

Troldtekt A/S Corporate Social Responsibility

Communication on Progress for the UN 2020

About this report

The CSR activities of Troldekt A/S are strategically aligned with the sustainable Cradle to Cradle design concept and the UN Global Compact.

This report relates to the calendar year 2020. In publishing this report, Troldekt 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 year, our CSR reporting is again based on the Global Reporting Initiative (GRI) methodology, which ensures consistent and comparable structuring and data collection from year to year. In practice, we are inspired by the earlier GRI G4 reporting framework, which in mid-2018 was replaced by the 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.

Report structure

The report is divided into five sections. First, we describe Troldekt's CSR efforts in general, providing a status from the Board of Management, and addressing the corona pandemic in particular, as well as looking at selected highlights from 2020. In the second section, we focus on our strategic work with the sustainable Cradle to Cradle design concept – while the third section focuses on our efforts to optimise our resource consumption and processes throughout the entire product life cycle.

The fourth section describes a number of specific activities in 2020. 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 ten principles

Troldekt'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 troldekt.com. Our cooperation with our suppliers is based on our Code of Conduct, which is also available at troldekt.com.

Want to know more?

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





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

Contents

About Troldekt

Page 4

- Editorial
- Recognition of CSR focus
- Highlights of the year
- Corona status
- Company profile
- Troldekt, the story
- Troldekt and the UN Global Compact

Troldekt and Cradle to Cradle

Page 14

- Certification and objectives

Troldekt and the UN Sustainable Development Goals

Page 16

- Our choice of goals

Product life cycle

Page 20

- Troldekt acoustic panels from cradle to cradle
- Danish raw materials with an environmental focus
- Fall in energy consumption and boost for working environment
- Short distances and no more empty returns
- How Troldekt makes a difference in buildings
- Cement-bonded wood wool creates value in circular economy

Troldekt's CSR activities in 2020

Page 38

- Student job with plenty of responsibility
- Financial support for intern's long drives
- Inspirational presentation: Industry must stand united
- Adult apprentice at Troldekt: "There's always help at hand and new things to learn"
- Gul Stue – a place for local young people to meet

Data from Troldekt

Page 46

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

Value of corporate responsibility became apparent in a historic year

Looking back on 2020 as a whole, the year was singularly dominated by the corona pandemic. However, it was also a year in which it became apparent that sustainable and responsible initiatives are of considerable commercial value. At Troldekt, this manifested itself on several fronts.

When countries the world over started closing their borders back in spring 2020, supply chains came under pressure. The normal flow of goods between continents ground to a halt in several places, and manufacturers in the north and west had difficulty procuring components from the south and east. Long-distance transport of commodities became a challenge. In addition, extensive measures had to be introduced by companies to prevent the spread of infection.

There are not many positives to be taken from the corona pandemic, which has cost the lives of both people and businesses. Nevertheless, as an interesting trend – in our view – the advantages of working with local suppliers have become very clear. Because all our raw materials are supplied from within a radius of about 150 kilometres from our Danish production facilities, Troldekt was able to keep production going at full capacity throughout the year. At the same time, the short transport distances have a positive impact on our CO₂ accounts.

Less travel in future

In general, 2020 has reinforced the idea that sustainable and responsible conduct is also good business. Forced by circumstances, trade fairs and travel were converted into online meetings and webinars. We cannot and should not cancel all physical events for ever, but it makes both environmental and economic sense to be selective. At Troldekt, we believe that we will be able to cut our travel budget by up to 50 per cent and save a huge amount of travel time compared to pre-corona times.

A socially difficult time

The construction industry is one of the industries that have done



particularly well during the corona pandemic, which has also benefitted Troldekt. But like everyone else, we have felt the adverse impact of COVID-19 on our social interaction. Our employees have been unable to meet across locations, many have been forced to work from home, and social events have been cancelled. At Troldekt and in the rest of society, we will have to rebuild our social relations in the years to come.

Product life cycle progress

For Troldekt, 2020 was not just about corona. It was the first full year with our new factory line. With the fully automated and efficient setup, we have succeeded in further reducing our energy consumption per unit produced, which has now been reduced by a significant 28.6 per cent in three years.

You can read more about our low energy consumption – and other

value-adding measures throughout our product life cycle – in this report. You can also read about a number of other advances in our CSR work.

Our CSR strategy remains inspired by the ten principles of the UN Global Compact, which we wholeheartedly support. I would like to thank all Troldekt's employees for their continued commitment – even during a year of corona – to translating our visions and strategy into visible and measurable results in the field of social responsibility.

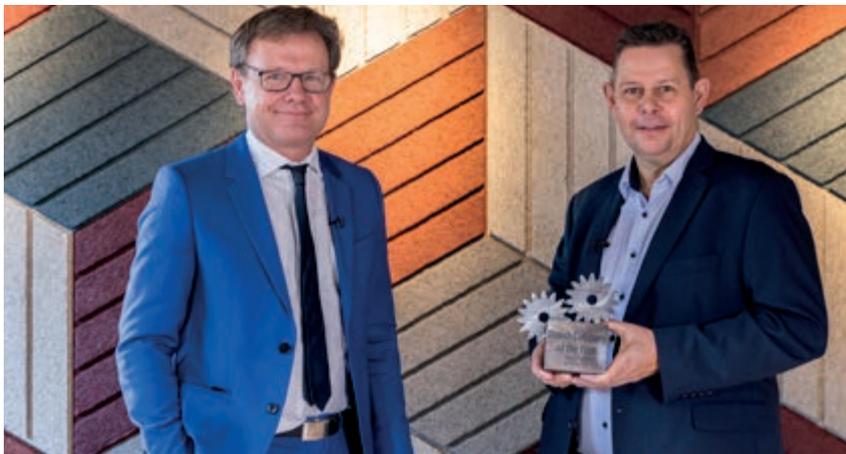
Peer Leth, CEO of Troldekt A/S

Recognition of CSR focus

In 2020, Troldekt received several awards and accolades for the company's strategic approach to sustainability and social responsibility.

DI Award

A panel of experts chose Troldekt as the winner of the prestigious DI Award 2020 in a strong field that also included FLSmidth and Berendsen. Troldekt received the DI Award for increasing its competitiveness through an ambitious green transformation based on the Cradle to Cradle concept.

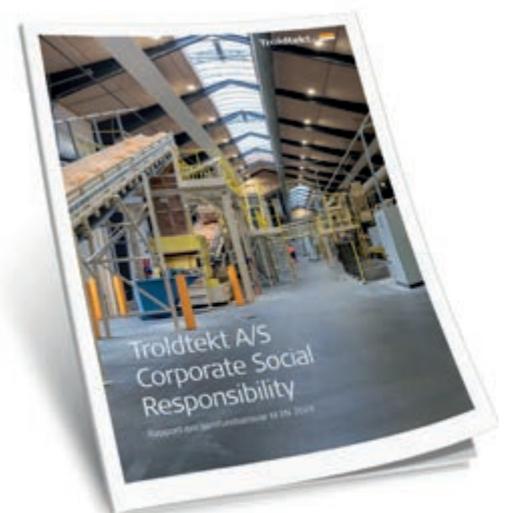


Danish-German Business Award

A professional jury and an open vote named Troldekt the winner of the Danish-German Chamber of Commerce's 'Danish Company of the Year' award. The award honours Troldekt's successful entry on the German market. The documented sustainability of Troldekt acoustic panels was one of the key reasons cited by the jury.

SMV COP

Troldekt's CSR report for 2019 was included in an exclusive list of the best reports from Danish companies in the SME segment with up to 250 employees. FSR – Danish Auditors and Global Compact Network Denmark compiled the list in connection with the SMV COP event.



9.7%

The amount of energy consumed per produced Trolldtekt acoustic panel was reduced by 9.7 per cent in 2020 compared to 2019. Since 2017, we have reduced our energy consumption per unit by 28.6 per cent.

[> Page 26](#)



97.7%

By 2020, 97.7 per cent of our energy consumption came from renewable sources. All electricity used in our production comes from wind power, and the heat used, among other things, in the drying process is generated by our own biomass plant.

[> Page 26](#)

3,347 tonnes

Dust from the milling of Trolldtekt acoustic panels is used by Aalborg Portland for the production of cement – and thus returns to the technical cycle. In 2020, Aalborg Portland's trucks took away 3,347 tonnes of dust after having delivered cement to our factory.

[> Page 36](#)



100%

From 2020, Trolldtekt A/S is certified according to both the leading standards for sustainable forestry: FSC® (FSC®C115450) and PEFC™. All raw wood used for the production of Trolldtekt acoustic panels is certified, and customers are free to choose between the two standards when buying Trolldtekt.

➤ **Pages 21-23**



4 initiatives

In 2020, we improved the working environment in production. Four of the most important initiatives are a humidification system to reduce dust in the edging and drying facility, the installation of low-noise electric pumps, a jib crane for heavy lifting in the painting facility, and finally the automated separation-out of defective panels in the edging workshop.

➤ **Page 27**

2 apprentices

In 2020, we took on two adult apprentices who wished to retrain. 36-year-old Stefan Susnea and 35-year-old Ben William Seymour both work at our metal workshop in Trolldhede.

➤ **Pages 42-43**



How corona has affected our working lives at Troldekt

Like everyone else, we were hit by dramatic changes to our everyday lives when corona arrived in Europe in spring 2020. CEO Peer Leth summarises the initial changes and steps that were taken.



Close coordination from day one

– I think most Danish companies remember the days of March 2020. We had just finished our stand at the large BYGGERI '20 trade fair in Fredericia when we heard the news that the fair had been cancelled due to the health authorities' recommendations to avoid gatherings of more than 1,000 people. It was a shock, but very clearly also the right decision. After that, things moved fast, and the following week large sections of society shut down.

– We immediately intensified our coordination efforts, and for a while our management team would hold three weekly emergency meetings in order to keep up with all the changes

that might have an impact on our colleagues and our customers. We also made sure to provide all employees with clear and frequently updated information on info screens, on our Ziik intranet and in our internal newsletter.

Additional protection

– We decided early on to follow the recommendations of the Confederation of Danish Industry to introduce measures to prevent the spread of infection, while at the same time keeping the wheels turning. To reduce the risk of infection, we installed plexiglass screens and introduced rotation schemes at the individual departments etc.

Moreover, we introduced stricter guidelines for our suppliers, for example in connection with the maintenance and operation of process plant at our 220,000 square metre factory site.

– Despite our use of robot technology, there are still many contact points where people meet. As far as possible, we tried to keep individual functions separate, created antechambers and introduced stricter procedures so that external drivers could do the paperwork without having to be in close contact with our logistics staff. We did this to prevent infection both ways. At the same time, we cancelled external visits and customer events at the factory.



by architects, fairs, seminars and conferences are usually a big part of our working lives at Trolldtekt. However, both our employees and our customers were quick to embrace all the new digital platforms – Microsoft Teams, Zoom, Go To Webinar and others – and, in fact, some of the changes in behaviour are here to stay.

– In the German market, developments have been absolutely extraordinary. The Germans have gone from having a serious digital backlog, which meant that trade fairs did not necessarily have wi-fi, to leading the way when it comes to online meetings. In 2020, we gave presentations at a number of large and well-planned webinars for architects, for example. In a country with such large distances, being able to hold meetings online as the most natural thing in the world is definitely a positive cultural change.

Onboarding difficult

– It has been difficult for production companies to establish where employees can work from home without impacting production. We have managed this across our locations in Denmark, Sweden and Germany. We have also introduced rules to keep visits between our locations to a minimum.

– In 2020, we took on many new colleagues in Germany and Sweden, and at times we were not able to give them the thorough introduction to the Trolldtekt DNA, our company culture

and products that they would usually get on a visit to Denmark. There will be some catching-up to do here because it is important that all our colleagues experience our products, our culture and our flat organisation, which is very different to the classic hierarchy seen in many German companies.

Digital development took off

– Sales organisations everywhere have had to get used to holding meetings and events online. This has also been the case for us, and physical visits

No critical corona outbreaks, but definite fatigue

– We have noticed clear signs of 'corona fatigue' among our colleagues, which we are aware that we will have to address. All social events – from our Christmas and summer parties to work-related events – have been cancelled, and it is clear that the whole organisation is missing the normal social interaction.

– On the positive side, we have succeeded in preventing the spread of infection. And of course this was our most important corona task in 2020.

Observations across markets

In addition to the factory and head office in Denmark, Trolldtekt has sales companies in Sweden and Germany. And corona has affected our three home markets to varying degrees.

In Denmark, the construction industry has been extremely busy in the past year, partly as a result of political decisions to bring forward investments. The Danish government acted swiftly in March 2020, but on the other hand the lockdown was relatively quickly eased, which allowed us to hold small meetings and receive customers.

In Sweden, much of society remained open, and it was some time before restrictions were imposed. However, following a substantial increase in infection

rates, Sweden also went into lockdown. For the rest of 2020 and well into 2021, it was not possible to visit the architects, who are one of our strategic target groups.

In some German states, curfews were imposed at times, which meant that as an employer we had to issue special permits in order for our colleagues to be able to make an important visit to a building site. The Germans soon got used to face masks and other measures, which meant, for example, that small fairs could be held in early autumn. It also became very clear that Germany cannot be seen as one big market as the corona situation has been handled very differently in the various states, which we as an organisation have had to accommodate.

Social responsibility is a fundamental value

The creation of sustainable indoor climate solutions is a guiding principle for Troldekt. 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 85 years ago: Norway spruce from Danish forests and Danish cement.

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

Troldekt's business strategy has been developed around the Cradle to Cradle design concept as the central element. Sustainability thus plays a crucial role in our work – because we believe that it will pay off in the long term.

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 wall cladding solutions which integrate good acoustics,

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.

Values



We are innovative

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



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.



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 timber merchants and DIY stores/builders' merchants, 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 active on the 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

Continued growth in 2020. We took on more employees, for example at our German subsidiary, where we have decided to invest massively based on our ambition of continuing our controlled growth. We also hired several hourly paid colleagues as a result of our continued investments in increased production capacity. By the end of 2020, the number of hourly paid employees had reached 100.

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
- German Sustainable Building Council (DGNB)

Information

For more information on Troldtekt A/S and its products, CSR activities and technical documentation, please visit 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.

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 at a young age, but the foundation is subsequently realised.

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 at Silver level 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

2020

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 limited companies in Denmark.

A/S L. Hammerich & Co. acquires A/S Troldhede Pladeindustri in Troldhede. Fibreboard and 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 full 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 decorative elements.

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 75th 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.

Troldtekt wins the DI Award for green transformation.

Global Compact: CSR based on UN principles

Corporate social responsibility is a fundamental value for Troldekt, 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 Troldekt, we are committed to ensuring that our activities contribute positively to our shared resources. Even though Troldekt acoustic panels are now produced using robot technology, the ingredients are still the same materials as were used in 1935: wood from Danish forests and cement made from Danish mineral resources.

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

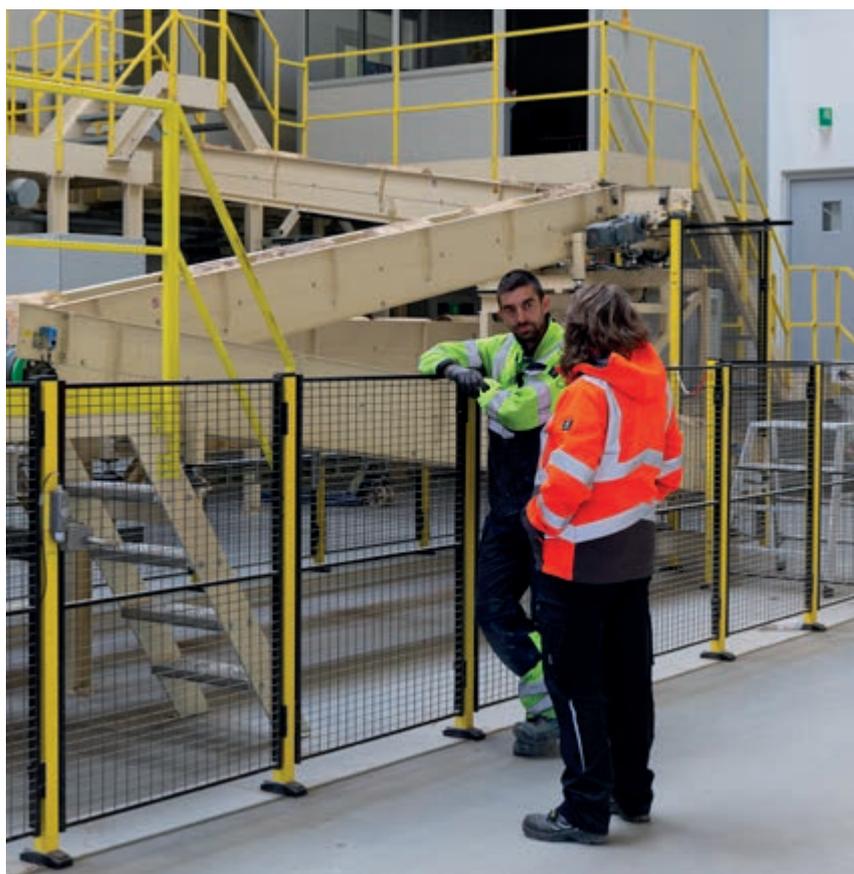
At Troldekt, we play an active role in society and engage in dialogue with the outside world. This applies both to the immediate neighbours of our factory in Troldehede and to our suppliers. In our Code of Conduct, which suppliers are obliged to observe, we state that corruption and bribery are completely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

Troldekt'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 Troldekt's CSR policy at troldekt.com under the menu item 'Environment & CSR'. On our website, you will also find our CSR reports from previous years.

Cradle to Cradle: Ready for the next level

At Trolldtekt, we are constantly progressing towards a circular economy. Following the implementation of new types of paint from 2021, the plan is for our products to advance to Cradle to Cradle Gold status.

Since 2012, Trolldtekt's business strategy has been based on the sustainable and internationally recognised Cradle to Cradle concept. The vision behind Cradle to Cradle is a world where manufacturers design their products for a circular economy, i.e. where materials are incorporated into new cycles – as opposed to a linear economy where you consume and throw away.

Via our Cradle to Cradle certification, we can document that Trolldtekt acoustic panels can be safely returned to the biological cycle as a soil conditioner. Additionally, dust from the production of Trolldtekt panels is returned to the technical cycle and used as a resource in new cement from Aalborg Portland. Moreover, we are working to find a way of recycling end-of-life Trolldtekt panels by crushing them for use in cement production.

Paint recipes may lead to Gold

Today, Trolldtekt is Cradle to Cradle-certified at Silver level, and only the material health category prevents us from attaining Gold status.

We have been working for a long time – together with our paint supplier – to devise a paint recipe without the use of anti-rot biocides. We have now succeeded in our endeavours, in addition to which we are supplementing our range with plant-based paints. With the new paint recipes, we expect Trolldtekt products to advance to Cradle to Cradle Gold status in the second half of 2021.

Our Cradle to Cradle certification covers the full product portfolio of Trolldtekt cement-bonded wood wool panels in natural wood, natural grey and painted in the standard colours white 101, grey 202, charcoal grey



208 and black 207. The certification also covers the non-combustible Trolldtekt A2 panels and Trolldtekt agro panels.

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 2012-2019	Results 2020	Objectives 2021-2022
Material health 	<ul style="list-style-type: none"> ✓ Troldekt acoustic series in natural and standard colours C2C-certified. ✓ Product development based on C2C principles. ✓ Goods for resale produced as private label for Troldekt screened. ✓ The wooden strips for Troldekt® contrast have, as the first goods for resale to be produced as private label for Troldekt, been given a Material Health Certificate. <p>C2C SILVER status.</p>		<ul style="list-style-type: none"> • Optimise paint recipe so that Troldekt acoustic panels in natural and standard colours can advance to C2C GOLD status. • Goods for resale produced as private label for Troldekt must have a Material Health certificate.
Material reutilisation 	<ul style="list-style-type: none"> ✓ Production waste sorted into a number of fractions to ensure that resources from production waste are recovered at the highest possible value level. ✓ Take-back scheme for collecting cement-bonded wood wool construction and demolition waste tested in the construction industry in Denmark. ✓ Scheme using dust from production as a raw material in new cement from Aalborg Portland is established. <p>C2C GOLD status.</p>		<ul style="list-style-type: none"> • Identify and establish new solutions for recycling cement-bonded wood wool in the biological cycle. • Agreement on crushing of panel waste concluded with external partner with a view to increased recycling in the biological and technical cycles. • Develop new products that contain production waste (for example offcuts). In the longer term, develop products based on end-of-life acoustic panels from building industry. • Pilot project with seven municipalities is being carried out to pave the way for take-backs from recycling centres for use in technical cycle.
Renewable energy 	<ul style="list-style-type: none"> ✓ Ørsted climate partner. 100% renewable energy for electricity consumption (wind power) from 2013. ✓ New energy-efficient biomass plant run in. ✓ 60% of diesel and gas-powered forklifts replaced with electric trucks. ✓ Light sources in most of the production facilities replaced with LED. <p>C2C GOLD status.</p>	<ul style="list-style-type: none"> • 84% of diesel and gas-powered forklifts replaced with electric trucks. • 97.7% of energy consumed in production comes from renewable sources (wind power and biomass plant). 	<ul style="list-style-type: none"> • Map possible alternative energy solutions from solar, wind or similar sources. • Explore the possibility of using waste heat from drying process.
Water stewardship 	<ul style="list-style-type: none"> ✓ No untreated wastewater discharge from production. ✓ Water-saving schemes established. ✓ Separate sewerage system for all factory buildings established. Rainwater is discharged to municipal reservoir. <p>C2C PLATINUM status.</p>		<ul style="list-style-type: none"> • Explore the possibility of utilising water vapour from drying process. • Map the possibility of establishing an overflow reservoir with vegetation.
Social fairness 	<ul style="list-style-type: none"> ✓ CSR reporting to UN Global Compact from 2010. ✓ CSR reporting follows the GRI G4 structure. ✓ C2C principles introduced in the organisation and value chain. <p>C2C GOLD status.</p>	<ul style="list-style-type: none"> • Two adult apprentices employed in production. • Action plan on noise reduction from the original factory line implemented. 	

New objectives

Since the initial Cradle to Cradle certification of our products in 2012, we have reached a number of milestones. Both our results and goals are part of our Cradle to Cradle roadmap, which is an ambitious and publicly available plan for our work with the circular economy during the period up until 2022.

Our current roadmap expires next year, and in 2021 we will therefore be planning new long-term goals that are aligned with our Cradle to Cradle strategy. The new goals will be described in next year's CSR report.

Goals for a balanced world

UN member countries have adopted 17 common goals to ensure the balancing of the environmental and economic dimensions of sustainable development. At Troldekt, we have chosen to focus on the four goals where we can make the greatest difference.

At Troldekt, we have focused on breaking down the UN Sustainable Development Goals into a more manageable framework. We have done this by singling out the goals and targets where we realistically believe we can make the greatest difference.

For example, producing acoustic panels in Denmark is not going to eliminate world poverty or stop

hunger. However, we operate in an industry that accounts for about 40 per cent of society's resource and energy consumption, and we can therefore make a difference by supporting SDG 12: Responsible consumption and production. As a large buyer of raw wood, we are also in a position to make choices that can help combat the loss of biodiversity in

forests – thus helping to realise SDG 15: Life on land.

These two themes were therefore the first that we addressed in 2018. Since then, we have added SDG 3: Good health and well-being and SDG 17: Partnerships for the goals, because we are also able to take actions that can make a difference in these two areas.



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: Revitalise the global partnership for sustainable development

Target 17.16: Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilise 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.



A documented healthy material

Troldtekt acoustic panels contribute to a healthy indoor climate – both by ensuring good acoustics and because they are made from healthy materials. The panels have been thoroughly analysed in connection with our Cradle to Cradle certification. This means that all the ingredients have been analysed down to 100 ppm – and that we have evidence that the acoustic panels do not contain any harmful substances. Under the Danish Indoor Climate Labelling scheme, Troldtekt's products are classified in the best categories for degassing and particle release.

And finally, Ramboll has documented how Troldtekt contributes points under the leading, voluntary sustainable building certification schemes. In this context, a healthy indoor climate also plays an important role.



Products for the circular economy

At Troldtekt, we are committed to green forms of production and to designing products with long useful lives, and which can live on in the circular economy after the end of their lives.

All the electricity we use in production comes from wind power, while the heat for our drying processes is generated by our own biomass-fired plant. And when it comes to the operation of our trucks, we have almost completely replaced fossil fuels with green energy.

We sort our production waste into fractions to make the most of the resources at the highest possible value level in both the biological and technical cycles. In the biological cycle, we are working with a number of different solutions that will add another role – or cycle – for our cement-bonded wood wool waste before it ends its days as soil conditioner. At Aalborg Portland, dust from our edging workshop is returned to the technical cycle in the production of new cement.



Certified to responsible forestry standards

Norway spruce sourced from Danish forests is one of the raw materials used to produce Troldekt acoustic panels, and we buy a lot of raw wood every year. Wood is basically a healthy and sustainable material because trees absorb CO₂ while they grow. However, sustainability may suffer if account is not taken also of the animals, plants and people working or living in the forests.

This is where the leading certifications for responsible forestry come into the picture. The international FSC and PEFC certification schemes both set certain standards when it comes to biodiversity, working conditions and the conservation of forest areas. We have chosen to be certified according to both schemes, so all Troldekt acoustic panels are certified according to either FSC or PEFC. And so the wood in each panel can be traced back to the forest where it came from.



Circular economy alliances

At Troldekt, we work with a number of partners who – like us – are keen to promote circularity in construction.

In Denmark, for example, we have joined forces with FSC Denmark, and together we are striking a blow for more certified forests in Denmark in the public debate. We are also working with Aalborg Portland to derive the greatest possible value from our production waste.

In Germany, we support, among other organisations, Cradle to Cradle NGO, which works to promote the circular economy throughout society, while in Sweden we are a member of Cradlenet, which works for the same purpose. Similarly, we work with several other partners who share our approach to sustainable construction – and who are translating principles into action.

Troldtekt acoustic panels from cradle to cradle

Materials, production, transport, use and recycling. Throughout the product life cycle, Troldtekt is committed to optimising resource consumption and processes to ensure that our acoustic solutions contribute added value.

This is the thinking behind the product life cycle underpinning Troldtekt's Cradle to Cradle business strategy. And new initiatives are continuously being introduced in each of the five phases.



Read about each of the phases of Troldtekt's product life cycle on the next pages of the report. See also how our actions at each stage align with the criteria of Cradle to Cradle and the UN Sustainable Development Goals.





UN Sustainable Development Goals



Cradle to Cradle



Materials:

Danish raw materials with an environmental focus

Troldtekt acoustic panels are made from wood and cement. Troldtekt uses only FSC and PEFC-certified wood sourced from Danish forests. And we are in dialogue with Aalborg Portland about reducing the carbon footprint of the cement they supply.

Troldtekt acoustic panels consist of certified wood, which is a natural material, and cement made from Danish mineral resources. The two ingredients are used to produce the original Troldtekt cement-bonded wood wool panels with the unique acoustic properties.

All the raw wood we use is Norway spruce sourced from Danish forests. Danish wood is a renewable resource, as more is planted than is logged. Moreover, wood is a carbon-neutral resource, as trees absorb as much CO₂ while they grow as is released during their care, felling and transport.

For Troldtekt, certification, including traceability of the wood we use, is crucial. From 2020, we have been certified according to the two leading standards for sustainable forestry: FSC and PEFC. With the two certifications, we support biodiversity in forests in line with UN SDG 15: Life on land.

Strict traceability requirements

Troldtekt obtained FSC certification back in 2013, and since 2018 has also been approved to offer products in the 'FSC 100%' category, which means that all the wood used to produce each and every acoustic panel meets the FSC requirements.

Strict traceability requirements have to be met – from the time the wood arrives at our factory and until we deliver the finished acoustic panels to customers. FSC-certified raw wood is carefully separated from PEFC-certified raw wood throughout the production process, which means that every wood fibre in a Troldtekt acoustic panel can be traced to a specific delivery. And before we produce the FSC-certified acoustic panels, the production line is thoroughly cleaned.



Supplemented with PEFC certification

The demand for certified wood is increasing in construction, which is why we decided to supplement our FSC certification with PEFC certification. This guarantees customers documentation that all the wood in our acoustic panels comes from responsible forestry.

Troldtekt has previously supplied PEFC-certified products, but decided at the beginning of 2018 to go *all in* on the other leading certification – FSC. Since then, demand has grown, however, and it has been difficult to source enough raw wood from Danish FSC-certified forests. In 2020, we therefore decided to opt for PEFC certification again as a supplement.

This means that all Troldtekt acoustic panels are certified. In practice, all 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 therefore freely choose between either one or the other – PEFC or FSC.

Strength of cement brings benefits

Troldtekt acoustic panels have the outstanding properties of the raw materials from which they are made: the flexibility and natural breathability of the wood combined with the strength, robustness and durability of



Need for more certified Danish forests

We need more certified Norway spruce plantations if Danish industry is to be able to continue to source local raw materials in Denmark. This is the call from Troldekt A/S, which is supported by FSC Denmark, which handles one of the two leading wood certification systems.

"There's a strong demand for certified wood products, and this is positive from the point of view of the climate footprint of the construction industry. But if we and the rest of the industry are to carry on our production in Denmark in 10-15 years' time, we need even better access to buying Norway spruce from certified forests," says Peer Leth, CEO of Troldekt A/S.

Side by side with untouched forest

Danish politicians are eager to minimise the proportion of coniferous trees in public forests – in favour of other types of trees. In partnership with FSC Denmark, Troldekt has therefore publicly struck a blow for the need for coniferous wood for the timber industry.

"We also love the idea of having wild and varied forests, but one does not exclude the other. In a

certified forest, Norway spruce and deciduous trees can co-exist with untouched forest. In fact, it's a requirement for certification that a certain proportion of the forest remains untouched. I think politicians should demand the establishment of more forests in Denmark, so as to make room for both untamed nature and for certified plantations that support the green transition of the construction industry," says Peer Leth.

He is backed by Søren Dürr Grue, CEO of FSC Denmark.

"In FSC-certified forests, you're not allowed to plant only fir trees. Native Danish species such as oak and beech must also be included. In this way, greater and interesting variety is ensured. Also, dead trees and the tops of felled trees must be left on the forest floor to serve as habitats for insects, a minimum of five trees must be left per logged hectare, and a certain proportion of the forest must be completely untouched," he says.

Following a dialogue with Troldekt and FSC Denmark, the Municipality of Ringkøbing-Skjern decided in 2020 to have all the municipality's forests FSC-certified.

the cement. Moreover, the cement also adds effective fireproofing properties – without the use of harmful chemicals. Excellent and valuable properties that would be difficult to achieve with a binder other than cement. In addition, the cement content means that Troldekt acoustic panels absorb CO₂ during their useful lives. In fact, cement absorbs CO₂ through the chemical process of carbonisation during hardening. Because the cement in Troldekt cement-bonded wood wool is spread across a large surface, the process in Troldekt is significantly faster than in solid concrete.

On the other hand, the production of cement emits a lot of CO₂, and reducing the carbon footprint from production is a key focus area for Troldekt. Read more in the grey box on the following page.



Facts about the two certifications of wood



The mark of responsible forestry

What is FSC?

FSC stands for Forest Stewardship Council®, and is an international non-profit labelling scheme for wood and paper, which was established in 1994. Some of the advantages of FSC are that the certification:

- has national standards that are all based on ten global principles
- gives equal priority to social, environmental and economic interests in all decision-making
- prohibits the destruction of forests or other natural habitats
- demands that the rights of indigenous peoples are respected
- places strict demands on the use of harmful pesticides
- prohibits the use of genetically modified trees (GMOs)
- has an integrated accreditation system that systematically checks the certification bodies
- requires that a control visit is made to each certified forest once a year.



What is PEFC?

PEFC stands for Programme for the Endorsement of Forest Certification and offers a number of advantages when it comes to documenting sustainability. Among other things, the certification ensures:

- maintenance, conservation or enhancement of ecosystem biodiversity
- protection of ecologically important forest areas
- prohibition of forest conversions, exclusion of certification of plantations established by conversions
- prohibition of most hazardous chemicals and GMOs
- protection of workers' rights and welfare and the promotion of local employment
- recognition of free, prior and informed consent (FPIC) of indigenous peoples, the UN Declaration on the Rights of Indigenous Peoples, and the Indigenous and Tribal Peoples Convention, 1989 (No. 169)
- respect for property and land tenure rights as well as customary and traditional rights
- provisions for consultation with local people, communities and other stakeholders
- compliance with all applicable legislation
- requirement that companies demonstrate compliance with social, health and safety requirements in traceability certification.

Dialogue in progress: Footprint from cement must come down



The cement, which is a key raw material in Troldekt acoustic panels, is supplied by Aalborg Portland – and the production of cement accounts for almost all of the CO₂ emissions associated with the production of Troldekt acoustic panels. In the calculation of carbon emissions, a distinction is made between:

- **scope 1** – direct emissions from the company's own sources
- **scope 2** – indirect emissions from the company's consumption of energy
- **scope 3** – other indirect emissions, including emissions from the sourcing of goods from external suppliers.

In the production of Troldekt acoustic panels, we use carbon-neutral energy sources: Process heat from own biomass plant and electricity from wind power. Our scope 1 and scope 2 emissions therefore come exclusively from a small number of gas and diesel-powered trucks that we have not yet replaced with electric trucks. Scope 3 emissions relate almost exclusively to the production of the cement we buy from Aalborg Portland.

Goal of significant reduction

Reducing our carbon emissions is an important environmental goal for us. As we are using almost 100 per cent renewable energy for the processes we control ourselves, further reductions must be achieved through the cement we source. We are therefore in constant dialogue with Aalborg Portland, which has committed to

Surplus heat recovery plant

reducing its CO₂ emissions by 70 per cent by 2050. The target is a 30 per cent reduction by 2030, which means that we as a partner have the chance to follow up on progress along the way.

Green initiatives and trials of new type of cement

Aalborg Portland's goal will be achieved, among other things, through energy efficiency improvements, by phasing out fossil fuels, through carbon capture, increased use of alternative or carbon-neutral fuels, the launch of greener cement products and the supply of carbon-neutral district heating to over 75,000 households.

Troldekt has entered into an agreement with Aalborg Portland to run trials of a new type of cement with a reduced carbon footprint – FUTURECEM™. The promising new type of cement results in a 30 per cent reduction in emissions compared to ordinary cement.

Higher emissions due to increased production

Total CO₂ emissions as well as emissions broken down into scopes 1, 2 and 3 are shown in the data section on pages 48 and 49 of this report. Due to a significant increase in production volumes, total CO₂ emissions have also increased in the past few years. CO₂ emissions per unit produced have remained relatively stable, with a 3.5 per cent increase in 2020 after a 4.8 per cent decrease in 2019. The fluctuations are primarily due to changes in our product mix.





UN Sustainable Development Goals

Cradle to Cradle

Production:

Fall in energy consumption and boost for working environment

We have invested heavily in new technology at our factory in Trolldhede in recent years. This has resulted in lower energy consumption as well as an improved working environment.

At Trolldtekt, we work in line with UN SDG 12. Based on our Cradle to Cradle strategy, we work purposefully to bring about positive change in areas such as renewable energy and reutilisation, thereby supporting the goal of responsible consumption and production.

All the electricity used to produce our acoustic panels comes from renewable sources in the form of wind power from the offshore wind farm near the Danish island of Anholt. This is the result of the Climate Partnership that Trolldtekt entered into with Ørsted back in 2012. The Climate Partnership guarantees that Ørsted produces enough green power at one of their certified wind farms to cover Trolldtekt's electricity consumption. At the same time, the Climate Partnership involves ongoing collaboration to identify ways of further reducing Trolldtekt's energy consumption.



New technology reduces consumption

When it comes to energy efficiency, Trolldtekt has come a long way in recent years. Our new production line was ready in 2019, and it was an opportunity to invest massively in new technology that benefits both the environment and our operating economy. At the same time, we have invested many millions of kroner in upgrading our existing production line in recent years.

In 2020, our investments really started paying off. We thus succeeded in reducing our energy consumption per acoustic panel produced by 9.7 per cent compared to 2019. Adding the energy savings achieved over the

previous two years, we have reduced our energy consumption per unit by an impressive 28.6 per cent in total since 2017. The energy reductions have been particularly pronounced for our drying processes. The effect of technical and process optimisations of our two drying ovens has been considerable.

Green energy and recycled paint

However, our focus is not just on the amount of energy we consume. We have also made determined efforts to minimise the use of energy from fossil fuels in our production. For example, our own biomass plant supplies the heat for our production. Moreover, we

have purposefully replaced gas and diesel-powered trucks with electric trucks.

In addition, we work to recycle as many resources as possible in our production. In our painting department, for example, after investing in a new painting plant, we can collect and reuse a large proportion of the excess paint (from overspraying). This has reduced the amount of paint that is wasted by more than 70 per cent.

Automation strengthens working environment

Investments in new technology have also led to an even higher

New measures minimise dust, noise and heavy lifting

In 2020, Troldekt continued to focus on optimising its high-tech production – while at the same time improving the working environment for the employees involved in several stages of production.

“It’s crucial that all Troldekt employees feel safe and comfortable going to work every day. We’ve gradually removed a number of manual routines, and we’re always looking for new technological solutions that may

contribute to further improving the working environment,” explains Ole Busk Sørensen, Head of Production Technical Department in Troldekt.

Here you can read about four measures implemented in 2020:



Significantly less dust in the air

In the edging and drying facilities, dust in the air has been a nuisance, and a humidification system has therefore been installed, consisting of a small pump, an atomiser and an extraction unit. Water particles are sprayed into the room and bind to the dust to reduce the amount of air-borne dust. The same method is used in supermarket vegetable departments. Our employees have welcomed the new initiative and feel that it makes a positive difference. Autumn 2021 will see the inauguration of our new edging workshop, which will also have a humidification system.

Electric pumps ensure low noise levels

In the painting facility, the old compressed-air pumps, which pump paint into the cabins, have been replaced with new electric pumps. This has reduced the noise level by an impressive 85 per cent, as the electric motor is very quiet compared to the compressed-air pumps. As production runs 24 hours a day, noise from the pumps has quite an impact on the everyday working lives of our employees, and therefore the switch to electric pumps has made a big difference to the working environment.



Jib crane replaces manual lifting

In the painting facility, a jib crane has been installed and done away with the heavy lifting involved in shifting 20-litre paint buckets manually. Only custom colours are delivered in buckets; standard colours such as white are supplied in 1,000-litre tanks, which obviously does not involve any lifting. The jib crane lifts the bucket and holds it steady while the paint is poured.

Automated separation-out of defective panels

In the edging workshop, where Troldekt acoustic panels are stacked, there may sometimes be a need to remove defective panels. Previously, the plant had to be stopped to allow an employee to manually remove the defective panel. The two plants have been integrated, and an automation process has been developed, whereby any defective panels are extracted into a separate pile. This is a more efficient process, which also reduces the manual lifting.



level of automation in the production of Troldekt acoustic panels. The abolition of virtually all manual workflows has resulted in a significantly improved working environment.

At the same time, we focus on minimising noise and dust nuisances as much as possible – for the sake both of Troldekt’s employees and of our neighbours in Troldhede. In the new production line, for example,

noise screens have been installed around the motors that power the ventilation system.



UN Sustainable Development Goals



Cradle to Cradle

Transport:

Short distances and no empty trucks

Although transport accounts for a relatively small proportion of the environmental impact of Troldekt acoustic panels, we have a strong focus on minimising emissions from transport. Short distances also ensure a high level of security of supply.

While many production companies source their raw materials from other countries or continents, none of Troldekt's raw material suppliers are more than 150 kilometres away.

As part of our business model, we use locally sourced raw materials for the production of acoustic panels. This means that the Norway spruce, which is one of the two main components in our panels, comes from Danish forests, while the cement is supplied by Aalborg Portland, which extracts the raw materials sand, chalk and clay from the Danish underground.

The advantages are many, including not least minimal environmental impact from transporting our raw materials. In this way, our strategy of using local raw materials also supports UN SDG 12: Responsible consumption and production.

A strength in a pandemic

As appears from the article on the next page, the strategy of sourcing raw materials from local suppliers also



has the advantage that production can be maintained even if global supply chains suddenly collapse – as we saw with the corona pandemic in 2020.

While taking the necessary steps to prevent the spread of infection, Troldekt was able to keep up production and deliver the acoustic panels ordered by our customers as agreed. Meanwhile, other production companies were hit by the lockdowns affecting international transport services.

As you can read in the section on recycling, we also make the most of capacity through careful transport planning. We make sure that the trucks delivering cement from Aalborg Portland to our factory carry surplus



Local sourcing secured production

Some CEOs in the construction industry had quite a few bad nights when supply lines came under pressure during the early days of the corona crisis in spring 2020. This is the conclusion of a survey conducted by the Federation of Danish Building Industries. For example, 42 per cent of the member companies surveyed had experienced some, considerable or even extreme supply issues due to the corona situation.

With production based in Denmark and sourcing of all raw materials within a radius of about 150 kilometres, Troldekt A/S was able to maintain production at full capacity during the pandemic.

"Since March 2020, we've been operating at full pre-corona capacity. Our raw materials are wood from forests in Jutland and cement from Aalborg Portland, and they've been delivered at the same frequency as before corona," says Peer Leth, CEO of Troldekt A/S.

However, the fact that Troldekt's production has so far been unaffected by the corona situation is not down to some special pandemic preparedness planning, but rather to a business model based on locally sourced raw materials, which has put Troldekt in a strong position amidst the global crisis:

"Our entire strategy is based on local production and documented sustainability. We source Norway spruce from certified forests in Jutland, and none of our suppliers are further away than Aalborg Portland. We've

therefore had absolutely no supply issues. At the same time, the short transport distances have a positive impact on our CO₂ accounts," says Peer Leth.

Value chains a more important priority

When asked in April 2020 how the corona crisis was affecting them, quite a few members of the Federation of Danish Building Industries expressed some anxiety. Only 27 per cent of the member companies said they had experienced no problems at all.

"All companies need reliable supplies. During the corona crisis, the construction industry has at times been challenged, in particular by hold-ups at the borders. And in some countries, such as France, the UK and a number of countries in southern Europe, the entire construction industry has been affected by lockdowns. It has also put pressure on Danish companies in the construction sector that work with suppliers in these countries," says Director Elly Kjems Hove from the Federation of Danish Building Industries.

"It's good for a company like Troldekt that they can source all their raw materials in Denmark. Not everybody is able to do that," she says, adding that the corona crisis has led companies to build up buffer inventories so as to be able to keep up production in the case of short-term lockdowns.

materials from our production – such as dust and offcuts – back to Aalborg Portland for recycling. The production waste is used in the production of new cement at Aalborg Portland.

Stockist dealers ensure efficient transport

One thing is the shipping of raw materials to Troldekt's production line. Another is the transport of the finished acoustic panels to customers. At Troldekt, we have optimised our system to ensure that transport operations are as efficient as possible.

In Denmark, Troldekt is sold through timber merchants and DIY stores/builders' merchants, which makes it possible to optimise the

transport to end-users. In other words, Troldekt can make fewer (and larger) deliveries to the stockists, which can then supply end-users from their stocks of acoustic panels.

Similarly, Troldekt has a wide distribution network of local dealers or distributors in the main markets outside Denmark – including Sweden and Germany, which are our two largest markets.

Need for more local raw materials

One of the challenges that could put Troldekt's strategy of relying on locally sourced raw materials under pressure is raw material shortages. As demand increases, suppliers in Denmark may not always be able

to keep up. We see a risk of this happening with certified wood, as both Troldekt and other players in the construction industry are increasingly looking for FSC or PEFC-certified wood.

As you can read in the section on materials, we at Troldekt are working to share our knowledge about the benefits of forest certifications – both among private and public forest owners. Following a dialogue with Troldekt and FSC Denmark, in 2020 the Municipality of Ringkøbing-Skjern decided to have all the municipality's forests FSC-certified. This will make it possible for us to source more wood locally.







UN Sustainable Development Goals



Cradle to Cradle

Use:

How Trolldtekt makes a difference in buildings

Most northern Europeans spend 80-90 per cent of their time indoors. At Trolldtekt, we believe that acoustic comfort and a healthy indoor climate without harmful chemicals are of key importance in buildings.

Most people choose Trolldtekt because of the acoustic properties of our products, but actually get a multifunctional ceiling or wall solution that also significantly boosts comfort levels and the indoor climate. In other words, Trolldtekt cement-bonded wood wool has a number of properties that create value for building users.

1. Superior acoustics

The acoustics of a room can have a huge impact on our well-being and concentration. Hard and smooth surfaces like concrete and plaster throw back the sound waves, and the long reverberation time results in an echoing soundscape. By contrast, materials with an open surface structure – like Trolldtekt cement-bonded wood wool – guarantee superior acoustics with short reverberation times.

In fact, a construction based on Trolldtekt and underlying mineral wool absorbs up to 90 per cent of the sound, while a hard concrete surface absorbs only 1-2 per cent. Trolldtekt is therefore a popular choice in most types of buildings, including schools, offices, sports centres, restaurants, cultural venues and private homes.

2. Healthy indoor climate

A sustainable building must be environmentally, financially and socially sustainable, which includes ensuring a healthy indoor climate for users. Poor air quality and very low or high humidity levels can affect productivity in workplaces and learning in schools and lead to more sick days.

In addition to ensuring superior acoustics, Trolldtekt cement-bonded wood wool absorbs and releases moisture. This helps to ensure the right level of humidity in a building.

The air quality will be perceived as being higher in a room where the materials absorb moisture – and this can reduce the need for ventilation.

Trolldtekt ceilings can also be used to provide comfort ventilation, for example in schools, offices, conference rooms etc. With the system solution Trolldtekt ventilation, fresh air flows from a pressure chamber above the ceiling through the acoustic panels into the room. The air flows at low pressure through so-called active Trolldtekt panels, which typically make up 10-20 per cent of the ceiling surface. This means that the air is distributed evenly throughout the room without draught or noise.

As part of the Cradle to Cradle certification, all ingredients in Trolldtekt acoustic panels have been analysed down to 100 ppm. It has thus been documented that Trolldtekt is free of substances that are harmful to humans or the environment. Moreover, Trolldtekt has obtained a number of certificates documenting the healthy indoor climate (see box on the next page).

3. Documented sustainability

A healthy indoor climate is a central part of a sustainable building. As described in the previous section, Trolldtekt contributes a number of valuable qualities in this respect. During use, Trolldtekt further





Labels for healthy choices

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



Troldekt acoustic panels are Cradle to Cradle-certified at Silver level 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.



Troldekt 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).



Troldekt 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 label is common to Norway and Denmark and is recognised worldwide.



Troldekt acoustic panels are classified as 'low emission', and thus benefit nature and human health in the voluntary and independent German Blue Angel ecolabel.



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



Troldekt 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.

Long-life walls



In connection with the expansion of our factory in Trolldhede, Trolldtekt bought a number of neighbouring properties. Most recently, we have environmentally cleaned up and subsequently demolished a property originally built in the 1940s, when it was common to use Trolldtekt cement-bonded wood wool as part of plastered wall constructions. In fact, it turned out that the interior walls consisted of 80-year-old Trolldtekt panels – which were still holding.

Living on after transformation

The property in Trolldhede is just one example testifying to the long useful life of Trolldtekt acoustic panels. This is a positive quality in the green transition, where the focus is on resource optimisation.

Old Trolldtekt ceilings are often preserved when buildings are transformed and repurposed. An example of this is ZENI architects' design studio, which was one of six projects nominated for the RENOVER 2020 award. The design studio in Aabenraa was formerly a boiler hall, and the original Trolldtekt ceilings from 1957 have been preserved.

Old Trolldtekt panels can also be painted to create a new look. This has been done, for example, in connection with a major renovation of Aarhus Airport.



contributes to a healthy operating economy, as the acoustic panels require no maintenance after installation. Also, they have a long useful life, which means that they can 'live on' in connection with the refurbishing or repurposing of buildings.

The indoor climate and life cycle costs are examples of areas where Trolldtekt contributes positively to the leading sustainable building certifications (DGNB, BREEAM, LEED, WELL etc.).

4. Effective fireproofing

Wood is an organic and flammable material, but every single wood fibre in a Trolldtekt panel is encapsulated and protected by non-flammable cement. Trolldtekt panels therefore have low flammability and only emit

low heat during a fire, and almost no smoke.

Trolldtekt acoustic panels are fire-classified under European standard EN 13501. Trolldtekt acoustic panels are classified as B-s1,d0, which denotes the material's reaction to fire. In practice, this means that Trolldtekt panels are only weakly combustible and emit little heat and smoke.

Trolldtekt A2 panels are non-flammable and have been classified as A2-s1,d0.

5. Natural strength

Trolldtekt cement-bonded wood wool panels combine the strength of cement with the breathability of wood. On the one hand, the panels are extremely robust and dimensionally stable – even in humid environments such as swimming pools. There is no warping over time. However, thanks to their

flexibility, you can easily saw and screw into them during installation.

Moreover, the combination of wood and cement ensures that Trolldtekt panels can absorb and release moisture, have a long lifespan and are documented free of harmful chemistry – which are all key advantages during use.

6. Flexible design options

Trolldtekt can also make a difference to the aesthetic comfort of a building.

Different colours, structures, edge designs and suspension systems allow considerable freedom to design scalable ceiling and wall surfaces using Trolldtekt. This goes both for the classic Trolldtekt acoustic panels and for the new series of design solutions, which come with milled grooves or expressive patterns.



UN Sustainable
Development Goals



Cradle to Cradle



Recycling:

Cement-bonded wood wool creates value in circular economy

At Troldekt, we sort our production waste into a number of fractions to create new value. Cement-bonded wood wool can be returned to the biological cycle as a nutrient or to the technical cycle as a raw material in cement production.

The vision behind the Cradle to Cradle concept is a world without waste. In order to obtain Cradle to Cradle certification, a material must therefore be recyclable. For example, materials may be returned to a biological cycle as nutrients, or to a technical cycle as raw materials in a new product. Troldekt is committed to recycling – both of our own production waste and of end-of-life acoustic panels from buildings.

To ensure that our production waste is reused at the highest possible value level, we sort our waste into a number of fractions. This approach enables us to work with different solutions in both the biological and technical cycles – and to regularly trial new models.

Can be returned to nature

Thanks to our Cradle to Cradle certification, the components that make up Troldekt acoustic panels are well-defined. An independent assessor has analysed Troldekt cement-bonded wood wool in detail (100 ppm), and we therefore have documentation that Troldekt production waste can safely be returned to the natural cycle as a soil improver. The cement in Troldekt panels has a high lime content, which helps to neutralise the acids produced during composting. The wood in the panels is an organic material, and helps to prevent compost from compacting. This increases oxygenation in the composting process so that carbon and nutrients are recirculated.

Offcuts and end-of-life panels create value

However, for the time being we have decided to focus especially on the technical cycle, as this will allow us to derive value from both production



waste and end-of-life Troldekt acoustic panels from demolished buildings.

We are already working closely with Aalborg Portland on returning dust from our edging workshop to the technical cycle in their cement production. In practice, cement-bonded wood wool waste is used in the production of new cement (read more in the article on the next page). The next step will be for broken or damaged panels from our production to be returned to the technical cycle at Aalborg Portland.

The ambition is for our cooperation with Aalborg Portland to be developed to also cover the demolition waste and waste from building sites that currently end up at the municipal recycling centres. This is a more complicated waste fraction as Troldekt cement-bonded wood wool has a long useful life, and end-of-life acoustic panels can therefore easily be 50-70 years old. Because we have no way of knowing whether the panels have been treated with harmful chemicals during that period, they cannot be returned to the biological cycle.

Cement production is a thermal process that renders harmless any surface treatments, and end-of-life Troldekt panels can therefore be added to Aalborg Portland's cement production without any problems. However, we need to find the right logistics partners who can help collect cement-bonded wood wool from Danish recycling centres. In 2021, we will be launching a pilot project together with the Municipality of

Ringkøbing-Skjern – and in the next phase with a total of seven Danish municipalities. The project is intended to pave the way for scaling the scheme.

Considerable environmental benefits from recycling

There are considerable environmental benefits to be gained from returning Troldekt panels to either a biological or technical cycle rather than

incinerating them. Incineration should only be an option in cases where the only alternative is landfill, which will always be the least environmentally friendly solution.

Our existing partnerships – together with new methods and pilot projects – are therefore important elements in our work with the circular economy, the ambition being to ensure that Troldekt creates the greatest possible value in biological and technical cycles.

3,347 tonnes of cement-bonded wood wool waste used for cement production

When Aalborg Portland's trucks have delivered white and grey cement to Troldekt's factory in Troldehede, they do not return empty. Instead, they take away dust from the edge processing of the Troldekt panels, which is used in Aalborg Portland's cement production.

The wood content of the Troldekt dust contributes to the combustion process (energy), while the cement content becomes a raw material in new cement. The

cement-bonded wood wool waste fractions are so minute that they can be fed through the existing tanks and piping systems at Aalborg Portland's large but rather sensitive plant.

The scheme, which started as a pilot project in 2018, is now well-established, and in 2020 Aalborg Portland trucks took away a total of 3,347 tonnes of dust, thus avoiding an empty return trip back to Aalborg.





Plenty of responsibility for student: It makes me professionally stronger

Mads Søndergaard Nielsen is a student assistant at Troldekt, where he is responsible for implementing a new CRM system in the organisation. A demanding but exciting job that provides him with valuable experience.



Since mid-August 2020, 25-year-old Mads Søndergaard Nielsen has been working as a student assistant for Troldekt, where he is responsible for implementing a new CRM system in the organisation. It is a demanding job, especially alongside his full-time studies, but Mads is excited by the challenge and certain that it will

provide him with valuable experience. And his Troldekt managers are incredibly supportive.

"It's really exciting for me to get to know the whole organisation – from finance to sales and marketing. Normally, you're attached to a particular unit, but in this project I'm working across all the departments,

which is a great learning experience," says Mads Søndergaard Nielsen, who is studying information science at graduate level at Aarhus University.

A very important role

Ole Tønning Villumsen, Sales Manager at Troldekt, took on Mads Søndergaard Nielsen. He explains



Sales Manager Ole Tønning Villumsen (left) and student assistant Mads Søndergaard Nielsen (right).

that Troldekt was looking for someone to take responsibility for the entire implementation process and subsequently go on to become a system superuser.

"Mads plays a very important role in connection with the implementation of the system. It's a job that carries considerable

responsibility because the CRM system is a big investment for us. Mads is highly competent and quick-witted, he's good at getting to grips with things, and he dares to make decisions," says Ole Tønning Villumsen and continues:

"We generally find that students contribute great value. We're very

conscious that when we say yes to having students, we must also be willing to involve them in everything that's going on. We don't want them to be sat in a corner all by themselves just because they're only here one or two days a week."

Bridging the gap between IT and people

According to Mads Søndergaard Nielsen, the most challenging aspect of the project is having to change his colleagues' routines and workflows.

"Fortunately, my degree is about bridging the gap between IT and people, and I've involved employees from different departments in the process to create the best result. A solution that works in the real world, and not just in the textbooks."

He stresses how valuable it is to be able to use the skills and knowledge he is acquiring during his studies in a workplace like Troldekt.

"Being able to sound things out with my closest managers, while being entrusted with quite a lot of responsibility and a high degree of self-management is very motivating. It's a chance for me to put theory into practice, which makes me stronger both in my studies and at Troldekt."

Troldekt gets involved in study projects

Our collaboration with students is extremely valuable for Troldekt, and we are very happy to participate in student projects in different areas. The students' knowledge and sharp brains contribute new perspectives on our organisation. Moreover, we believe that helping students gain experience from working with relevant and real-world problems during their studies is an important task for society.

Here are two examples of student projects in which we played a role in 2020:

Project on technical planing process

A project by production engineering students from VIA University College focused, among other things, on the rotary plane in Troldekt's production, including maintenance and switch-overs during the planing process. As part of the project, the students came on a study trip to the factory in Troldekt, where Factory Manager Orla Jepsen showed them the relevant machines and processes.

Thesis on leadership and circular economy

Two students from Copenhagen Business School did their thesis on leadership in connection with a change process involving a transition from a linear to a circular business model. Troldekt was used as a case together with other best practice companies, sharing its experience with the company's shift to a circular business model.



Financial support for intern's long drives

Charly Witt did an internship as a production technologist at Troldekt in Troldehede in 2020. As his daily 200-kilometre commute put quite a strain on the family's finances, he received a grant from Louis Hammerichs Fond to cover the costs.

In 2020, Troldekt had the pleasure of offering Charly Witt a six-month internship in Troldehede, after which he was to write his final project. 32-year-old Charly has done a degree in production technology and lives in Sabro near Aarhus with his family. Charly has been deaf since suffering from meningitis when just one year old. His daily commute from Sabro to Troldehede meant a return journey of 200 kilometres in all. Charly was happy to do the long drive – despite not even being eligible for a travel allowance.

Louis Hammerich Fond was keen to support Charly and help fund the costs for Charly and his family of him doing the internship to which he showed such dedication. Charly Witt therefore received a grant from the foundation.

“Receiving the grant meant a lot for me and my financial situation as my only income was the normal state education grant while I was doing the internship,” says Charly Witt.

Not easy to find internship

Due to his hearing impairment, it was not easy for Charly Witt to find an internship as a production technologist. Despite the long drive involved, he decided to send an application to Troldekt.

“The acoustic aspect of the product is quite exciting for me as a deaf person, so I was very keen to learn



more about that, and that's why I applied,” he says and continues:

“Being accepted for the internship and subsequently receiving the grant was a wonderful acknowledgement as I've been up against quite a few obstacles due to my disability. It's clear to me that Troldekt has looked

at my competences and potential rather than my limitations.”

After his internship, Charly Witt was employed as a project employee with Troldekt for five months, working with selected test and documentation tasks within product development.

About Louis Hammerichs Fond

The foundation was set up by Louis Hammerich in 1936 with the aim of providing financial support for Troldekt employees in need of a helping hand. Grants are distributed to alleviate hardship brought on by serious

illness, old age or financial misfortune, but funding may also be granted to help finance studies, education etc. The Board of Directors of Troldekt A/S also acts as the board of the foundation.

Inspirational presentation: Industry must stand united

Systematic social responsibility efforts among an increasing number of actors in the construction industry increase the likelihood of bringing about positive change to framework conditions. Troldekt has helped several companies start up their CSR work.

At Troldekt, we find that both private companies and public organisations are keen to draw inspiration from our work with CSR and sustainability. And we are happy to share our experience.

In 2020, our CEO, Peer Leth, gave several presentations and participated in consultative sessions on, among other things, the UN Sustainable Development Goals.

“We have no interest in keeping our formula too close to our chest, but are keen to be open and transparent about our efforts. We’ve invested heavily in making our production more sustainable, and the more building industry actors that go down this path voluntarily, the less likely it is that we’ll see rigid legislation in this area,” says Peer Leth.



Examples of consultative sessions in 2020

In 2020, Peer Leth participated in the following sessions:

Municipality working with SDGs

Members of the city council in the Municipality of Ringkøbing-Skjern were looking for inspiration for their work with the UN Sustainable Development Goals and contacted Troldekt, which has been working with the SDGs for several years.

Peer Leth talked about our approach and the fact that we recognise all 17 SDGs, but work specifically with four of them, as this is where we believe we can make the greatest difference.

Making SDGs work for SMEs

Troldekt’s work with the UN Sustainable Development Goals was also the theme for a presentation by Peer Leth at the general meeting of Ringkøbing-Skjern Business Council.

His message to the many small and medium-sized enterprises was that they can meaningfully work with

the SDGs without having to embrace all 17 goals at once. Start small and focus on one or a few goals to make the process more manageable, was his advice.

CSR must be good business

At a session with top management and other managers at Lindab, Peer Leth provided concrete input for the company’s CSR work.

The purpose was to inspire Lindab to turn social responsibility and sustainability into a positive business case by working with responsible initiatives in support of their core business. At Troldekt, we firmly believe that CSR initiatives should pay off in the long term – otherwise they are unlikely to become sufficiently integrated into the operations of small and medium-sized enterprises.

Adult apprentice with Troldekt: “There’s always help at hand and new things to learn”

Two adult apprentices, Stefan Susnea and Ben William Seymour, have been employed in Troldekt’s production. Eager to retrain, they have both embarked on a training programme to become metalsmiths.



Adult apprentice Ben William Seymour at the metal workshop in Troldekte.

In 2020, Troldekte took on two adult apprentices at the metal workshop in Troldekte: 36-year-old Stefan Susnea and 35-year-old Ben William Seymour. They are doing a four-year metalworking programme, alternating between college and working as apprentices at Troldekte.

“It’s important for Troldekte to have apprentices as part of our team,” says Ole Busk Sørensen, Head of Production Technical Department at Troldekte.

“We feel obliged to take on apprentices and train them, thereby helping to maintain a pipeline of new talent for the industry. In addition, I think Troldekte is a good place to train with versatile tasks and skilled employees who are very happy to help train tomorrow’s technicians. And of course, we also benefit from the commitment and dedication of our apprentices.”

A versatile workplace

On why Troldekte has decided this time to take on adult apprentices, i.e. persons aged 25+, Ole Busk Sørensen says:

“Whether you’re unskilled or come from a different background like Ben and Stefan, it must be possible to retrain within a relevant profession – even if you’re in your 30s or older.”



Adult apprentice Stefan Susnea while doing foundation course.

Also, adult apprentices usually have more life experience and know how to conduct themselves in a workplace. Moreover, Stefan and Ben are competent, quick learners and have settled into the department well."

At the metal workshop, which has a staff of 16, the two apprentices gain experience working with classic metalworking jobs. For example, building new machines, platforms, tables and reinforcements. As the Troldekt production line runs 24 hours a day, there is a constant need for preventive maintenance and repairs of machinery and equipment.

Interesting work and better working hours

Ben William Seymour lives in Sønder Omme, about 25 kilometres from Troldekte. He used to work as a chef, but after the birth of his daughter, he felt that his working hours were no longer compatible with family life.

"My father is a metalsmith, and he's often spoken about his work – about the different types of metal and welding methods and the precision with which you have to work. I've always found this interesting, and so I thought perhaps it could be a way for me to go."

Having completed the foundation courses at college in autumn 2020, Ben William Seymour started work at Troldekte at the beginning of the new year.

"It's amazing to finally get going. My colleagues are fantastic and very helpful, and they're always happy to show things several times. I'm allowed to work with many different disciplines, for example hydraulics, electricity and the invention of new elements to improve the workings of different machines. No two days are the same."

A desire for upskilling

Originally from Romania, Stefan Susnea moved to Denmark in 2013. He speaks fluent Danish and now lives with his wife in Troldekte – just 700 metres from the Troldekte factory. Having qualified as an automation technician in Romania and previously worked with machine and equipment maintenance in Denmark, Stefan was keen to upgrade his qualifications. He chose to become a metalsmith

"I like working in a workshop and with different maintenance and metalworking tasks. I've naturally had

to take a pay cut during my time as an apprentice, but I see my education as an investment in the future for me and my wife. It's a great opportunity for me."

He highlights his colleagues and the positive working environment at the workshop as the best things about being apprenticed at Troldekte.

"I really like the team. My colleagues are fantastic, things are well-planned, and everything is under control. It's been easy for me to settle in, and I learn new things every day and build on my experience."

Gul Stue – a place for local young people to meet

When you live a long way from the nearest large town or city, creating a sense of community in your local village is essential – also for young people. The Gul Stue youth centre does just that. Inside, everything is yellow. Even the acoustic ceiling donated by Troldekt.



In Sdr. Bork, a village just south of Ringkøbing Fjord in western Jutland, a group of local young people have renovated an old grocery store and transformed it into their very own youth centre. And as a special feature, everything is yellow – walls, floors, coffee cups – even the Troldekt ceiling.

20-year-old Marcus Ottosen is the young innovator behind the Gul Stue youth centre. He explains:

“I felt that the area lacked a place for young people to meet and feel part of a community, something that would make it even more cool to be a young person here.

The Gul Stue youth centre is part of the *Bedst mod Vest* cluster collaboration, in which five villages in western Jutland work together to infuse more

life and activity in the region. The idea of a youth centre received a lot of support – including financial support from philanthropic association Realdania's *Underværker* fund. Gul Stue was even nominated for the Danish Ministry of Industry, Business and Financial Affairs' *'Landdistriktsprisen'* award 2020, coming an impressive third.

A much-needed gathering place

Marcus Ottosen began asking around to see who would be interested in helping to start up the Gul Stue project, and one who answered the call was 19-year-old Femke Streefkerk.

“All my friends had gone off to spend a year at *'efterskole'* so it was great to be part of the project from the outset. We've needed a place for young people to meet. There was

nowhere really to meet anyone from the other villages. Now we've already met a lot of people.”

Gul Stue is for all young people, and so far a homework café, board game evenings, a Friday café and Sunday fun days have been organised.

No adult help

In autumn 2019, the young people were handed the keys to Sdr. Bork's old grocery store. However, due to the corona pandemic, the renovation work took a little longer than expected.

The young people involved spent hours after school and work and at weekends renovating the space and basically did all the installation work themselves – including extra insulation, new floors, the Troldekt acoustic ceiling and furnishings. The project has

been heavily supported by the local community.

"People brought us food, and tools were donated. Others let us use their trailer. And many people have dropped by to see all the progress. There's a lot of local support, and that's what's unique about living out here," says Marcus Ottosen.

Help from a DIY celebrity

Designer Søren Vester, a familiar face from interior design TV programmes, has followed Gul Stue from the beginning and also came along for a working weekend.

"I was brought in to help the young people create a meeting place. The idea was not to go for a ready-made solution, because the creation process itself is as important as the final result. For the young people, the project was a chance to get to know each other, and they genuinely enjoyed themselves in the process," says Søren Vester, adding:

"I'm so impressed with the 'finish' and the whole approach. Electrical wiring was hanging out of the walls of the old store, and the floor was full of holes. They've transformed it into a place where you want to spend time. It's about being part of a community, one that grows from them and for them."

An acoustic ceiling was essential because of the many users of Gul Stue and also due to the hard floors. And so the old store was fitted with an acoustic ceiling donated by Troldekt.



"Under expert guidance, we've painted the ceiling yellow to match the overall theme. It's made a huge difference to the acoustics. It's no longer tiring when lots of young people gather in different zones and start chatting," says Søren Vester.

Yellow – the colour of community

It was Søren Vester who came up with the crazy idea of painting everything yellow.

"He suggested it for fun, and at first everyone laughed. But now it's become the concept, and we've pretty much taken ownership of everything yellow in the area. When people see something yellow, they think of us," laughs Marcus Ottosen, adding:

"In fact, the only thing that isn't yellow is the felt on the pool table."

Our data

To ensure structured CSR reporting, Troldekt uses the international GRI G4 guidelines.

However, on 1 July 2018, the GRI G4 guidelines were superseded by the GRI Standards. The CSR report for 2020 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 thus increased production further in 2020.

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 compiled from supplier invoices or statements provided by suppliers.

	Material	2018	2019	2020	Unit	Renewable material
Raw materials	Wood	39,948	50,034	57,486	m ³	yes
	Cement, grey	1,953	3,081	3,695	tonnes	no
	Cement, white	20,625	26,686	33,158	tonnes	no
	Accelerator	188,702	382,350	439,804	litres	no
	Sodium silicate	254,782	266,229	422,132	litres	no
	Paint	454,348	603,112	713,273	litres	no
Associated process materials	Water	17,985	23,442	24,445	m ³	yes
	Asphalt cleaner	2,893	280 *	4,236 *	litres	no
	Mould oil	130,451	141,361	165,467	litres	no
Packaging	Cardboard	71	96	149	tonnes	yes
	Foil	35	43	35	tonnes	no
	Wood pallets	57,891	81,919	114,939	pcs	yes

* In 2019, we reduced the consumption of asphalt cleaner through a change of application method. However, this did not work as intended, and we therefore had to go back to the original setup, which resulted in an increase in consumption.

Percentage of recycled materials

Material	2018	2019	2020
Total proportion of recycled materials as a percentage of total materials consumption	1.3%	1.6%	1.6%

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

Recycled materials in grey cement: 15.91%, corresponding to 588 tonnes (479 tonnes in 2019).

Recycled materials in white cement: 1.38%, corresponding to 458 tonnes (398 tonnes in 2019).

Energy consumption within the organisation

The tables below provide an overview of Trolldtekt's energy consumption in 2018-2020. Only energy consumption at the factory in Trolldhede is included.

	2018	2019	2020
Energy consumption (GJ)	81,553	92,309	96,929
Percentage from renewable energy sources	94.6%	96.2%	97.7%

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
	2018	2019	2020	2018	2019	2020			
Electricity consumption	23,518	27,650	33,208	28.8%	30%	34.3%	100%	no	Externally
Biofuel	53,640	61,178	61,474	65.8%	66.3%	63.4%	100%	no	Externally
Gas (trucks)	1,346	1,094	282	1.7%	1.2%	0.3%	0%	yes	Externally
Diesel (trucks)	3,049	2,386	1,965	3.7%	2.6%	2.0%	0%	yes	Externally

Energy intensity

	2018	2019	2020
Energy consumption per m ² of produced panel	25.47 MJ	21.95 MJ	19.83 MJ
The development affects Trolldtekt's environmental performance	Positively	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

	2018	2019	2020
Total energy savings	7,336 GJ	14,822 GJ	10,384 GJ

The reduced energy consumption reflects gains attributable to our new modern machinery as well as the continuous optimisation of operations.

Direct CO₂ emissions (Scope 1)

The table presents an overview of direct CO₂ emissions from sources that are owned or controlled by Trolldtekt.

Direct sources of emissions	Tonnes CO ₂		
	2018	2019	2020
Biofuels for drying*	-	-	-
Gas for trucks	141	70	18
Diesel for trucks	211	165	122
Total	352	235	140 **

* Biofuels are regarded as a CO₂-neutral energy source.

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

Indirect CO₂ emissions (Scope 2)

Indirect sources of CO ₂ emissions	Tonnes CO ₂		
	2018	2019	2020
Electricity	0	0	0

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

Other indirect CO₂ emissions (Scope 3)

This indicator covers a number of other indirect emissions of CO₂ from sources that are not owned or controlled by Troldekt, but where the CO₂ emissions result from the company's activities. CO₂ emissions from transport account for less than 0.5 per cent of total CO₂ emissions in Scope 3. In addition, this data is subject to considerable uncertainty. We have therefore decided not to include the CO₂ emissions stemming from transport in Scope 3.

Indirect sources of CO ₂ emissions	Tonnes CO ₂		
	2018	2019	2020
Production of purchased process materials, raw materials and packaging	26,844	33,735	40,711

CO₂ emissions intensity

This shows the intensity of CO₂ 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 ₂ /m ²			The development affects Troldekt's environmental performance
	2018	2019	2020	2018	2019	2020	
In Scope 1	352	235	140	0.11	0.06	0.03	Positively
In Scope 2	-	-	-	-	-	-	Status quo
In Scope 3	26,844	33,735	40,711	8.38	8.02	8.33	Negatively
Total CO ₂	27,196	33,970	40,851	8.49	8.08	8.36	Negatively

Reduction of greenhouse gas (GHG) emissions

Increased production volumes, and hence increased consumption of cement, has led to an increase in total greenhouse gas emissions.

Emissions of ozone-depleting substances

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

CFC-11 equivalent (kg)		
2018	2019	2020
0.0056	0.0073	0.0086

SO_x

This shows Troldekt's discharges of SO_x.

SO _x equivalent (tonnes)		
2018	2019	2020
70.7	92.3	107.7

The increase in SO_x emissions mirrors 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
	2018	2019	2020	
Wood	72	93.5	100.3	Recycled
Plastic packaging	10.8	5.8	6.4	Recycled
Cardboard packaging	6.2	11.4	11.9	Recycled
LDPE agricultural film*	-	2.4	4.8	Recycled
Iron and metal	35.5	33.3	31.2	Recycled
Electronics	1.8	3.8	2.3	Recycled
Ash from biofuels	37.9	71.5	69.3	Recycled
Hazardous waste for reuse	6.2	23.1	1.1	Recycled
Wastewater from painting facility**	479	596	653	Recycling/incineration
Hazardous waste for incineration	16.7	7.8	13.7	Incineration
Suitable for incineration	54.9	64.7	36.2	Incineration
Landfill***	1.5	0.5	1.3	Landfill

* We cover more wood supplies (piles of wood) 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. Volumes are determined by the production of two-layer panels.

Extent of mitigation of environmental impacts

- We have continued to invest massively in reducing noise levels in several places at the factory.
- Diesel and gas-powered trucks have been replaced with electric trucks.

Percentage of products sold and packaging materials recycled

	2018	2019	2020
Wood pallets delivered (qty)	79,282	91,123	119,179
Wood pallets returned (qty)	20,477	19,733	24,824
Wood pallets returned (%)	26	22	21

Sanctions for non-compliance with environmental laws and regulations

Troldekt was not 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 in place to effectively prevent and address any environmental issues and industrial accidents that 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 per cent 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 2020, we were in dialogue with the authorities and 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 the distribution of employees according to 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	0	0	0	0
	31-50	5	9	0	0	0	1	1	1
	51-	12	8	0	0	1	0	1	0
Troldhede	-30	0	0	1	5	1	1	0	2
	31-50	5	4	4	44	2	18	0	2
	51-	4	3	2	42	0	9	1	4

Employment	No. in Tranbjerg	No. in Troldhede
Full-time employees	30	111
Part-time employees, incl. flexitimers	5	3
Permanent employees	35	114
Short-term contracts, including paid student interns	0	0
Total	35	114

Employees in subsidiaries are not included in the figures. Troldtekt GmbH has seven salaried employees. Troldtekt AB has four salaried employees.

No. of employees on 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. Seven per cent of our total workforce is represented on these formal health and safety committees in Troldtekt.

Industrial accidents and absence due to illness

The figures cover the 98 hourly paid employees at the Troldekt factory in Troldekte. 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.

	2018	2019	2020
No. of lost-time injuries	2	5	4
Lost-time injury frequency (no. of industrial accidents/1 million hours worked)	18.13	36.92	28.45
Absence as a result of industrial accidents (hours/1,000 hours worked)	1.29	2.01	1.08
Absence due to illness, total (%)	3.9	2.63	6.08*

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

Composition of senior employees according to gender and age

The following provides a summary of the composition of senior employees in Troldekt 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
No.	0	0	2	0	2	3
Distribution of senior employees in %	0%	0%	28.57	0%	28.57	42.86

Percentage of screened suppliers – Labour rights

According to Troldekt'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 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 per cent 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 per cent of suppliers who have signed our Code of Conduct are placed in the low-risk group, and 4 per cent are in the medium-risk group, and there are no suppliers in the high-risk group.

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

There have not been any incidents among Troldekt'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 per cent 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.

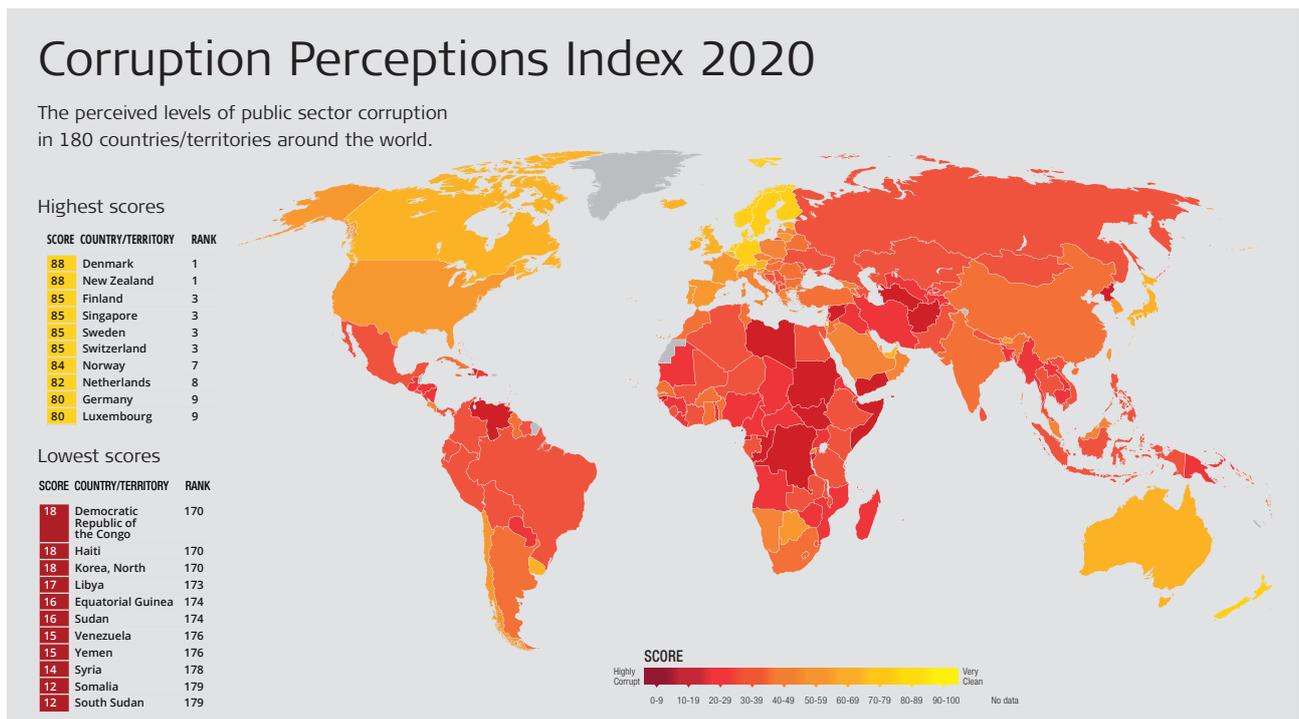
In 2017, we took steps to future-proof our anti-corruption guidelines. This work continued in 2018 and 2019. All new employees are introduced to the company's anti-corruption guidelines.

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 2020.



Sanctions for non-compliance with laws and regulations

Troldtekt was not sanctioned for non-compliance with laws and regulations in 2020.

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 per cent) who have signed our Code of Conduct are placed in the low-risk group, and one supplier (corresponding to 4 per cent) 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 at Silver level. The panels have also been recognised for their contribution to a healthy indoor climate and have, for example, been granted the Danish indoor climate label *Indeklimamærket*, the Finnish quality label M1 and Allergy UK's Allergy Friendly Product Award.

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 2020.

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 per cent) who have signed our Code of Conduct are placed in the low-risk group, and one supplier (corresponding to 4 per cent) 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
General		
Management statement	4	
Company name	10	
Troldtekt's primary brands, products and services	10	
Geographical location of Troldtekt's head office	11	
Countries where Troldtekt is represented	11	
Markets	11	
Troldtekt's workforce	52	
Troldtekt's supply chain	11	
Committees and associations in which Troldtekt is represented	11	
Materiality analysis	2	
Stakeholder involvement	2	
Reporting period	2	
Date of latest report	Back page	
Frequency of reporting	2	
Contact information	2	
Values	10	
CSR policy	13	
Code of Conduct	13	
Total weight of waste by type and disposal method	50	
Extent of mitigation of environmental impacts	49	
Percentage of products sold and packaging materials recycled	49	
Environment		
Materials consumption	47	
Percentage of recycled materials	47	
Energy consumption within the organisation	48	
Energy intensity	48	
Reduction of energy consumption	48	
Direct CO ₂ emissions (Scope 1)	48	
Indirect CO ₂ emissions (Scope 2)	49	
Other indirect CO ₂ emissions (Scope 3)	49	
Intensity of greenhouse gas (GHG) emissions	49	
Reduction of greenhouse gas (GHG) emissions	49	
Emissions of ozone-depleting substances	49	
SO _x	50	
Sanctions for non-compliance with environmental laws and regulations	51	
Percentage of screened suppliers – Environment	51	
Risk classification of suppliers – Environment	51	
Grievances about Troldtekt's environmental impacts	51	

Description	Page no.	Comments
Labour conditions		
Workforce and employee turnover	52	
No. of employees on formal committees	52	
Industrial accidents and absence due to illness	53	
Composition of senior employees according to gender and age	53	
Percentage of screened suppliers – Labour rights	53	
Risk classification of suppliers – Labour rights	53	
Society and product responsibility		
Percentage of screened suppliers – Anti-corruption	54	
Implementation of anti-corruption guidelines	54	
Cases of corruption or bribery	54	
Sanctions for non-compliance with laws and regulations	55	
Percentage of screened suppliers – Society	55	
Risk classification of suppliers – Society	55	
Assessment of products	55	
Sanctions for non-compliance with laws and regulations concerning use of products	55	
Human rights		
Risk of child labour	55	
Percentage of screened suppliers – Human rights	55	
Risk classification of suppliers – Human rights	55	

Status 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.	Objectives will be transferred to 2021. Due to corona restrictions, it has not been possible to carry out the planned external audits at carriers.
General	Provide a sign language guide for all employees online to make it easier to communicate with deaf colleagues.	Realised. A guide has been made available on our intranet, Ziik, and featured in our internal newsletter.
General	Recruitment of trainee/apprentice in both Tranbjerg and Trolldhede.	Realised. The two apprentices, who are both adult apprentices, have, however, been employed in Trolldhede.
Labour conditions	Continued focus on safety. The goal is zero industrial accidents. We are initiating: <ol style="list-style-type: none"> 1) rules and markings in connection with internal traffic 2) stricter procedures on the use of workwear in high-vis colours 3) stricter guidelines on the use of protective equipment where needed 4) focus on avoiding heavy lifting 5) focus on preventing falls. 	Partially realised. Five lost-time injuries were reported in 2020. Zero accidents objective will be transferred to 2021. <ol style="list-style-type: none"> 1) Objective about rules and markings has been partially implemented and transferred to 2021. 2) Objective about workwear in high-vis colours has been realised. 3) Objective about increased focus on protective equipment has been realised. Prescription safety glasses, safety footwear in the form of shoe covers etc. have also been purchased. 4) Objective of avoiding heavy lifting has been realised, for example through the installation of a new jib crane in the painting facility as well as new palomats. 5) Objective of preventing falls has been partially achieved and transferred to 2021.
Environment	Implement the action plan on noise reduction from the original factory line. The action plan has been coordinated with the municipality.	Realised. The action plan has been implemented, and the environmental approval is due for consultation in 2021.
Environment	Explore possibilities for entering into an international development project aimed at exploiting waste heat and water vapour from the drying process.	Objective will be transferred to 2021. Our development project partner has dropped out, but the project will continue in relation to energy supervision, whereby external consultants will go through all processes with the aim of identifying possibilities for utilising waste heat and water vapour as well as separating and reusing the water.
Environment	Reduce the CO ₂ 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.	Objective will be transferred to 2021. Trolldtekt and Aalborg Portland are in dialogue about the possibility of procuring cement with reduced environmental footprint.

New objectives for 2021

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.	
Environment	In connection with energy supervision, external consultants will go through all processes with the aim of identifying possibilities for utilising waste heat and water vapour as well as separating and reusing the water.	
Environment	Increase local supply of certified wood to further minimise transport. Partly through dialogue with nearby municipalities about certification, and partly by reassessing raw wood requirements, as our new machinery can handle wood with other dimensions and different ages than has so far been possible.	
Environment	Both paint suppliers supply paints that match Cradle to Cradle Platinum level.	
Environment	Reduce the CO ₂ 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.	
Environment	Internal testing at Troldekt to facilitate take-back scheme for used cement-bonded wood wool panels ends Q3. In Q4, the timetable for a pilot project with the Municipality of Ringkøbing-Skjern will be defined, the plan being to introduce a take-back scheme for used cement-bonded wood wool panels in the Municipality of Ringkøbing-Skjern.	
Environment	Minimise the amount of packaging waste on construction sites. Among other things, by phasing out chipboard and by reinforcing pallets to do away with the need for pallet sheets.	
Labour conditions	Continued focus on safety. The goal is zero industrial accidents.	
Labour conditions	Hold inspirational presentations on stress management for all salaried employees.	
Society	Hold a refresher course on anti-corruption for employees for whom the topic is relevant. Courses will be recorded for use in connection with the onboarding of new employees.	

Troldtekt A/S

Address	Head office Sletvej 2A, DK-8310 Tranbjerg J Production and warehouse Østergade 37, Trolhede, DK-6920 Videbæk
CSR report 2020	Uploaded to the UN's Global Compact on 15 June 2021
Editors	Responsible: Tina Snedker Kristensen Data: Peer Leth, Orla Jepsen and Renate Blom Editing & copywriting: Publico Layout & photos: Tommy Kosior
Contact	Tina Snedker Kristensen Head of Marketing and Communications tkr@troldtekt.dk +45 8747 8124

About Troldtekt

Troldtekt acoustic solutions for ceilings and walls are among the leading products for ensuring good acoustics, effective fire protection and a healthy indoor climate. The main product is Troldtekt acoustic panels made from the natural material wood as well as cement extracted from the Danish underground, and which are Cradle to Cradle-certified at Silver level. 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 Trolhede in western Jutland.

Certifications

