.</li> <li>✓ Take-back scheme for collecting cement-bonded wood wool construction and demolition waste tested in the construction industry in Denmark.</li> <li>✓ Scheme using dust from production as a raw material in new cement from Aalborg Portland is established. <b>C2C GOLD level.</b></li> </ul>		<ul style="list-style-type: none"> <li>• Identify and establish new solutions for recycling cement-bonded wood wool in the biological cycle.</li> <li>• Agreement on crushing of panel waste concluded with external partner with a view to increased recycling in the biological and technical cycles.</li> <li>• Develop new products that contain production waste (for example cut-offs). In the longer term, develop products based on end-of-life acoustic panels from building industry.</li> </ul>
<b>Renewable Energy</b> 	<ul style="list-style-type: none"> <li>✓ Ørsted climate partner. 100% renewable energy for electricity consumption (wind power) from 2013.</li> <li>✓ New energy-efficient biomass boiler run in.</li> <li>✓ 50% of diesel and gas-powered forklifts replaced with electric trucks.</li> <li>✓ Light sources in most of the production facilities replaced with LED bulbs. <b>C2C GOLD level.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Diesel and gas-powered forklifts have been replaced with electric trucks, so that more than 60% of all trucks are now electric.</li> </ul>	<ul style="list-style-type: none"> <li>• Map possible alternative energy solutions from solar, wind or similar sources.</li> <li>• Explore possibilities for participating in an international development project aimed at utilising waste heat.</li> </ul>
<b>Water Stewardship</b> 	<ul style="list-style-type: none"> <li>✓ No untreated wastewater discharge from production.</li> <li>✓ Water-saving schemes established.</li> <li>✓ Separate sewerage system established on new production line and in most of the other factory buildings. Rainwater is discharged to municipal reservoir. <b>C2C PLATINUM level.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Separate sewerage system for all factory buildings established.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore possibilities for participating in an international development project aimed at utilising steam.</li> <li>• Map the possibility of establishing an overflow reservoir with vegetation.</li> </ul>
<b>Social Fairness</b> 	<ul style="list-style-type: none"> <li>✓ CSR reporting to UN Global Compact from 2010.</li> <li>✓ CSR reporting follows the GRI G4 structure.</li> <li>✓ C2C principles introduced in the organisation and value chain. <b>C2C GOLD level.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Training for employees in new robot technology introduced.</li> <li>• Danish lessons provided for new employees.</li> </ul>	

## How Troldekt is certified

Troldekt is Cradle to Cradle-certified in the Silver category. The certification covers the full product portfolio of Troldekt acoustic panels and design solutions in natural wood, natural grey and painted in the standard colours white 101, grey 202, charcoal grey 208 and black 207. The Silver certification also covers the non-combustible Troldekt A2 panels and Troldekt agro panels.

### New long-term objectives in the pipeline

Our Cradle to Cradle work is dynamic, and we have therefore updated our roadmap every year, even though we are only Cradle to Cradle re-certified every two years – most recently at the beginning of 2019. The annual update ensures that it is completely clear which objectives we are currently pursuing. In 2020, we will prepare new long-term objectives, which will be set out in next year's CSR report.

# Troldtekt targets new SDGs

After focusing our efforts on two of the UN's 17 Sustainable Development Goals (SDGs), we are now extending this focus to include two more. It is still crucial that we manage to translate the goals into concrete action in our business.

The colourful collage of the 17 SDGs has become a common frame of reference for businesses and consumers. However, for many people the goals are quite abstract and not necessarily associated with meaningful and concrete actions.

"When giving external presentations about our CSR work, I often meet people who are unsure about how to get to grips with the SDGs. Many people think that you have to work with all 17 of the goals, including the 169 targets. At Troldtekt, rather than being overwhelmed we decided from the outset to focus on the areas which we are able to influence to the greatest extent," said Peer Leth, CEO at Troldtekt A/S.

"Our first step was to focus on SDG 12 (Responsible consumption and production) and SDG 15 (Life on land) as well as the four targets that we have been working continuously on for the past couple of years. We have now evaluated and decided to add two more goals and three new targets," he says.

## Healthy materials and valuable partners

The two SDGs added in 2019 are SDG 3 (Good health and well-being) and SDG 17 (Partnerships for the goals).

"When it comes to health and well-being, we want to help make buildings healthier. We have already mapped the substances contained in

our products, so we know they are healthy for humans. Our panels have a long product lifetime, and for us it is imperative that we only bring healthy materials into circulation in buildings," says Peer Leth, adding:

"We still have some way to go. For example, we're in dialogue with our supplier about the recipes for our paints. The challenge is that if we remove all the biocide which prevents rot, there is a risk of bacterial infection in the paint, and then we would be unable to collect and reuse waste paint."

Peer Leth adds that a lot of experience has been gained in 2019 relating to SDG 17 – Partnerships for the goals:

"We're proud that, together with FSC Denmark, we've helped to disseminate knowledge about responsible forestry. And that by doing so, we've succeeded in persuading the Municipality of Ringkøbing-Skjern to FSC-certify the municipal woods so that we can buy more raw wood locally."

## Everyone knows the SDGs

Peer Leth makes no secret of the fact that the measures which faithfully support the SDGs also bring competitive advantages for Troldtekt.

"Both politically and for our customers, the UN SDGs are a frame of reference which everyone knows. It makes the dialogue easier when we can present specific initiatives. The SDGs have set an agenda which means that companies are overtaken on the inside if they don't work with the goals. This is only positive – because the involvement of the business sector is vital to realising sustainable development," says Peer Leth.



# SDGs are both sustainability and business

The work with the UN's SDGs is integrated into many Danish businesses – but more small and medium-sized enterprises (SMEs) need to come on board. According to the CSR manager at the Danish Chamber of Commerce, the goals are important for the future of the planet as well as for companies' business opportunities.

The UN SDGs provide companies with a framework for working with sustainability. According to Malene Thiele, CSR manager at the Danish Chamber of Commerce, it is still the largest companies that work systematically with the goals. Among small and medium-sized enterprises (SMEs), only 35% state that they have proper knowledge of the SDGs, which is a pity according to her:

"It is crucial that SMEs start working with the SDGs, and the need for them to do so will only increase in the near future. Consumers are demanding high standards of corporate sustainability, and the competitive situation in future will depend greatly on companies being able to make the most of the opportunities offered by the SDGs. Therefore, it's worrying that more than half of SMEs don't believe that the SDGs are relevant for them," she explains.

The CSR manager points out that Danish SMEs are also under pressure politically to incorporate the SDGs and sustainability into their business strategies. If a company's management is not already taking the business in a sustainable direction, it is likely they will be forced to do so at

some point or another to comply with legislation or demands from business partners.

## Companies create sustainability

According to Malene Thiele, it is essential that companies shoulder their part of the responsibility for realising the SDGs.

"The goals future-proof our planet, and consumers cannot do this alone. It is very good to see that consumers are being responsible and making demands on companies. About 75% of Danish consumers say that they would be happy to pay more for a product or service if it comes from a company that focuses on sustainability," says Malene Thiele.

"Almost 60% agree that a more sustainable development requires consumers to change their habits," she continues.

In addition to establishing a sustainable agenda, the CSR manager says that the SDGs can also help companies to attract the best talents in the job market. Candidates look at how employers are working with the SDGs, and see this as an important parameter and a decisive aspect of tomorrow's job market.



*Malene Thiele, CSR manager at the Danish Chamber of Commerce*

Even though there is still huge SDG potential in the SME segment, according to Malene Thiele, Denmark is one of the frontrunners when it comes to introducing and living up to the SDGs compared to other countries. This is evident from the SDG Index and Dashboard Report, which measures which countries have come farthest in implementing the SDGs.

**SUSTAINABLE DEVELOPMENT GOALS**

# SUSTAINABLE DEVELOPMENT GOALS



## SDG 3: Good health and well-being

**Overall goal:** Ensure healthy lives and promote well-being for all at all ages.

**Target 3.9:** By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.



## SDG 12: Responsible consumption and production

**Overall goal:** Ensure sustainable consumption and production patterns.

**Target 12.6:** Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

**Target 12.7:** Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

**Target 12.c:** Rationalise inefficient fossil-fuel subsidies that encourage wasteful consumption (text is abbreviated).



## SDG 15: Life on land

**Overall goal:** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

**Target 15.b:** Mobilise significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.



## SDG 17: Partnerships for the goals

**Overall goal:** Strengthen the means of implementation and revitalise the global partnership for sustainable development.

**Target 17.16:** Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources (text is abbreviated).

**Target 17.17:** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.





# Healthy buildings require healthy materials

With well-documented material health and traceability, Trolldtekt works in line with the goal, which, among other things, aims to reduce deaths and illness caused by harmful substances.

Sixty per cent of acute respiratory infections in children are due to conditions in the ambient environment. And like adults, they spend most of their time indoors. This is highlighted by US research from the US National Institute of Environmental Health Sciences (NIEHS) and the Environmental Protection Agency (EPA), which make the point that we spend as much as 90% of our

lives indoors. At home, when travelling, at work or in public buildings. Therefore, it is crucial to focus on the health of the built environment, and according to the World Health Organization, there is plenty of scope for improvement. In a 2006 study, the WHO found that we are primarily exposed to air pollution when we are inside. Children are particularly exposed, as they have a higher

breathing volume, and thus breathe in larger volumes of air than adults.

Trolldtekt wants to contribute to buildings which are healthy for their occupants. We are doing so by documenting the positive impact of Trolldtekt acoustic panels on the indoor climate as well as the material health of our products.



**Thorough content analysis**

Troldtekt cement-bonded wood wool panels are made of 100% natural materials – wood and cement. As part of Troldtekt’s Cradle to Cradle certification, our products are thoroughly analysed. All the substances are defined down to 100 ppm, and assessed for their impact on people and the environment. The analysis is carried out under the auspices of Vugge til Vugge Danmark,

the accredited assessment body under the Cradle to Cradle Products Innovation Institute.

In practice, therefore, our systematic work with Cradle to Cradle means that we possess detailed knowledge of all the substances contained in our products, and that we can document that they do not contain any hazardous substances. Cradle to Cradle calls for a more thorough approach than other

certifications, which simply operate with ‘does not contain’ lists. We see this as a key precondition for delivering building materials which are healthy for people and the environment.

**Low degassing and particle release**

Our products have been tested, for example, by Danish Indoor Climate Labelling (under the Danish Technological Institute), and certified in the

## Labels for healthy choices

In order to highlight the way in which Troldtekt benefits the indoor climate and makes it easier for developers and consultants to choose healthy materials for construction, we have obtained approvals and certifications under a number of schemes:



Troldtekt acoustic panels are Cradle to Cradle-certified in the Silver category according to the Cradle to Cradle Certified™ standard’s latest version 3.1. The certification has been granted, among other things, because the panels contain no harmful substances, and can therefore be returned to nature as nutrients in the biological cycle.



Troldtekt acoustic panels are classified in the M1 category by the Finnish Indoor Air Association and the Building Information Foundation RTS. The classification system categorises building materials based on emission classes – i.e. how many substances the materials release to the air. Emission class M1 corresponds to the best quality (lowest emission rate).



Troldtekt acoustic panels are indoor climate-certified in the best category by Danish Indoor Climate Labelling (under the Danish Technological Institute) – a voluntary labelling scheme for building materials and their impact on the indoor climate. The indoor climate certificate is common to Norway and Denmark and is recognised worldwide.



Troldtekt acoustic panels are classified as ‘low emission’, and thus benefit nature and health in the voluntary and independent German Blue Angel ecolabel.



Troldtekt acoustic panels have earned the UK organisation Allergy UK’s Allergy Friendly Product Award. The Allergy Friendly Product Award is only given to products which improve health and well-being for asthma and allergy sufferers. In connection with the award, Troldtekt has been studied and assessed by UK Allergy’s panel of consultants and scientific experts.



Troldtekt acoustic panels have been environmentally assessed by the Swedish SundaHus Material Data system and categorised as class A, which comprises products with the smallest negative impact on human health and the environment.

best categories. To qualify for the Danish indoor climate label, a product's degassing must decline within the first 60 days of installation. Trolldtekt panels fulfil the requirements when measurements are performed after only 10 days. Ceiling products are also tested for the quantity of fibres and particles they release. Here too, Trolldtekt panels qualify for the best category ('low particle release') – i.e. less than 0.75 milligrams per square metre.

#### Documented contribution

We have worked with Rambøll to map how Trolldtekt contributes specifically to

the leading sustainable building certifications, including DGNB, LEED, BREEAM and WELL. A healthy indoor climate is one of the criteria looked at.

We can now document Trolldtekt's contribution to WELL certification, which focuses in particular on improving human health and well-being through the built environment. In 2019, Rambøll mapped how Trolldtekt is able to contribute to 20% of the criteria in WELL, among other things because our acoustic solutions are Cradle to Cradle-certified with material health documentation.

Also in 2019, Rambøll documented Trolldtekt's contribution to Nordic Swan Ecolabelled construction, and Trolldtekt has been included in the Nordic Swan Ecolabel's database of products that can be used for Nordic Swan Ecolabelled construction. The Nordic Swan Ecolabel is the official ecolabel in the Nordic region, and prioritises, among other things, the importance of buildings having a good indoor climate.

## Material passports can pave way for the circular economy

Every year, too many undesirable substances are incorporated into new and renovated buildings. In 2017 alone (latest figures from the Nordic SPIN database), the building materials used in Denmark contained almost 20,000 tonnes of substances which are classified as harmful in Denmark and/or the EU. "On the one hand, everyone in the construction industry talks about sustainable building, but on the other, very few people have a grip on the substances contained in building materials. Developers and architects are not chemists, so greater transparency is needed about the substances," says Martha Lewis, a senior architect and Head of Materials at Henning Larsen Architects, and who won the 'person award' at 'Det Bæredygtige Element' sustainability award in 2019.

She has been monitoring the figures for harmful substances in construction closely in recent years. While she finds that areas such as ventilation, acoustics and daylight have received greater attention, there is no positive development to be seen in the use of harmful chemistry. On the contrary, things are moving in the wrong direction,



*Martha Lewis, architect and Head of Materials at Henning Larsen Architects.*

which is an obstacle to the circular economy.

"Materials containing undesirable substances cannot be recycled directly in new buildings, and nor can they be crushed and used as a resource in new materials," says Martha Lewis.

#### In working group with Trolldtekt

For Martha Lewis, it is obvious that improvements must be made voluntarily, as implementing new legal requirements via the EU system is

a difficult and laborious process. Therefore, she has – in collaboration with Trolldtekt, among others – formed a working group that will find ways of introducing the so-called materials passports in the construction industry.

"Materials passports will be a voluntary scheme, whereby manufacturers clearly state which substances their products contain. This will lead to healthier buildings, and make it possible to link information to digital building models that clients update themselves if, for example, they replace or paint a material. In this way, it will be transparent which materials can be included in circular cycles when a building needs to be renovated or demolished," says Martha Lewis.

She mentions that product certifications exist today which it makes sense for developers or consultants to choose if they want to construct a building without harmful substances. These include several schemes under which Trolldtekt has been evaluated or certified: the Nordic Swan ecolabel, the Swedish SundaHus Material Data and Byggvarubedömningen as well as Cradle to Cradle.



# Green energy and life cycle in focus

Producing Troldekt acoustic panels is an energy-efficient process – and uses a large proportion of renewable energy. Through their long product lifetime and good recycling possibilities, Troldekt acoustic panels help support sustainable construction and consumption.



Construction accounts for almost 40% of the world's total CO<sub>2</sub> consumption. Both in the manufacture of building materials and in the running of buildings, there are huge gains to be made by thinking about greener production methods as well as the circular economy, where materials are recycled at a high value level.

Through our Cradle to Cradle strategy, we are committed to continuously improving in areas such as renewable energy and recycling. In this way, we support SDG 12 – Responsible consumption and production.

## Wind power and biofuels

All the electricity used in our production is based on renewable energy through our climate partner agreement with Ørsted. The agreement

means that, since July 2013, all our electricity has been based on wind power from the Anholt offshore wind farm. We are an Ørsted climate partner because we want stable, carbon-neutral electricity supplies.

By entering into a climate partnership agreement, we are buying certificates which guarantee that Ørsted produces power at one of their certified wind farms that corresponds to our consumption. By entering into this partnership, we have contributed to supporting and expanding wind power as a key energy source in Denmark. Today, a large proportion of Denmark's electricity consumption is covered by wind energy, and we are buying certificates for the remainder of our electricity consumption to ensure that it is all covered by wind energy.

With our own biomass boiler and by replacing gas and diesel-powered trucks in production with electric trucks, we have minimised our consumption of fossil fuels while staking instead on green energy sources. See figures showing this development in the data section at the back of the report.

## Waste creates new value

Throughout the factory in Troldehede, we are focusing on minimising the consumption of resources while recycling as much as possible instead. Cradle to Cradle certification ensures that the materials in Troldekt acoustic panels are well-defined and do not contain harmful substances. Therefore, Troldekt production waste with cement-bonded wood wool can be returned to nature without any problem.

However, so as to ensure that the greatest possible value can be derived from the resources in our production waste, we are separating the waste into several different fractions, which are being utilised in various ways. We are continually working to test and find sustainable solutions for all our waste fractions, including cement-bonded wood wool waste and residual bark from the debarking of the Norway spruce logs.

Production waste in the form of pure offcuts can be composted in the biological cycle and used as a soil conditioner. The cement in Trolldtekt panels has a high lime content, which helps to neutralise the acids produced during composting. The wood in the panels is organic material, and helps to prevent the compost from compacting. This increases oxygenation in the composting process so that carbon and nutrients are recirculated.

Dust from our edging workshop is used in the technical cycle in cement production at Aalborg Portland. The wood content of the Trolldtekt dusts contributes to the combustion process (energy), where it replaces fossil fuels, while the cement content is incorporated into new cement, reducing the use of virgin raw materials.

Resources are also used efficiently at our painting facility. Thanks to new technology, in recent years we have



reduced the amount of paint which is wasted by more than 70%. This is because we can now collect and reuse a large proportion of the excess paint (so-called overspray).

**Long product lives are good for the environment**

When installed in buildings, our products contribute positively to the circular economy. Trolldtekt acoustic panels are sturdy and have a long product lifetime of min. 75 years. They require no maintenance, and can be painted repeatedly without impairing the acoustic properties of the panels. Therefore, developers can choose to retain an existing Trolldtekt ceiling when renovating or transforming a property – or they can reuse the panels in new buildings. There are consid-

erable environmental benefits to be gained from maximising the lifetime of the panels.

Today, used cement-bonded wood wool panels cannot be safely returned to the natural cycle. This is because comprehensive environmental screening is required to establish whether the panels have, for example, been surface-treated during use. We are working to find an external partner who can rough-crush waste panels for the biological cycle and fine-crush waste panels for the technical cycle. In this way, we can, in addition to dust, also send surface-coated panel waste to Aalborg Portland – and in the longer term perhaps also demolition waste.

**Biological cycle**



**Technical cycle**



## Ceiling given new lease of life at exclusive airport

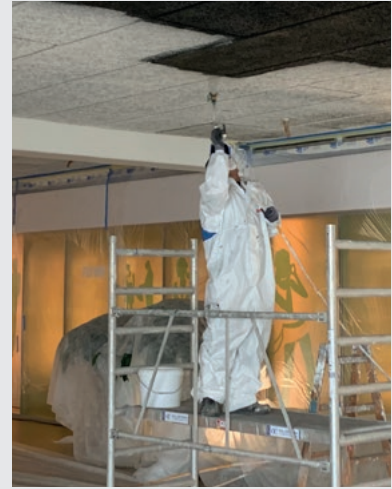
Aarhus Airport is the fourth-largest airport in Denmark. As a natural part of its growth strategy, the airport has undergone extensive refurbishment.

The first floor is where most of the work has taken place. There is a new café and lounge area, and a new restaurant has been opened.

To support the exclusive look, the airport's existing acoustic ceiling from Troldekt has been painted black. While black ceilings contribute to perfecting the interior design, repainting them was also in keeping with the airport's focus on recycling

and sustainability. Troldekt is a natural material made from Danish wood and cement, and the ceiling panels have a product lifetime of at least 75 years – also when painted during their product lives.

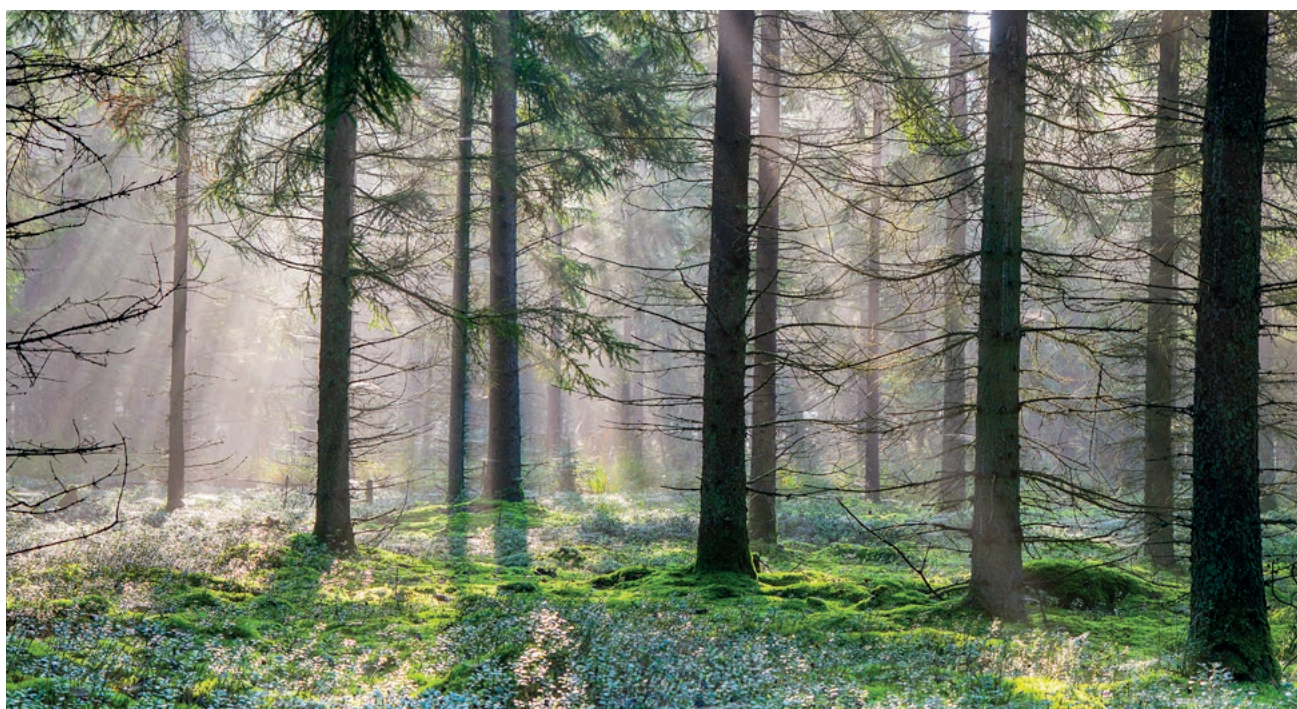
"Painting the ceilings black has transformed the whole feel of the airport, which now comes across as exclusive and elegant. We have, among other things, been inspired by the hotel industry, and changing the colour of the ceiling has made an impressive difference," says Merete Olesen, Airport Station Manager at Aarhus Airport.





# Local raw materials from responsible sources

At Troldekt, we obviously use natural raw materials to produce our acoustic panels. We are certified according to both the leading standards for responsible forestry, and all the wood we use comes from local forests.



Troldekt acoustic panels are a wood product, and wood is a healthy, elegant and flexible natural material which makes a positive contribution to the carbon accounts. This is explained by the fact that while growing, each tree absorbs just as much carbon dioxide as is released during its care, felling and transport.

Several developers are therefore choosing to construct buildings in which wood is the main supporting material. At Troldekt, we want to be able to trace all the wood in our products back to sustainable sources. And we want forest owners to take documented responsibility for the people who depend on the forest's resources.

Deforestation is a problem in many parts of the world, which results in fewer trees absorbing CO<sub>2</sub> from the

atmosphere and the release of the CO<sub>2</sub> which is already stored in the trees. On the other hand, protecting forests, biodiversity and reforestation help to ensure a balanced ecosystem.

This is where the leading wood certifications FSC® (FSC®C115450) and PEFC™ come into the picture. Both FSC and PEFC are international certification schemes that prioritise the environment, biodiversity, working conditions and the conservation of forestry areas. At Troldekt, we are certified according to both schemes.

### **A number of responsible principles**

With the two certifications, our customers are guaranteed that the wood can be traced back to responsible forestry. In other words, it means that the forest owners have been focusing on:

- maintaining or increasing the level of biodiversity, among other things by leaving damaged trees and treetops in the forests
- replanting forests and protected forest areas where there are particularly favourable conditions for biodiversity and endangered species
- ensuring that forest workers are trained and have good working conditions
- managing forests without the use of hazardous chemicals
- ensuring good access conditions for forest users.

## More people building with sustainable wood

More focus on sustainable wood in construction means that certified wood products are in high demand. This is why we at Troldekt chose to be PEFC-certified in 2019 – in addition to our FSC certification.

“We’re already only using wood from local forests which is certified in accordance with the PEFC principles. However, as we’re seeing a growing demand among our customers for certified products, it’s natural for us to meet this desire for certification,” says Peer Leth, CEO at Troldekt.

All Troldekt acoustic panels now certified. In practice, 100% of the raw wood is PEFC-certified, and a

large proportion is also FSC-certified, as it comes from ‘double-certified’ forests. However, the finished acoustic panels can only be certified according to one of the two certification schemes, and customers can freely choose between either one or the other – PEFC or FSC.

### Increasingly popular scheme

The demand for certified wood is growing – which is why Denmark is producing more and more PEFC-certified wood. At the beginning of 2020, approx. 293,000 hectares of forest in Denmark were certified according to the scheme. Or about 15% more than three years before.

In total, about 40% of Danish forests are PEFC-certified.

“In recent years, we’ve seen a growing awareness in the construction industry and among developers of the role played by sustainable wood and the contribution it makes to healthier buildings. Therefore, more forest owners and suppliers are choosing to become PEFC-certified,” says Morten Thorøe, Executive Secretary at PEFC Denmark, adding:

“We’re delighted that Troldekt, as a leading supplier of wood products, has embraced the certification. It’s quite unique for a manufacturer to only use certified raw wood,” says Morten Thorøe.



## Support for ‘Danmark planter træer’

On Saturday, 14 September 2019, the fundraising show *Danmark planter træer* (Denmark plants trees) was screened on the Danish TV channel TV2. For each donation of DKK 20 by companies and private individuals, a new tree was planted in the Danish ‘Folkeskove’, or People’s Forests.

Troldekt supported the show with a DKK 10,000 donation, which equates to 500 newly planted trees. The Folkeskove is a new concept designed to benefit the climate, ensure clean drinking water and strengthen biodiversity for plants and wildlife. Another important aim is to make it possible for all Danes to spend time outdoors in a forest.





# Partnerships ensure impact

Commitment and cooperation create leverage for the SDG, which Troldekt works with through partnerships. Among other things, we support NGOs and other organisations that help promote sustainability and the circular economy.

At Troldekt, we share the UN's main premise that we must stand together in order to change the world. Therefore, we are partnering with companies, NGOs and other organisations which, like us, want to contribute to a circular economy within the construction industry. We have entered into meaningful partnerships on all three domestic markets – Denmark, Germany and Sweden.

## Unified voice in Danish media

In Denmark, Troldekt works closely with FSC Denmark to increase the number of FSC-certified forests through various activities.

In 2019, several Danish media also reported on our partnership with Aalborg Portland within the field of recycling. Together with our cement supplier, we are working to ensure that production and construction waste containing Troldekt acoustic panels can create value in cement production.

Most of our CO<sub>2</sub> emissions stem from the production of cement, and we are therefore keen to work closely with Aalborg Portland to reduce the CO<sub>2</sub> footprint of our products through new technologies for cement production. This has, among other things, resulted in the project whereby dust from our edging workshop creates value in cement production. Our aim is – via logistics partners – to roll out the project to include demolition waste and cement-bonded wood wool waste from construction sites.

## Joining forces for Cradle to Cradle

In Germany, we work with, among others, the German Cradle to Cradle NGO, which works to promote the circular economy and the Cradle to Cradle design concept throughout the country.

Its many activities include a congress, an academy, a professional forum and an annual 'action week' with a range of initiatives. The Cradle to Cradle NGO has more than 30 regional groups, more than 700 active members, and a partner group of companies in which Troldekt has been an active member since 2018.

As a partner, we provide financial support for the NGO's efforts to promote Cradle to Cradle, and we also attend presentations and events where we share our experiences with the circular economy. In 2019, we also contributed Troldekt acoustic panels to the newly opened C2C LAB in Berlin, an educational centre, NGO office and 'living laboratory' for Cradle to Cradle-certified building materials.

## Network and green think-tank

In Sweden, too, strong forces are working to promote the circular econ-

omy, and here Troldekt is a member of, for example, Cradlenet. The NGO offers inspiration and knowledge sharing between companies, organisations and people. This is in line with our strategy of helping to communicate messages about the circular economy to as many people as possible in the Swedish construction industry.

Moreover, we have entered into partnership with the green think-tank Fores in Stockholm. Fores bridges the gap between politicians, the business community and research within the field of sustainability – and stands out as a key player in this area in the public debate in Sweden. As part of the collaboration, we have contributed Troldekt solutions to the think-tank's new headquarters, where everything – from chairs to carpets and ceilings – signals sustainability.

## Troldekt supports sustainable building

Troldekt A/S is a member of the leading organisations within sustainable building in Denmark, Sweden and Germany. Through these memberships, Troldekt is part of a large network of experts for exchanging experience and inspiration.

In Germany, the organisation is called **DGNB – Deutsche Gesellschaft für Nachhaltiges Bauen**. Launched in 2008, the DGNB certification system ensures sustainability at the social, economic and environmental level – during the construction process and in the finished building.

In Denmark, we are a member of the independent council for sustainable building, **Green Building Council Denmark**. The council has decided to follow DGNB, which is therefore the most widely used sustainable certification system in the Danish construction industry. The first Danish version of the DGNB certification system was published in 2012, since when it has been updated several times.

**Sweden Green Building Council** manages and supports a number of the most widely used certification schemes within sustainable building in Sweden. Two of them are Miljöbyggnad and BREEAM-SE.

# Troldtekt leading the call for more FSC-certified forests

Active participation in FSC Week, presentations at WWF Denmark's forest conference and at FSC Denmark's anniversary event. These are some of the activities in which Troldtekt was involved in 2019 through our partnership with FSC Denmark. Our two organisations have also joined forces in the media with a call for more certified forests.

"A significant proportion of our acoustic panels are FSC-certified, but we want to produce even more, as an increasing number of Danish forestry owners hopefully have their forests certified. Our strategy is based on sustainable production, and the market is ready for larger volumes of FSC-certified products. Therefore, we see a huge need for more certified forest areas in Denmark," says Peer Leth, CEO of Troldtekt A/S.

At Troldtekt, we have also arranged and hosted meetings between Danish

forestry and players in the timber industry aimed at increasing the supply of local certified wood.

## Ready for more sustainable forests

Today, just 20% of Denmark's forests are FSC-certified, and demand is outstripping supply. The FSC label guarantees, among other things, that no more trees are felled than the forest can reproduce on its own – and that local workers are trained, supplied with safety equipment and paid a decent wage.

"The forestry industry has been waiting for demand to take off. At the same time, the Danish FSC forestry standard has needed revising and optimising, reducing the number of requirements and making them more practice-oriented. That is why we are now calling on private forest owners and landowners to certify their forests," says Loa Dalgaard Worm, Director of Strategy and Business Development at FSC Denmark

## Municipality certifies forests after dialogue

As a direct result of this 'call' from FSC Denmark and Troldtekt, the Municipality of Ringkøbing-Skjern in western Jutland has now decided to FSC-certify all its municipal forests.

"I was invited to a meeting at Troldtekt together with FSC Denmark. Here, I was told about the benefits to be gained from certifying forests and the challenges of obtaining enough FSC-certified wood. I learned a lot from the dialogue, and it resulted in us deciding to FSC-certify our municipal forests as a supplement to our PEFC certification. At the same time, I will make a point of telling my counterparts in other municipalities about the scheme," says Hans Østergaard (Liberal Party), Mayor of the Municipality of Ringkøbing-Skjern.

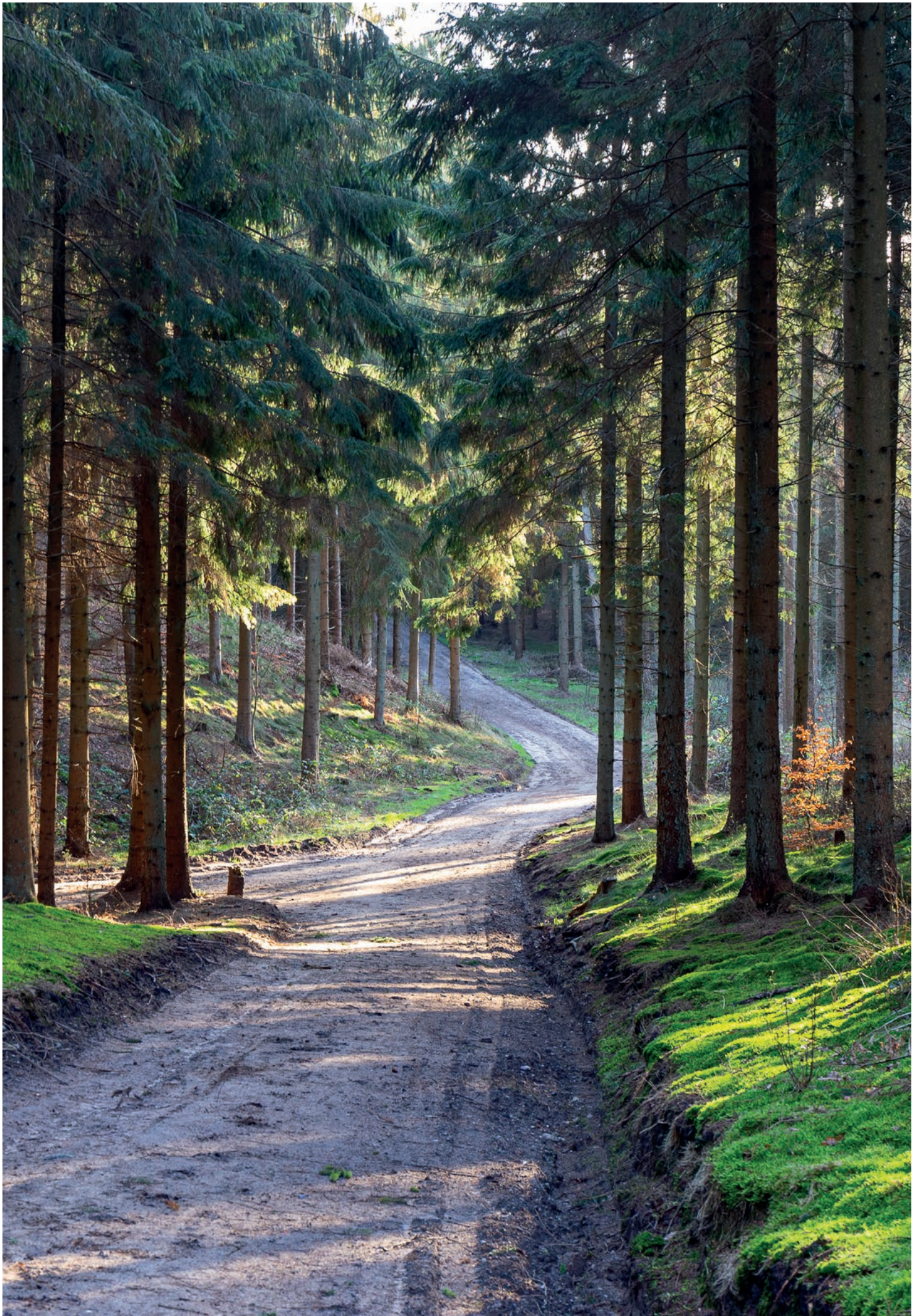
## More raw wood available locally

Troldtekt produces all its acoustic panels in Troldhede in the Municipality of Ringkøbing-Skjern. The decision to FSC-certify the municipal forests enables us to source more of our raw wood locally.

"Of course, we prick up our ears when a large local company draws attention to a particular need. I'm delighted that we can now offer FSC-certified wood to Troldtekt, for example. It's important for their sales in Denmark and on their export markets, such as Germany," says Hans Østergaard.



The mark of responsible forestry



# Sustainable laboratory opens in Berlin

Troldtekt acoustic solutions have been installed at the world's first C2C LAB, which opened in Berlin in autumn 2019. The renovated building serves as an educational centre, NGO office and a 'living laboratory' for Cradle to Cradle-certified building materials.



In a new knowledge centre in the Berlin district of Prenzlauer Berg, architects can experience and experiment with Cradle to Cradle-certified building materials and circular material flows. C2C LAB houses an educational centre, offices for the Cradle to Cradle NGO and a 'living laboratory'.

It has 'green' walls that clean the air. Carpets that bind particles. And office furniture which is not only healthy for people, but also for the environment. All the materials used in the 400-square-metre C2C LAB

therefore meet the Cradle to Cradle criteria for healthy products that can be returned to nature or recycled in new products.

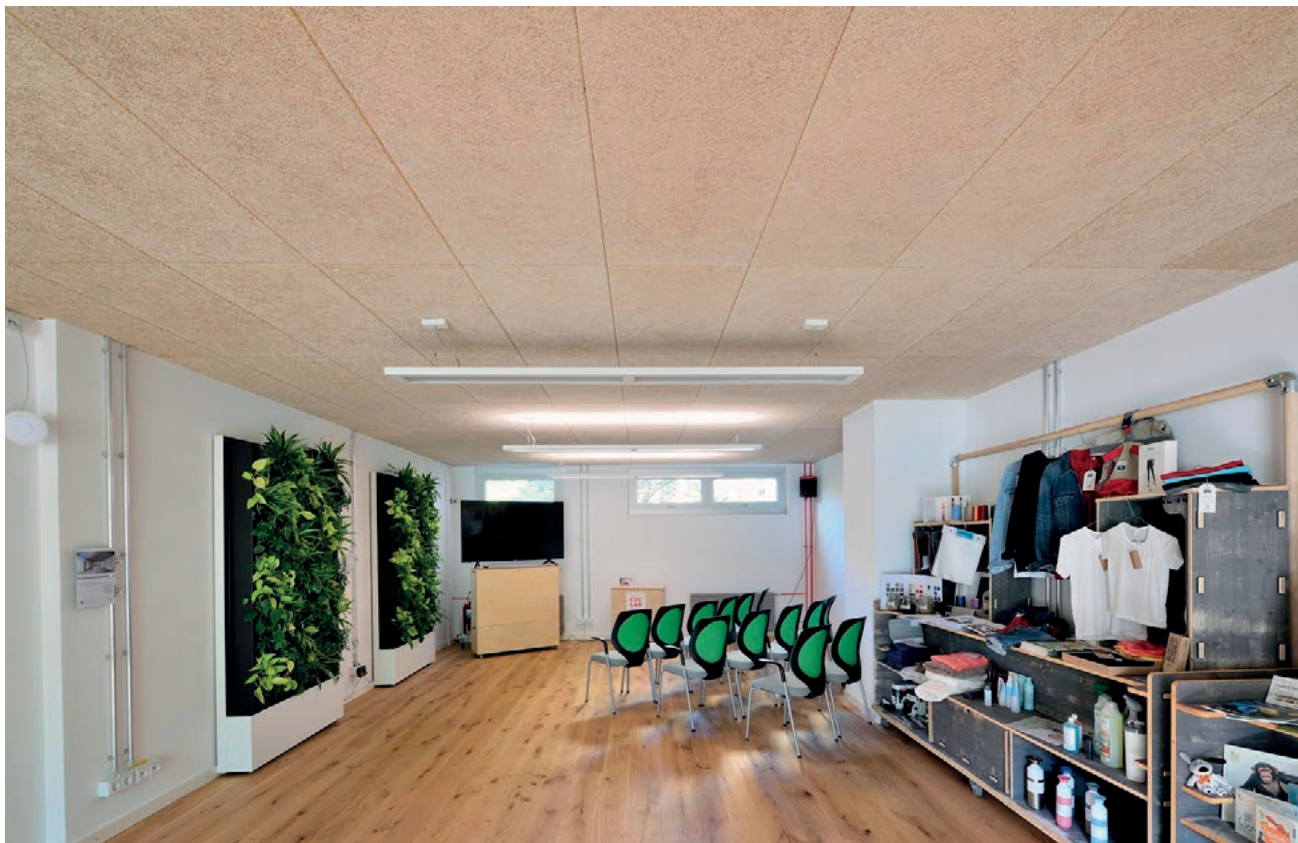
"We're proud to have finished the world's first complete renovation according to Cradle to Cradle principles with our new C2C LAB, and to be able to show how Cradle to Cradle works in practice. With C2C LAB, we've created a unique lighthouse project, which will hopefully serve as inspiration for many years to come," says Tim Janßen, Executive Director and member of the

Board of Cradle to Cradle NGO, which is behind the project.

Dating back to 1986, the building which houses C2C LAB was originally built as a 'Plattenbau' of large, prefabricated reinforced concrete elements. This type of multi-storey development was very characteristic of the GDR era.

## **Extensive, green renovation**

The renovation of the building involved completely rethinking the ground floor. The old walls were demolished, and C2C glass partitions were used to



create eight rooms which are lighter and more open. The old and damaged floors were removed and replaced with Cradle to Cradle-certified carpets and hard flooring. Other more durable floors such as a terrazzo floor were kept. To ensure plenty of natural light, the windows were enlarged and replaced with Cradle to Cradle-certified window systems.

“The sustainability aspect is playing an increasingly important role in new-builds. When renovating existing buildings on the other hand, it is more of a niche area, and one which we are

trying to raise people's awareness of with the renovation of C2C LAB,” says Tim Janßen.

“C2C LAB is an educational centre and a living laboratory, where the best materials have been used in an exemplary and innovative way. The renovation shows how to recycle products so that they are returned to the cycle in a meaningful way, but there are still challenges that need addressing,” he adds.

The building methods used have also matched the Cradle to Cradle criteria for separation – so none of

the materials have been glued together using adhesive or foam. Cradle to Cradle-certified acoustic ceilings, green walls and wall paints guarantee a healthy environment, but also add a natural feel.

Different variants of Trolldtekt acoustic panels have been used on ceilings and walls in both meeting and conference rooms. Trolldtekt acoustic panels are made of the all-natural materials wood and cement. The panels are Cradle to Cradle-certified in the Silver category, and the circular principles are a key part of Trolldtekt's strategy.

## About C2C LAB:

- The building which houses the 400-square-metre C2C LAB was originally built in 1986.
- C2C LAB has been completely refurbished using healthy materials – in line with Cradle to Cradle principles.
- Over 30 partners have been involved in establishing C2C LAB, including Trolldtekt. Several different variants of the Cradle to Cradle-certified Trolldtekt acoustic panels have been chosen for the interior.



# Sustainable offices for green think-tank

The green, liberal think-tank Fores in Sweden is a bridge-builder between politics, research and the business community. On arriving for meetings and events at Fores's Stockholm office, visitors are met by sustainable elements from floor to ceiling. And here Troldekt's design solutions play a key role.



Fores in Stockholm is the epitome of sustainable development. The think-tank stands out as a key player in the Swedish debate about green initiatives – with conferences, seminars and publications. The office in the heart of Stockholm is designed to support these activities. All the materials, from the carpets on the floor to the chairs and the ceilings, have a sustainable profile. This is extremely important from the point of view of inspiring visitors and people coming for meetings.

“At Fores, we want to lead the way in terms of sustainability. Not just in

the way we think, and the reports we publish, or the materials that we prepare for politicians, but also as a meeting place,” says Mattias Goldmann.

He was CEO of Fores when the Troldekt solutions were installed in the offices in 2019 as part of a partnership between Fores and Troldekt. In the autumn, he moved to a position as Chief Sustainability Officer at Sweco.

“We want to build bridges between politicians, businesses and the research community. The bridge-building takes the form of academic discussions, but is also supported through

the physical environment where the meetings take place. Moreover, it's important that the meeting venue signals sustainability and climate responsibility,” adds Mattias Goldmann.

## Impressed by Troldekt

Fores is based on Kungsholmen, only a stone's throw from Stockholm City Hall and with waterfront views. Stepping inside the offices and looking upwards, visitors are immediately reminded of where they are. This is because the Fores name is milled directly into the

elegant Troldekt line acoustic ceiling in several places.

"At Fores, we're very impressed with Troldekt, and we chose their solutions because they use Norway spruce which grows in Scandinavia and is a biological raw material, because the product is Cradle to Cradle-certified, and because Troldekt uses 100% wind power in its production," says Mattias Goldmann.

"We have Troldekt panels on our walls and ceilings. I think it's important, because when something is right in front of your nose, it means that we can tell people to also think about sustainability and the climate when considering the acoustics. This is the message we always want to convey," adds the CEO.

A Troldekt design solution has also been chosen for the wall. Here, the Troldekt rhomb mini version – with its rhomb-shaped pattern in shades of grey, black and white – creates a three-dimensional effect.



### Better decision-making

In addition to the sustainability aspects, Troldekt panels also contribute to ensuring superior acoustics, and thus to more qualified discussions in the Fores offices. Both at working meetings with just a few participants and at large-scale events, where Fores hosts up to 250 visitors at a time.

Mattias Goldmann says:

"For a satisfactory meeting or event, it's important that you don't suffer listener fatigue which will make you want to leave the room. This is what it was like when we first moved into the building, with its hard stone floors and the noise of traffic outside. However, with the sound insulation which has now been installed, this is a good place for meetings, and just what we wanted. A place where people meet and develop together. Better acoustics ensure better discussions and thus better decision-making."

# Increased focus on safe workflows

In 2019, five lost-time injuries were sustained by employees at Trolldtekt. Our aim is zero industrial accidents, and we are now launching a number of measures to further improve safety in our production facilities.

High-vis reflective vests, precise traffic rules and clear signage. At a large factory like ours in Trolldhede, clear procedures are needed to prevent industrial accidents. This is why we are systematically working with safety, but after five lost-time injuries in 2019, we are now intensifying this work further.

"Safety is a top priority, and we have a goal of zero accidents. All our employees must feel safe, and never doubt that they will return home uninjured at the end of the day. This is why it is of great concern to us that last year we suffered five industrial accidents, and in 2020 we are launching a number of measures to make it even safer to move around what is now a huge factory area," says Orla Jepsen, factory manager at Trolldtekt A/S.

He adds that in connection with the accidents, Trolldtekt has a fully functional emergency response procedure, which also includes psychological crisis support.



## On-site traffic and reflective vests

Several of the first safety measures to be introduced relate to on-site traffic. Every day, trucks whizz around stacked with acoustic panels, which restrict the drivers' view of the sur-

roundings. In addition, vans and trucks come and go from suppliers and business partners.

"Of course, we already have clear traffic rules for the site, but now we are making them even stricter. For example, we're making it completely clear where visitors have to park, and we're considering whether more roads should be one-way," says Orla Jepsen.

"Another key priority is visibility. Both colleagues and visitors must wear a high-vis reflective vest at all times. It's reassuring to see how many colleagues are already good at reminding each other to wear their vest. We need to keep this up. An important aspect is addressing the challenge, and ensuring that we help each other to follow the procedures which are already in place," he continues.

During 2020, more measures will be implemented in close cooperation between the occupational health and safety committee and management.





# Colleagues learn Danish at work

Many Troldekt employees come from non-Danish ethnic backgrounds. We make a priority of offering Danish lessons to those for whom Danish is not their mother tongue.

Several of our employees working in production in Troldekte have moved to Denmark from abroad, and even though many of them had a basic knowledge of Danish before they were employed, we are focusing on giving them a chance to upgrade their language skills. We are therefore offering Danish lessons to colleagues for whom Danish is not their native language.

"We have had employees who only wanted to speak English. We can certainly get by with this, but we would much prefer it if everyone spoke Danish. It helps to minimise the number of misunderstandings between colleagues, and it strengthens the sense of togetherness," says Steen Nielsen, who is a shop steward at Troldekte A/S.

## Investing in our employees

In 2019, Troldekte decided to start offering Danish lessons during working hours, as an investment in our employees – and to help retain talented workers.

Shan Manikkam, from Sri Lanka, who has worked at Troldekte for many years, says that he can now combine his work with his interest in learning more Danish. It means that he can better understand what is being said



in the media and avoid misunderstandings in his everyday life.

"I've always told my boss that I want to be good at communicating. I speak Danish at work, but also when I shop and when I'm talking to my children," he says.

Danish lessons are held each week on Troldekte's premises. The teaching is differentiated and flexible and offered to everybody on the same terms.

## Good opportunities for upgrading skills

On the initiative of the works council at Troldekte, we are offering production employees the opportunity to attend a supplementary training programme of their choice. This is happening in cooperation with 'KompetenceGruppen' at the Municipality of Ringkøbing-Skjern.

In late 2018/early 2019, all hourly paid workers were offered an interview with the municipality's consultants to clarify their training needs and wishes. Subsequently, in consultation with the municipality, we have drawn up a catalogue of possible training courses that our colleagues can attend.

# Student project sparked idea for new solution

In 2019, Troldekt cooperated with a group of students who were given a chance to try their hand at high-tech challenges in production. The students turned a problem on its head and arrived at a completely new idea.



In spring 2019, Troldekt opened its factory doors to four students on the MSc programme in Technology Based Business Development at Aarhus University. As part of an exam project, the group was shown several complex challenges that we were seeking to address at our high-tech production facility in Troldehede in western Jutland.

"Beforehand, all we knew was that the task had something to do with IoT (Internet of Things, ed.), and that it had to be solved at Troldekt. After being presented with various challenges at the factory, we chose to hone in on one of them in our project," says Eduard-Andres Hedensted, one of the students in the group.

The challenge involved the quality assurance that we perform when the wood wool is mixed with cement, before the finished acoustic panels are cast. Orla Jepsen, factory manager at Troldekt A/S, explains:

"To avoid visible lumps of cement on the panel surfaces, we have an employee who manually removes them. What we were looking for was a technology that could automate the process so we could use the labour in a smarter way."

### Three days in the field

The students spent three days at Troldekt's factory, and then spent some time working on their technological

solution to the challenge. The result was an idea in which a robot, via so-called machine learning, learns to identify cement lumps using a camera. Then, a robot arm can push the cement further down into the panel mixture so that it is no longer visible on the surface.

"We had a very good dialogue with Troldekt along the way, and we were able to interview employees and collect data from observations of production. The three days at the factory were crucial, because if we had simply been presented with the highly technical challenge on paper, then it would have been much more difficult to arrive at a solution," says Eduard-Andres Hedensted.



### Fruitful for both parties

The idea presented by the group was met with an enthusiastic response from Troldekt.

“They really thought outside the box, and came up with a solution that we would never have thought of ourselves. Our focus has been on removing the lumps of cement, rather than on whether they could be pushed down and hidden in the panels. All I

had been thinking about beforehand was wanting to help a few students with their project, something that we enjoy doing. However, I never expected to get such a specific and constructive solution to a particular issue here at the factory,” says Orla Jepsen.

The four students also benefited from the process.

“We were very warmly welcomed by Troldekt, and received a lot of an-

swers and feedback when we needed it. For us, it has been fascinating to learn about a particular product and how it's produced. During the project, we've seen how what we learn on the degree programme can be applied in the real world,” says Eduard-Anders Hedensted.

## FACTS: About the project

- The four students – Eduard-Andres Hedensted, Lasse Nielsen, Philip Schmidt and Lavinia Stratulat – undertook the assignment at Troldekt as part of their Technological Business Model Innovation (TBMI) course.
- TBMI is one of the main courses on the Technology Based Business Development degree programme at the Department of Business Development and Technology (AU BTECH) at Aarhus University's campus in Herning.
- The practical assignment the students have to complete is called a TBMI Challenge. The challenge is presented by a company, and has to be solved technologically.

# Sponsorship for tomorrow's architects

At Trolldtekt, innovation is a fundamental value. Consequently, we honour students who develop new ideas for architecture. In 2019, we were again the main sponsor of a competition in which students from Hamburg designed the school of the future.

Based on a specific construction project, six teams of students competed against each other in the run-up to SCHULBAU, the international fair and exhibition for educational institute architecture, in Hamburg in February 2019. Based on a site visit, research interviews and their own architectural ideas, the students had to submit their proposals for the design of the new campus Neugraben.

In the Hamburg area alone, billions of euros are being spent on new schools at the moment – so it is important to shed light on the best ideas for tomorrow's educational buildings. For this purpose, six teams of architecture students from different local universities were able to present new and innovative ideas.

## Support for a core area

As in 2018, Trolldtekt was the main sponsor of the competition in 2019 – because we want to motivate tomorrow's architects to work innovatively, and because we want to promote CSR



in our new domestic markets, including Germany.

On the other hand, we have decided to discontinue our own competition – the Trolldtekt Award – which invited international students to come up with new and original ways of using Trolldtekt acoustic panels. Peer Leth, Trolldtekt's CEO, explains:

“The Trolldtekt Award has provided us with some good and unusual input over the years, but we've now decided

to change tack, and instead give students the possibility of trying their hand on a real construction project, which will subsequently be executed in real life. In Germany, there is a huge need for new schools and for renovating existing schools, and acoustic solutions for schools is one of our core business areas. Therefore, it makes a lot of sense for us to support the competition at the SCHULBAU fair.

## Involvement in study projects

Social responsibility is a fundamental value at Trolldtekt. And assuming responsibility for educating young people is no exception. Each year, we receive a lot of enquiries from students who are interested in using Trolldtekt in their projects. We welcome these enquiries and the interest which the students show in us.

### In 2019, we also participated in these projects:

#### Internship provided data base

Two students from the bachelor programme Value Chain Management (VIA University College in Horsens) spent a semester as interns at Trolldtekt. Beginning in August 2019, the internships took place at our factory in Trol-

hed. Here, the two students collected daily data on the efficiency of our machines (OEE) and reported their findings to management. The data formed the basis of our work with lean. Subsequently, we have employed one of the two students.

#### Contributed knowledge about Cradle to Cradle

A student from the Institute for Integrated Quality Design at Johannes Kepler University Linz in Austria has written a thesis on the subject of 'Cradle to Cradle and Take back'. To gather knowledge for her thesis, she spoke to companies with practical experience of this issue – and Trolldtekt participated in an interview.

# Byens Hus brings light to Mørke

The town of Mørke on Djursland has undergone a spectacular urban renewal project, which has, among other things, resulted in a brand new community centre in which sustainability and recycling were key focus areas. Troldekt donated a ceiling for the building.

With hundreds of thousands of Danes following the TV series *Lys i Mørke* ('Light in Mørke', 'mørke' being Danish for 'the dark'), the small railway town on the Jutland peninsula of Djursland has ensured that its urban renewal project is known far and wide. One of the visions for the project which has manifested itself most clearly is the new Byens Hus community centre. The building is a reinterpretation of the old community hall, and was developed and designed by Peter Skjalm from RUM3 Studio. The idea is for the building to be used for everything from confirmation parties and Christmas markets to community evenings for the town's residents.

"We were keen to have a neutral venue where the town itself could set the agenda. The old community hall was not very flexible and accommodating of different types of events. At the same time, Mørke also needed more venues for celebrating life's key events, says Jakob Rauff Baungaard,



*Jakob Rauff Baungaard has been one of the driving forces behind the new community centre.*

who was one of the driving forces behind the building project.

## **Brings everybody together**

It was very uplifting for Jakob Rauff Baungaard to see how the town came together to complete Byens Hus in late autumn 2019.

"Many locals have been involved in the process, both newcomers and people who have lived here for a long time. It has been tough at times, because there was so much to do. We had a vision of using recycled materials as much as possible, so old boards have been planed, we've looked for second-hand furniture, and tonnes of bricks have been cleaned," he explains.

On the first floor of the 200-square-metre building, Jakob Rauff Baungaard and the rest of the project group had problems finding a recycled ceiling that would ensure good acoustics in the large room with its vaulted ceiling.

"The solution was Troldekt acoustic panels which tied in well with the building's sustainable profile. We're extremely grateful that Troldekt agreed to support our project by donating a ceiling which is completely in line with the spirit of the place," says Jakob Rauff Baungaard.



# Our data

In order to ensure structured CSR reporting, Troldekt uses guidelines from the international GRI G4 standard.

However, as of 1 July 2018, the GRI G4 guidelines have been superseded by GRI Standards. The CSR report for 2019 is structured in the same way as previous reports, which has resulted in a marked improvement in the quality of our content and data collection.



# Environment

Troldekt remains a dynamic, growing company. We are seeing a marked increase in demand, and in 2019 we therefore increased our production further, among other things on our brand new production line, which was commissioned in early 2019.

Data on the company's materials consumption therefore shows an increase in the consumption of raw materials etc.

## Materials consumption

All materials are purchased from external suppliers. The data is obtained from supplier invoices or statements provided by suppliers.

	Material	2017	2018	2019	Unit	Renewable material
Raw materials	Wood	43,781	50,056	52,978	m <sup>3</sup>	yes
	Cement, grey	1,892	1,994	3,081	tonnes	no
	Cement, white	19,777	20,604	26,686	tonnes	no
	Accelerator	202,536	188,702	382,350 *	litres	no
	Sodium silicate	291,414	254,782	266,229	litres	no
	Paint	409,774	454,348	603,112 **	litres	no
Associated process materials	Water	16,624	17,985	23,442	m <sup>3</sup>	yes
	Asphalt cleaner	4,512	2,893	280 ***	litres	no
	Mould oil	145,162	130,451	141,361	litres	no
Packaging	Cardboard	79	71	96	tonnes	yes
	Foil	25	35	43	tonnes	no
	Wood pallets	57,295	57,891	81,919	pcs	yes

\*The amount of accelerator has increased significantly. This is due to a new dosing method. An action plan has been launched to reduce consumption again.

\*\*The proportion of panels that need to be painted continues to increase. Therefore, paint consumption is increasing.

\*\*\*The amount of asphalt cleaner has been significantly reduced. We have changed the application method. Previously, we dosed by dripping the cleaner onto the surface – now a very fine spray method is used.

## Percentage of recycled materials

Material	2017	2018	2019
Total proportion of recycled materials as a percentage of total materials consumption	1.5%	1.2%	1.6%

Each Troldekt panel contains cement, which is partially produced from recycled materials (the cement may contain ash and sand from offshore channels).

Recycled materials in grey cement: 15.55%, corresponding to 479 tonnes (337 tonnes in 2018).

Recycled materials in white cement: 1.49%, corresponding to 398 tonnes (235 tonnes in 2018).

The proportion of recycled materials in white cement has increased, resulting in an increased overall share of recycled material.

### Energy consumption within the organisation

The tables below provide an overview of Troldekt's energy consumption in 2017-2019. Only energy consumption at the factory in Troldekte is calculated.

	2017	2018	2019
Energy consumption (GJ)	88,633	81,553	92,309
Percentage from renewable energy sources	95%	94.6%	96.2%

Consumption is distributed across the following entries:

	Quantity (GJ)			Share of total energy consumption			Share of renewable energy sources	Contributes to emissions	Produced externally/internally
	2017	2018	2019	2017	2018	2019			
Electricity consumption	21,742	23,518	27,650	25%	28.8%	30.0%	100%	no	Externally
Biofuel	62,694	53,640	61,178	71%	65.8%	66.3%	100%	no	Internally + externally
Heating oil*	271	-	-	< 1%	-	-	0%	yes	Externally
Gas (trucks)	1,162	1,346	1,094	1%	1.7%	1.2%	0%	yes	Externally
Diesel (trucks)	2,764	3,049	2,386	3%	3.7%	2.6%	0%	yes	Externally

\*Oil is no longer used for heating.

### Energy intensity

	2017	2018	2019
Energy consumption per m <sup>2</sup> of produced panel	27.76 MJ	25.47 MJ	21.95 MJ
The development affects Troldekt's environmental performance	Negatively	Positively	Positively

The table 'Energy consumption within the organisation' lists which types of energy are included, and whether the energy is produced externally/internally.

### Reduction of energy consumption

	2017	2018	2019
Total energy savings	-15,454 GJ	-7,336 GJ	-14,822 GJ

The reduction in energy consumption reflects the gains attributable to our new modern machinery.

### Direct CO<sub>2</sub> emissions (Scope 1)

The table presents an overview of direct CO<sub>2</sub> emissions from sources that are owned or controlled by Troldekte.

Direct sources of emissions	Tonnes CO <sub>2</sub>		
	2017	2018	2019
Biofuels for drying*	-	-	-
Heating oil**	19	-	-
Gas for trucks	121	141	70
Diesel for trucks	191	211	165 ***
Total	331	352	235 ***

\*Biofuels are regarded as a CO<sub>2</sub>-neutral energy source.

\*\*Oil is no longer used for heating.

\*\*\*The consumption of gas and diesel for forklift trucks is decreasing as we make the switch to electric trucks.



**Indirect CO<sub>2</sub> emissions (Scope 2)**

Indirect sources of CO <sub>2</sub> emissions	Tonnes CO <sub>2</sub>		
	2017	2018	2019
Electricity	0	0	0

Troldtekt uses 100% wind power in the form of renewable energy from the Anholt offshore wind farm (with Climate Investment).

**Other indirect CO<sub>2</sub> emissions (Scope 3)**

This indicator covers a number of other indirect emissions of CO<sub>2</sub> from sources that are not owned or controlled by Troldtekt, but where the CO<sub>2</sub> emissions result from the company's activities. CO<sub>2</sub> emissions from transport account for less than 0.5% of total CO<sub>2</sub> emissions in Scope 3. In addition, this data is subject to considerable uncertainty. We have therefore decided not to include the CO<sub>2</sub> emissions stemming from transport in Scope 3.

Indirect sources of CO <sub>2</sub> emissions	Tonnes CO <sub>2</sub>		
	2017	2018	2019
Production of purchased process materials, raw materials and packaging	25,186	26,857	33,735

**CO<sub>2</sub> emissions intensity**

This shows the intensity of CO<sub>2</sub> emissions per produced square metre of acoustic panel both in total and broken down according to the information from the three previous tables.

	Volume (tonnes)			Kg CO <sub>2</sub> /m <sup>2</sup>			The development affects Troldtekt's environmental performance
	2017	2018	2019	2017	2018	2019	
In Scope 1	331	352	235	0.10	0.11	0.06	Positively
In Scope 2	0	0	0	0	0	0	Status quo
In Scope 3	25,186	26,857	33,735	7.89	8.39	8.02	Positively
Total CO <sub>2</sub>	25,517	27,209	33,970	7.99	8.50	8.08	Positively

**Reduction of greenhouse gas (GHG) emissions**

Increased production volume has resulted in an increase in total greenhouse gas emissions. However, kg of CO<sub>2</sub> per square metre has decreased.

**Emissions of ozone-depleting substances**

This provides information about Troldtekt's emissions of ozone-depleting substances.

CFC-11 equivalent (kg)		
2017	2018	2019
0.0056	0.0056	0.0073

**SO<sub>x</sub>**

This shows Troldekt's discharges of SO<sub>x</sub>.

SO <sub>x</sub> equivalent (tonnes)		
2017	2018	2019
62.6	70.7	92.3

The increase in SO<sub>x</sub> emissions reflects the increase in production.

**Total weight of waste by type and disposal method**

All waste disposal is carried out by approved suppliers. Waste data has been compiled and supplied by these suppliers.

Waste types	Volume (tonnes)			Treatment
	2017	2018	2019	
Wood	55.8	72	93.5	Recycled
Plastic packaging	1.9	10.8*	5.8	Recycled
Cardboard packaging	5.6	6.2	11.4	Recycled
LDPE agricultural film**	-	-	2.4	Recycled
Iron and metal	55.5	35.5	33.3	Recycled
Electronics	2.5	1.8	3.8	Recycled
Ash from biofuels	14.5	37.9	71.5	Recycled
Concrete	78.1	1	-	Recycled
Hazardous waste for reuse	13.3	6.2	23.1	Recycled
Wastewater from painting facility***	-	479	596	Recycling/incineration
Hazardous waste for incineration	16.0	16.7	7.8	Incineration
Suitable for incineration	43.6	54.9	64.7	Incineration
Landfill****	1.4	1.5	0.5	Landfill

\*The amount of plastic packaging has increased significantly. This is due partly to the commissioning of a new packaging machine, and partly to the establishment of a new factory line as many of the machines were supplied wrapped in plastic.

\*\*Due to the wet autumn in 2019, we had to cover our stock of wood (wood stacks) with LDPE agricultural film.

\*\*\*In 2018, we started collecting the wastewater from our painting processes and sending it to a processing plant. Sludge from painting acoustic panels is sent for incineration, while the treated wastewater is discharged into the public sewers.

\*\*\*\*Insulation material is sent for landfill. The amount is determined by the production of two-layer panels.

### Extent of mitigation of environmental impacts

- Our investment in a new production line has resulted in a significant reduction in energy consumption per square metre of produced panel.
- We have continually invested massively in reducing noise levels in several places at the factory.
- Dust from our edging workshop is transported in closed tankers. The process has been optimised, and has significantly reduced the dust-related problems.
- Diesel and gas-powered trucks have been replaced with electric trucks.

### Percentage of products sold and packaging materials recycled

	2017	2018	2019
Wood pallets delivered (qty)	73,745	79,282	91,123
Wood pallets returned (qty)	19,775	20,477	19,733
Wood pallets returned (%)	27	26	22

### Sanctions for non-compliance with environmental laws and regulations

Troldekt has not been sanctioned for failing to comply with environmental laws and regulations in the reporting period.

### Percentage of screened suppliers – Environment

Troldekt's Code of Conduct states that our suppliers must strive to minimise the environmental impact of their activities. They must also have procedures to effectively prevent and address any environmental issues and industrial accidents which may impact society and the environment.

All new Troldekt suppliers must sign our Code of Conduct. Only if suppliers comply with the guidelines can they start doing business with us. We have been doing business with many of our suppliers for a number of years, and we generally have a low supplier turnover.

Twenty-seven of Troldekt's main product-related suppliers have signed Troldekt's Code of Conduct. Approx. 90% of our product-related purchases thus come from suppliers who have signed our Code of Conduct.

### Environmental impacts in the supply chain

No. of suppliers who have signed Troldekt's CoC	Percentage categorised in low-risk group	Percentage categorised in medium-risk group	Percentage categorised in high-risk group
27	96%	4%	0%

All suppliers who have signed our Code of Conduct are categorised in low, medium or high-risk groups. This happens, among other things, on the basis of their specific risk of having a negative environmental impact. We have no suppliers in the high-risk group. Should this happen in future, we will maintain our relations with such suppliers in order to exert a positive influence. We visit our suppliers at regular intervals, and CSR is an important parameter in the dialogue.

### Grievances about Troldekt's environmental impacts

In 2019, we were in dialogue with neighbours about noise problems at the factory on a number of occasions. We are always open to dialogue, and we will do our utmost to accommodate our neighbours' wishes. Based on our dialogue, we have invested heavily in noise-reducing measures.

# Labour conditions

Troldtekt's employees are the company's most important asset. Consequently, their safety, health and rights are the foundation stone for our business. We are always seeking to further improve the working environment and make Troldtekt an even more attractive place to work.

Social fairness is not just a high priority for our own employees – it is also important that our suppliers treat their employees well. We ensure this through our Code of Conduct.

## Workforce and employee turnover

The table below is a summary of the number of employees and staff turnover in Troldhede and Tranbjerg, and how employees are distributed according to their terms of employment. Please note that the table includes apprentices, flexitimers and paid student interns, while young workers are not included.

Location	Age	Salaried employees		Hourly paid workers		New employees		Employees who have left Troldtekt	
		Women	Men	Women	Men	Women	Men	Women	Men
Tranbjerg	-30	1	0	0	0	1	0	0	0
	31-50	8	10	0	0	2	1	1	0
	51-	10	7	0	0	1	2	0	0
Troldhede	-30	0	0	1	5	1	1	0	2
	31-50	5	2	2	32	3	6	1	0
	51-	4	3	3	33	0	7	0	1

Employment	No. in Tranbjerg	No. in Troldhede
Full-time employees	31	89
Part-time employees, incl. flexitimers	5	2
Permanent employees	36	90
Short-term contracts, including paid student interns	0	0
Total	36	90

Employees in the subsidiaries are not included in the figures. Troldtekt Deutschland GmbH has taken on four salaried employees. Similarly, Troldtekt AB now also has four salaried employees.

## No. of employees in formal committees

In addition to the statutory occupational health and safety committee, Troldtekt has voluntarily set up a liaison committee. Both employees and the management are represented on both. Eight per cent of our total workforce is represented in these formal health and safety committees in Troldtekt.

### Industrial accidents and absence due to illness

The figures cover the 76 hourly paid employees at the factory in Trolldhede. Absence due to illness among salaried employees is not fully registered, which is why we have chosen not to include this data in the table.

	2017	2018	2019
No. of lost-time injuries	4	2	5
Lost-time injury frequency (no. of industrial accidents/1 million hours worked)	42.43	18.13	36.92
Absence as a result of industrial accident (hours/1,000 hours worked)	9.55*	1.29	2.01
Absence due to illness, total (%)	2.36	3.9	2.63

\*The increase in absence due to illness is due to more employees being on long-term sick leave.

The number of lost-time injuries increased in 2019. We are increasing our focus on preventive measures. The aim is a reduction in the number of lost-time injuries.

### Composition of senior employees according to gender and age

The following provides a summary of the composition of senior employees in Trolldtekt broken down by age and gender in per cent.

	Women < 30 yrs	Women 30-50 yrs	Women > 50 yrs	Men < 30 yrs	Men 30-50 yrs	Men > 50 yrs
Distribution of senior employees in %*	0%	21%	7%	0%	36%	36%

\*The figures are rounded off.

### Percentage of screened suppliers – Labour rights

According to Trolldtekt's Code of Conduct, our suppliers must comply with certain guidelines within the field of labour rights. Among other things, they must comply with local legislation concerning a minimum wage, and employees must be paid a wage which ensures them a fair standard of living. Employees must also have the right to paid holiday, absence due to illness, maternity/paternity leave and trade union membership.

All new Trolldtekt suppliers must sign our Code of Conduct. Only if suppliers comply with the guidelines can they start doing business with us. We have been doing business with many of our suppliers for a number of years, and we generally have a low supplier turnover.

Twenty-seven of Trolldtekt's main product-related suppliers have signed Trolldtekt's Code of Conduct. Approx. 90% of our product-related purchases thus come from suppliers who have signed our Code of Conduct.

### Risk of negative labour practices in the supply chain

The status is that 96% of suppliers who have signed our Code of Conduct are placed in the low-risk group, and 4% are in the medium-risk group, and there are no suppliers in the high-risk group.

A single supplier accounts for the 4% placed in the medium-risk group, being based in a country where good labour conditions are not enforced through statutory legislation. Trolldtekt has visited the supplier, and in this connection conducted a very satisfactory audit (on-site inspection).

There have not been any incidents among Trolldtekt's suppliers which required reprimands or other measures.

# Society

At Troldekt, we want to make a positive contribution to the local communities in which we are present. We are continually engaged in close dialogue with local stakeholders. Moreover, we have established anti-corruption guidelines, and through thorough documentation we are doing everything in our power to make sure that our products contribute to the safety and health of our customers' buildings.

As market leader in Denmark within the production and supply of acoustic solutions, we want to lead the way and set a good example in terms of positively influencing society around us.

### Anti-corruption: Screened suppliers

Troldekt's suppliers must neither directly nor indirectly engage in or benefit from any form of corruption or bribery. This is stated in our Code of Conduct, which all new suppliers must sign before they can start doing business with us. We have been doing business with many of our suppliers for a number of years, and supplier turnover is generally low.

Twenty-seven of our main product-related suppliers have signed our Code of Conduct. Together, the 27 suppliers represent approx. 90% of our product-related procurement volumes.

### Anti-corruption guidelines

All Troldekt's employees are informed about our CSR policy at canteen meetings, and the CSR policy is included in our staff manual. All employees have been informed about this.

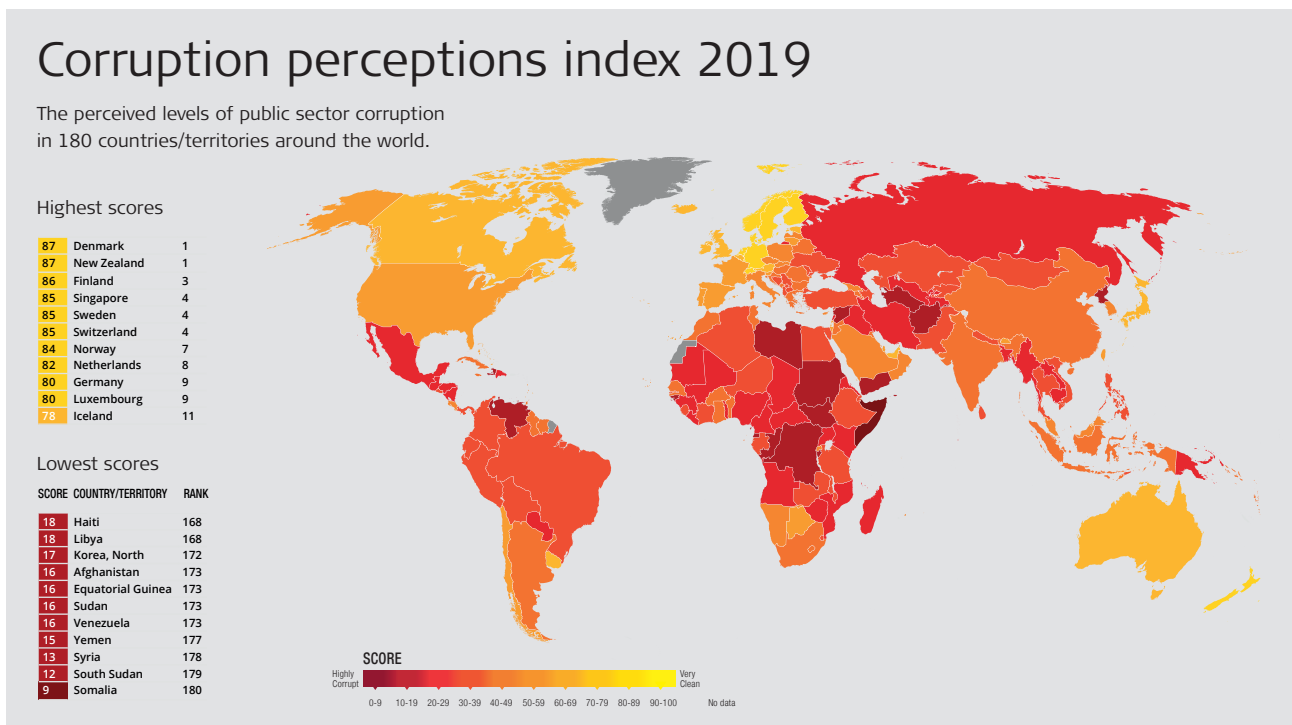
In 2017, we took steps to future-proof our anti-corruption guidelines. This work continued in 2018 and 2019. All new employees are introduced to the company's anti-corruption guidelines.

Number of suppliers screened with CoC*	Percentage categorised in low-risk group	Percentage categorised in medium-risk group	Percentage categorised in high-risk group
27	96%	4%	0%

\*The figures are rounded off.

### Cases of corruption or bribery

No cases of corruption or bribery were identified at Troldekt in 2019.



**Sanctions for non-compliance with laws and regulations**

Troldtekt was not sanctioned for non-compliance with laws and regulations in 2019.

**Society: Screened suppliers**

Troldtekt's Code of Conduct provides guidelines for the company's cooperation with its suppliers, including criteria relating to their impact on society.

All new suppliers must sign our Code of Conduct before they can start doing business with us.

**Society: Risk classification of suppliers**

Twenty-six of the 27 suppliers (corresponding to 96%) who have signed our Code of Conduct are placed in the low-risk group, and one supplier (corresponding to 4%) is placed in the medium-risk group. There are no suppliers in the high-risk group.

The supplier in the medium-risk group is based in a country where the impact of organisations on society are regulated by law. Troldtekt has visited the supplier, and in this connection conducted a very satisfactory audit (on-site inspection).

There have not been any incidents among Troldtekt's suppliers which required reprimands or other measures.

**Assessment of products**

Through our strategic work with Cradle to Cradle certifications, a thorough raw materials assessment has been carried out of Troldtekt's acoustic panels.

As a result of this assessment, we have phased out harmful substances, and Troldtekt acoustic panels are therefore Cradle to Cradle-certified in the Silver category. The panels have also been recognised for their contribution to a healthy indoor climate and have, for example, been awarded the Danish indoor climate label *Indeklimamærket*, the Finnish quality label M1 and Allergy Friendly UK.

**Sanctions for non-compliance with laws and regulations concerning use of products**

Troldtekt was not sanctioned for non-compliance with laws and regulations concerning the provision and use of its products in 2019.

# Human rights

Troldtekt wishes to promote CSR in the construction industry. An important aspect of this work is supporting and promoting human rights. Troldtekt has also made a commitment to this through joining the UN Global Compact.

With our Code of Conduct, we want to help ensure that our product-related suppliers respect human rights.

**Risk of child labour**

Troldtekt deems there is no risk of child labour in our organisation. Through our Code of Conduct, we take an active approach to the elimination of child labour.

**Human rights: Screening of suppliers**

Troldtekt's suppliers must neither directly nor indirectly be involved in using child labour. This is stated more explicitly in our Code of Conduct, which all new suppliers must sign in order to start doing business with us.

**Human rights: Risk classification of suppliers**

Twenty-six of the 27 suppliers (corresponding to 96%) who have signed our Code of Conduct are placed in the low-risk group, and one supplier (corresponding to 4%) is placed in the medium-risk group. There are no suppliers in the high-risk group.

The supplier in the medium-risk group is based in a country where there is a general risk that human rights are not respected. Troldtekt has visited the supplier, and in this connection conducted a very satisfactory audit (on-site inspection).

There have not been any incidents among Troldtekt's suppliers which required reprimands or other measures.

# Content index

Description	Page no.	Comments
<b>General</b>		
Management statement	4	
Company name	8	
Troldekt's primary brands, products and services	8	
Geographical location of Troldekt's head office	9	
Countries where Troldekt is represented	9	
Markets	9	
Troldekt's workforce	44	
Troldekt's supply chain	9	
Committees and associations in which Troldekt is represented	9	
Materiality analysis	2	
Stakeholder involvement	2	
Reporting period	2	
Date of latest report	Back page	
Frequency of reporting	2	
Contact information	2	
Values	8	
CSR policy	11	
Code of Conduct	9	
Total weight of waste by type and disposal method	42	
Extent of mitigation of environmental impacts	43	
Percentage of products sold and packaging materials recycled	43	
<b>Environment</b>		
Materials consumption	39	
Percentage of recycled materials	39	
Energy consumption within the organisation	40	
Energy intensity	40	
Reduction of energy consumption	40	
Direct CO <sub>2</sub> emissions (Scope 1)	40	
Indirect CO <sub>2</sub> emissions (Scope 2)	41	
Other indirect CO <sub>2</sub> emissions (Scope 3)	41	
Intensity of greenhouse gas (GHG) emissions	41	
Reduction of greenhouse gas (GHG) emissions	41	
Emissions of ozone-depleting substances	41	
SO <sub>x</sub>	42	
Sanctions for non-compliance with environmental laws and regulations	43	
Percentage of screened suppliers – Environment	43	
Risk classification of suppliers – Environment	43	
Grievances about Troldekt's environmental impacts	43	



Description	Page no.	Comments
<b>Labour conditions</b>		
Workforce and employee turnover	44	
No. of employees in formal committees	44	
Industrial accidents and absence due to illness	45	
Composition of senior employees according to gender and age	45	
Percentage of screened suppliers – Labour rights	45	
Risk classification of suppliers – Labour rights	45	
<b>Society and product responsibility</b>		
Percentage of screened suppliers – Anti-corruption	46	
Implementation of anti-corruption guidelines	46	
Cases of corruption or bribery	46	
Sanctions for non-compliance with laws and regulations	47	
Percentage of screened suppliers – Society	47	
Risk classification of suppliers – Society	47	
Assessment of products	47	
Sanctions for non-compliance with laws and regulations concerning use of products	47	
<b>Human rights</b>		
Risk of child labour	47	
Percentage of screened suppliers – Human rights	47	
Risk classification of suppliers – Human rights	47	

# Status 2019

Category	Description of objectives	Status
General	Review of suppliers in relation to the Code of Conduct; evaluate the current criteria for the classification of suppliers and implement a new risk assessment.	Objectives will be transferred to 2020. A plan has been drawn up for supplier audits and revision of the Code of Conduct to make it more operational.
General	Initiate supplementary training under the auspices of the Competence Development Fund of Industry (IKUF).	Realised. All hourly paid employees have been offered interviews with 'Kompetencegruppen' at the Municipality of Ringkøbing-Skjern. We have also held language courses. See the article on page 33.
Labour conditions	Continued focus on safety. The goal is zero industrial accidents.	The target has not been realised. In 2019, five lost-time injuries were reported. Objectives will be transferred to 2020. See the article on page 32.
Environment	A crusher is being installed to crush panel waste with a view to increased recycling in the biological and technical cycles.	Partially realised. As crushing waste generates dust and noise pollution and poses challenges in relation to our environmental approval, crushing is being outsourced to an external partner. From here, waste is sent for recycling in the biological and technical cycles. The scheme is being prepared so that it can also be rolled out for demolition waste.
Environment	Explore possibilities for entering into an international development project aimed at exploiting waste heat and water vapour from the drying process.	Partially realised. In December 2019, we discussed the plan with the project partners. Objectives will be transferred to 2020.

# New objectives for 2020

Category	Description of objectives	Status
General	Review suppliers in relation to the Code of Conduct; evaluate the current criteria for the classification of suppliers and implement a new risk assessment.	
General	Provide a sign language guide for all employees online to make it easier to communicate with deaf colleagues.	
General	Recruitment of trainee/apprentice in both Tranbjerg and Troldehede.	
Labour conditions	Continued focus on safety. The goal is zero industrial accidents. We are initiating: <ol style="list-style-type: none"> <li>1) rules and markings in connection with internal traffic</li> <li>2) stricter procedures on the use of workwear in high-vis colours</li> <li>3) stricter guidelines re the use of protective equipment in places where it is needed</li> <li>4) focus on avoiding heavy lifting</li> <li>5) focus on preventing falls.</li> </ol>	
Environment	Implement the action plan on noise reduction from the original factory line. The action plan has been coordinated with the municipality.	
Environment	Explore possibilities for entering into an international development project aimed at exploiting waste heat and water vapour from the drying process.	
Environment	Reduce the CO <sub>2</sub> footprint from the production of acoustic panels, among other things through cooperating with Aalborg Portland on the possibility of procuring cement with a lower footprint.	



<b>Troldtekt A/S</b>	
<b>Address</b>	Head office Sletvej 2A, DK-8310 Tranbjerg J Production and warehouse Østergade 37, Trolldhede, DK-6920 Videbæk
<b>CSR report 2019</b>	This report was uploaded to the UN's Global Compact on 15 June 2020
<b>Editors</b>	Responsible: Tina Snedker Kristensen Data: Peer Leth , Orla Jepsen and Renate Blom Editing & copywriting: Publico Layout & photos: Tommy Kosior
<b>Contact</b>	Tina Snedker Kristensen Head of Marketing and Communications tkr@troldtekt.dk +45 87 47 81 24
<b>About Troldtekt</b>	Troldtekt acoustic solutions for ceiling and wall cladding are among the leading products for ensuring good acoustics, effective fire protection and a healthy indoor climate. The company's main product is Troldtekt acoustic panels which are made from wood and cement and which are Cradle to Cradle-certified in the Silver category. Troldtekt acoustic panels are the obvious choice for ceilings in most types of buildings - from offices and commercial buildings to schools, institutions, swimming pools, sports centres and private homes. Troldtekt A/S was founded in 1855 as a trading company in Aarhus. Since 1935, the company has produced Troldtekt cement-bonded wood wool in Trolldhede in western Jutland.

**Certifications**

