

Initial Research

2020-11-11

LED iBond International: A leading light

- Develops an innovative technology and lighting platform with full IoT compatibility
- Targets several markets with strong growth potential
- We see a fair value of DKK 16.60 – 26.30 per share

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Stock ticker:	LEDIBOND
Industry:	Electrical products
Listed on:	First North Copenhagen
Latest stock price (DKK):	14,90
Market cap (MDKK):	133,2
Enterprise Value (MDKK):	116,2
Total number of shares (M):	8,94
- of which free float (M):	4,57

VHCF fair value per share

DCF model	16,60 - 26,30
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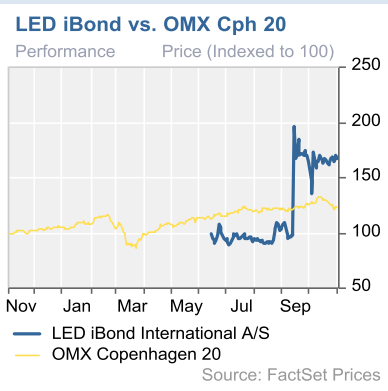
LED iBond International A/S

Address:	Agern Allé 5A 2970 Hørsholm, Denmark
Webpage:	ledibond.com
CEO:	Rolf. H Sprunk-Jansen

Main owners (11 Nov 2020)

	Capital (%)
NLR Invest ApS	26,60%
LAROMINI ApS	21,74%
Green Technology Investment ApS	15,63%

Stock price history



	-1m	-3m	-12m
Change (%)	14,4	75,3	na
52 w k range (Low /Hi) - DKK		7,00 - 19,00	

Source: FactSet

LED iBond International develops innovative LED lighting solutions that combine LED lighting with IoT functionality. The company's patented technology platform is based on a 6 mm thin aluminium structure with superior cooling capabilities compared to competitors. The design lowers the operating temperature for the LED lights, thereby dramatically increasing their lifetimes and reducing the cost of ownership. The panels are versatile, easy to install with no cabling required, and can even be used in confined environments where temperature control is a key parameter.

LED iBond International uses spin-offs with carefully selected partners to leverage on its technology. This paves the way for reaching customers in new markets at minimal expense. The company currently has three spin-offs and more could be added in the future.

In our economic scenario, we see revenues taking off in earnest in 2021 and we expect the company to reach breakeven during 2022 with cash flows turning positive in the same period. Our valuation model focuses on three market segments: smart buildings, UV-C disinfection, and vertical farming. We see additional upside potential in other business areas that are not included in our scenario. The current cash holdings might not last until the company's cash flows turn positive and in our model we have therefore assumed a minor capital injection to bridge the gap until cash flow breakeven.

We have valued the company using a DCF model which points to a fair value per share of DKK 16.60 – 26.30, implying a significant upside potential from today's market valuation. The valuation is based on our projected earnings for the company in combination with our current assessment of risks, especially the risk associated with being a young business in a fast-moving market with big international players. We see potential for further valuation upgrades when the company has overcome certain risks and when it starts delivering orders that confirm our growth scenario.

Table 1: Financial Overview

MDKK	2 018	2 019	2020e	2021e	2022e
Net turnover	6,5	11,8	4,2	31,9	81,5
Growth (%)	na	80,0%	(64,6%)	665,6%	155,2%
Gross margin (%)	35,1%	37,9%	32,6%	34,9%	34,5%
EBIT	(16,1)	(17,5)	(17,1)	(12,6)	3,5
EBIT margin (%)	neg	neg	neg	neg	4,2%
Cash holdings	13,0	6,4	15,3	12,8	12,4
Total assets	66,5	58,0	72,1	94,8	97,1
Total equity	19,6	32,7	42,9	43,1	46,2
Solidity (%)	29,5%	56,3%	59,5%	45,5%	47,6%
P/E	neg	neg	neg	neg	52,9
ROE	neg	neg	neg	neg	5,4%
EV/EBIT (x)	neg	neg	neg	neg	33,5
EV/Sales (x)	17,7	9,9	27,8	3,6	1,4

Source: Västra Hamnen Corporate Finance

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What does LED iBond do?

The LED iBond International group (hereafter LED iBond) is based north of Copenhagen, Denmark and is a technological lighting company founded in 2014. With its 20 employees, the company is developing and manufacturing innovative LED solutions by combining mechanical and electrical engineering expertise. The patented and versatile technology platform was first born back in 2001. Since then, a long period of product development has resulted in a wide array of applications for the LED lighting market. LED iBond was listed on Nasdaq First North Growth Market in Copenhagen in June 2020.

Listed on Nasdaq Copenhagen in June 2020

Thinnest LED panel ever developed

In contrast to regular LED panels found on the market, the company's patented solution is a sandwich structure consisting of two aluminium layers separated by a polymer core (also known as an Aluminium Composite Panel – ACP). The ACP allows for transmitting low-voltage (12-48V) electricity through the aluminium in the panel without any cabling, resulting in the lightest and thinnest LED base ever developed, with a thinness of only 6 mm. With the aluminium structure conducting the electricity, several units of ACP can easily be connected, giving superior flexibility and ease of integration for the customer.

Superior cooling means longer lifetime

Due to the favourable thermal conductivity of aluminium, the ACP delivers superior cooling capability, which means powerful lighting solutions without the need for additional cooling. High temperatures have a substantial negative impact of the lifetime of LED installations, and the cooling characteristics of LED iBond's ACP provide a markedly longer service life of the LEDs. This will translate into considerably improved cost of ownership for the customer. The low working temperature and the thinness of the ACP is also perfectly suited for confined spaces where temperature control is crucial, for example in a vertical farming setting.

Full IoT integration

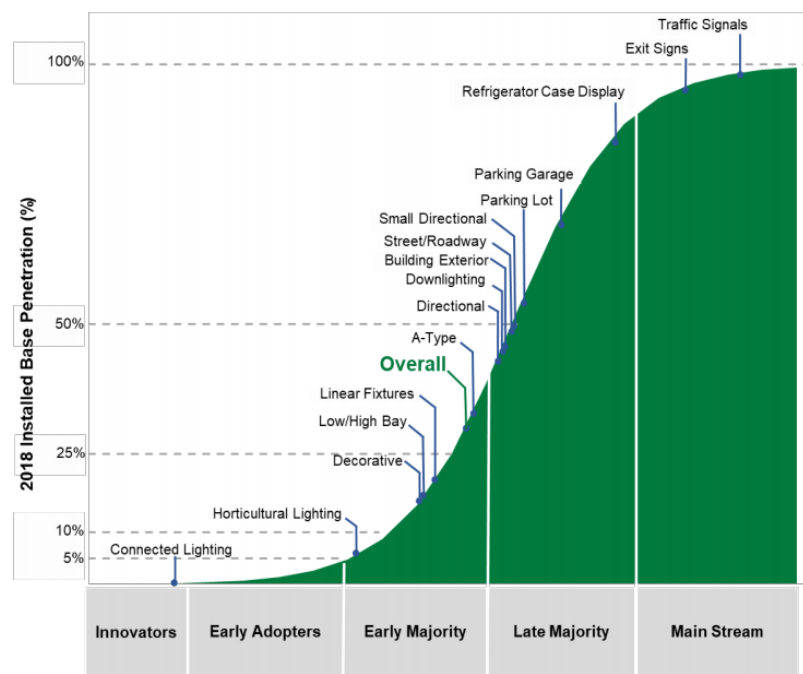
In addition to being able to integrate any kind of specialty LED in the ACP, including disinfecting UV-C LEDs, it also allows for full Internet of Things (IoT) integration. By adding IoT components to the ACP infrastructure, the company positions itself at the forefront of the ongoing automatization and data-driven trends taking place around the world. The company has already delivered LED elevator ceilings with two-way radio communication and light fixtures which vary the colour temperature depending on user needs and time of the day. Many more IoT features can be thought of, and as technological barriers expand, new areas of functionality will continuously be added.

The company has identified several market areas where its technology platform has potential to add significant value. These markets include innovative lighting applications for smart buildings, disinfection with UV-C LED, LED shelves for vertical farming, and optimising livestock farming using LED lights. The company has a strategy of continuously exploring new applications in other markets and industry segments through joint ventures with selected partners, which may result in more applications and areas of use for the technology platform in the future.

Smart lighting at an early stage

In a recent report from the US Department of Energy, connected lighting is shown to be at an early stage in the installed adoption of LED lighting applications. The report expresses high expectations regarding the future of connected lighting, citing the intelligent control systems’ potential to greatly amplify energy savings through the optimised use of lighting. The same goes for horticultural lighting, which is another industry segment that LED iBond targets through its vertical farming solution. These applications are still in their infancy as regards adoption. However, if they were to follow in the footsteps of other lighting applications, there will be a massive adoption of these applications in the future.

Figure 1: Installed Adoption of LED Lighting Applications



Source: US Department of Energy, Adoption of Light-Emitting Diodes in Common Lighting Applications

How does LED iBond’s technology platform work?

The foundation of LED iBond’s technology is a thin aluminium composite panel (ACP) that can carry 12-48 volts of electricity, sufficient to power both high-powered LED luminaires and digital components. The ACP uses two aluminium layers separated by a polymer core for creating an electric circuit that conducts electricity without the use of any cabling. Historically, ACPs have been used as building material for a long time due to its sustainable profile and ability to combine desirable mechanical properties with very low weight.

The aluminium serves many functions

The unique design relies on the aluminium layers to provide several different functions simultaneously:

- It forms two layers of the sandwich structure which ensures a sturdy but lightweight construction,
- It is the visible surface layer of the structure, which can be painted according to preferences,

- It constitutes the cabling to power the LEDs and other components, and
- By being physically connected to the LEDs, it effectively conducts heat away from the LEDs thanks to its attractive thermal conductivity.

This means the company's patented sandwich panel can be made only 6 mm thick but still manage to achieve superior heat dissipation from the LEDs compared to other solutions. The working temperature is typically as low as 40° Celsius, which translates directly into improved longevity of the LED lights. The company cites an expected service life of more than 100 000 hours. In contrast, competing LED lighting platforms normally last around 50 000 hours. This constitutes a significant improvement in the cost of ownership.

Figure 2: Aluminium Composite Panel design

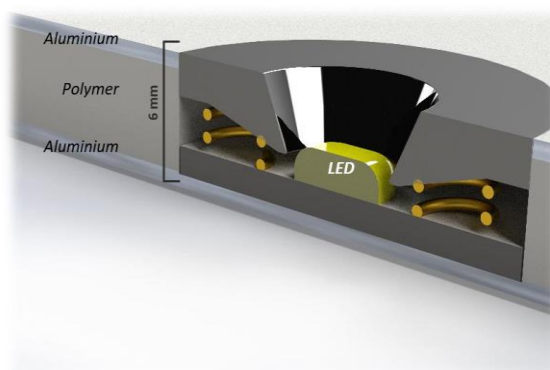


Image: LED iBond

The solution also secures consistent light performance over the lifetime. Traditional fluorescent tubes and halogen spots in contrast degrade over time and therefore leave lighting well below the desired performance after long-term usage. The company has also invented a method of manually changing individual malfunctioning LED components in a structure. This further improves the cost of ownership since it avoids having to replace the whole ACP due to one defective LED, which is the case with many other LED panels.

The ACP is flexible and can be custom-made to take any shape or form requested by customers, e.g. for elevator ceilings or for disinfection systems at airport security checks. The flexibility and easy installation of the ACP makes a compelling selling point for customers. The company's ACP can take any colour but is mainly sold in white and grey.

Open source invites third party applications

Other than carrying LED luminaries, the ACP converges lighting and IT by allowing for IoT connectivity through an open source platform. The open source platform is meant to encourage innovative hardware and software products by third party developers. The company is mainly a hardware company and relies on partnerships and collaboration for integrating IoT solutions that are compatible with its technology platform.

The flexible structure of the ACP allows for easy integration of IoT applications. The IoT components are powered by the same power supply as the LEDs and can even be integrated into an ACP without any LEDs. The embedded sensors can be used in numerous ways, e.g. for controlling temperature, lighting, motion sensor, camera, voice communication, etc. The functionality is continuously being expanded as development is pushed forward. The ACPs are prepared for further integration of IT hardware and software and thereby lives up to customers' demand for future-proof solutions.

Target markets and products

LED iBond targets a number of different industry segments with attractive market opportunities for their products. Some of these opportunities are targeted through LED iBond directly while others are targeted through joint ventures with partners that offer market insights or networks for distribution. The prioritised markets are within smart buildings, vertical farming, and disinfection with UV-C lights. The company also targets livestock farming, where the development is currently undergoing pilot tests in various locations in Denmark. The market segments and the respective products are described in more detail below.

Replaces guess work with data analysis

Smart buildings. A smart building uses technology to collect and analyse information about what goes on in the building with the objective of optimising the building's performance. This is done through technical solutions and automation that control various features in the building, such as ventilation, lighting, heating, air conditioning, security and more. To control these functions, IoT systems use sensors that collect data and use it to automatically adjust to the most preferable setting, e.g. lighting/air condition. The benefit of having a smart building is that it relies on data analysis and ends the human guess work, bringing economic and environmental benefits through optimised energy spending.

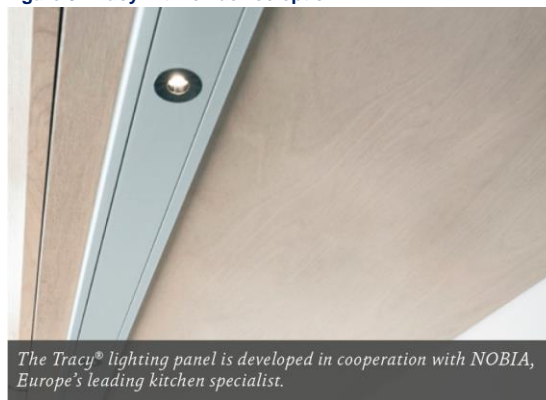
The company's Tracy product is highly flexible

LED iBond targets this market mainly with its flagship product, the Tracy, which is a flexible light rail with dimensions of 1800 x 40 x 6 mm. Units can be linked together to any length up to 50 meters with only one electrical connection point. The Tracy unit is highly flexible and can be cut at any length and angle to connect rails around corners, etc. In a standard setting, one unit of Tracy hosts 6 LEDs and comes with IoT functionality, converging lighting and technology. The Tracy is manufactured in-house in the company's own production facility in Denmark, with a capacity of 300 000 units per annum, which is equivalent to a turnover of DKK 150 million. The company believes that the current Tracy production line is sufficient for the capacity needed in the coming years.

Partnership with Nobia AB

The Tracy is well suited for many specific applications, such as kitchen lighting, libraries, and carports, and can be combined with different mounting systems, optics, drivers and IoT sensors. In the kitchen lighting segment, the company has a strategic partnership with Nobia AB, Europe's leading kitchen specialist with 15 brands under its company umbrella. Having an active sales channel through an OEM, the company gets access to an established customer base and benefits from their branding and marketing activities.

Figure 3: Tracy with IoT device option



The Tracy® lighting panel is developed in cooperation with NOBIA, Europe's leading kitchen specialist.

Image: LED iBond

In June this year, LED iBond was awarded a grant of DKK 6.1 million from the Energy Technology Development and Demonstration Program (EUDP), managed by the Danish Energy Agency. The award is intended for the further development of the Tracy as a base for "a new smart LED infrastructure system for the green and smart buildings of the future". The system in question should be designed to support monitoring and real-time management of building energy consumption, temperature, ventilation, humidity, heating and a wide range of other building functions. The grant has enabled the company to hire a part-time employee to fully concentrate on the project.

Supplied 100 elevator ceilings for Danish railway stations

Other than the Tracy light rail, the company targets the smart building market through tailor-made solutions using the ACP product and IoT functionality. These projects are normally of big scale, and one example is ThyssenKrupp Elevator A/S, for whom LED iBond custom made 100 elevator ceilings for installation at Danish railway stations. The thinness of the ACP is perfectly suited for the confined space of an elevator, and at the same time requires minimal maintenance and can be combined with other functionality to incorporate emergency lighting and two-way voice communication for example. The manufacturing of the ACPs is done by Danish contract suppliers today but may be taken in-house depending on investments in a new production line in the company's facilities in Denmark.

Smart shelves add function to furniture

Another important application area is the provision of what the company calls intelligent shelves. These are e.g. bookshelves with embedded lights or other electronic components on the underside of every shelf. A shelving system with integrated intelligent lighting and IoT functions can fill many functions. The company has already delivered a landmark installation of this sort with their contribution to the recently opened new Deichman Library in Oslo. The library is the main library serving the city of Oslo and is a showcase for LED iBond's capabilities with its rows of shelves, independently controlled and adaptable to the changing needs of the venue.

Figure 4: Deichman Library, Oslo



Image: deichman.no

In these projects the company is working in joint development projects through strategic partnerships for both product solutions as well as the accompanying IoT/software infrastructure.

Vertical farming maximizes growth output

Vertical Farming. The arable land is continuously decreasing while the world population is increasing. To compensate for this, it is crucial that the cultivation of food and crops becomes more efficient. A solution would be to cultivate in indoor layered greenhouses, also now as vertical farming, where the grow beds are stacked on top of each other. With vertical farming, it is possible to maximize growth in a limited growing area by using artificial lights. Some of the challenges faced by vertical farmers is the need to combine a low heat lighting solution with attractive operating costs.

New strategic partnership with Senmatic

In October, LED iBond announced that it had entered a strategic partnership with Senmatic A/S for OEM delivery of shelves with built-in grow lights. These will be included in Senmatic's offering of industrial vertical farming solutions. The strength of the ACP structure is utilised so that the ACP itself constitutes the shelf, combining LED iBond's superior cooling characteristics and minimal space requirements with a high carrying capacity in a compact configuration. In addition, an optional unique plant ventilation system can further optimize the cultivation conditions. LED iBond will supply LED lighting through a custom-made ACP shelf, tailored to fit the needs of Senmatic's customers.

The lower operating temperature will allow for closer distance between the shelves and therefore allow more cultivation in the same area of floor space, which will increase the output efficiency for food growers. The minimal maintenance requirements due to the long service life of its LEDs will be especially appreciated in the horticultural industry, for whom personnel costs are a major cost component. The partnership benefits LED iBond through the direct network access of Senmatic, which is a global network with 40 dealers, and its know-how about the light recipes for optimal growth scenarios through Senmatic's controllers and software solutions, resulting in smart and controllable lighting configurations.

UV-C to kill pathogens

Disinfection with UV-lights. The use of ultraviolet light (UV) for disinfection has been used for over 100 years and is very effective in killing pathogens, such as viruses and bacteria. UV light can be divided into three types based on wavelength: UV-A, UV-B and UV-C. UV-C is emitted from the sun but is absorbed by the ozone layer in the atmosphere and never reaches the earth. UV-C radiation effectively kills microorganisms and viruses and can be used to disinfect surfaces and components as well as to purify air and water. It is harmful to humans and animals and causes damage to both the skin and eyes if exposed.

LED iBond has developed a range of disinfection solutions through its two part-owned spin-offs, LED Aviation and LED VirusKill. The spin-offs use LED iBond's patented lighting solution

which has the potential to reduce the spread of COVID-19 as well as other pathogens. By using UV-C LED lights instead of traditional mercury-based UV lamps, the solution is much more environmentally friendly. In addition, LED iBond's solution has a much longer expected service life due to the lower operating temperature, especially compared to traditional UV light bulbs which are notorious for their poor reliability.

Order from Vanderlande validating the UV-C technology

In September, LED iBond announced an order for UV-C LED-based disinfection systems for airport security checkpoints through LED Aviation. The order amounted to 50 systems and the company is expecting more orders to follow. The customer, Vanderlande, has supplied logistics systems to 600 airports around the world, including 14 of the world's top 20 airports. Vanderlande decided to use LED Aviation's disinfection system for their new antimicrobial solution to reduce health risks and secure significant cost savings for airports.

LED iBond's offering also includes a handheld disinfection device, puriZAP. The device is sold through the part-owned spin-off LED VirusKill and can be used in numerous settings, such as cleaning service, hotels, hospitals, rental service, etc. The device is light, flexible and is designed for easy handling with an optimal light direction. It also includes a battery powered option, which removes the limitations represented by power cables.

Figure 5: UV-C disinfection with puriZAP



Image: LED iBond

In addition to the above-mentioned products and targeted markets, LED iBond also targets livestock farming through its spin-off LED Livestock. The company focuses on productivity-enhancing smart lighting for poultry farms, fish hatcheries and milk production. LED Livestock is currently running pilot tests in Denmark and has established customer relationships with poultry farmers and with a manufacturer of milking machinery.

Business Strategy

The company has a pronounced strategy of creating spin-offs of specialized products as niche offerings in markets with high growth potential. The spin-offs are joint ventures where LED iBond has the advantage of leveraging its technology platform and patent position. By partnering with carefully selected partners, LED iBond takes advantage of its partners' market access, expertise, and marketing activities. In addition, spin-offs are normally funded from sources outside the LED iBond group structure and will be manned by personnel outside LED iBond's organisation.

In the last two years, LED iBond has entered three spin-offs and it is possible that more spin-offs will be entered in the future. The sales generated by the spin-offs will contribute to LED iBond's earnings via three income streams. First, the spin-offs will order their products from LED iBond and therefore have a direct impact on the group's sales revenues. Second, through its part-ownership of the spin-offs, LED iBond will have a claim to a share of their profits. Third, LED iBond is entitled to a royalty fee in proportion to the sales generated by the spin-offs as compensation for their access to the patented technology.

The LED iBond products are either sold by the company's own sales force, by OEMs, strategic partnerships, or through international sales partners. The profitability depends on what sales model is used, with the highest margins attained by the company's own sales force. Using external sales forces however helps the company to maintain a small and efficient organization as the business grows.

Leveraging the technology through spin-offs

OEM customers integrate LED iBond's products into their own product offerings. These sales often entail high volumes and take advantage of the OEM customers' existing customer base, branding and marketing activities. Among others, LED iBond has OEM agreements with Nobia AB, ThyssenKrupp Elevator A/S and Bluetop Solar.

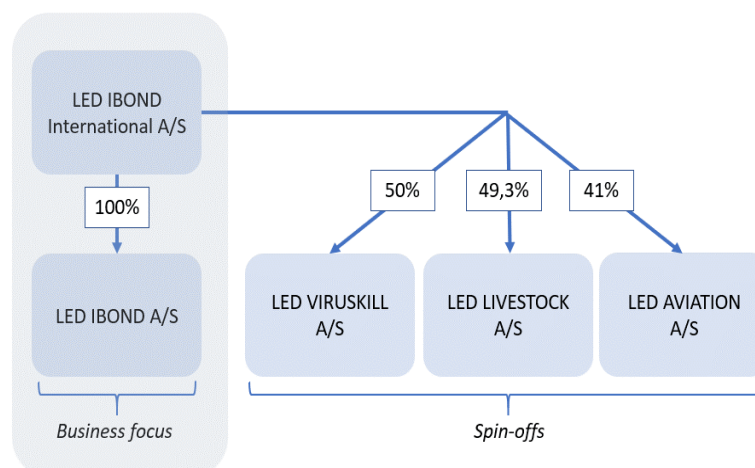
Strategic partnerships are used when the partner is participating in joint technical development of product solutions, as well as the accompanying IoT/software infrastructure. An example is Senmatic, where a joint development project is aimed at creating a vertical farming offering.

International sales partners are segment-focused resellers, selling solutions and products to a wide range of B2B customers, e.g. architects, light designers, and other industry professionals.

Company and Key Personnel

LED iBond is headquartered at the Technical University of Denmark (DTU) in Hørsholm, north of Copenhagen. The company employs around 20 people/17 full-time employees through LED iBond International and LED iBond. The company's three spin-offs have a staff of 3.5 full time employees. LED iBond International is a holding company in a group structure where the main business takes place in the fully owned subsidiary LED iBond A/S. Primarily, this includes LED solutions targeting smart buildings and vertical farming.

Figure 6: Group structure and spin-offs



Source: LED iBond/Västra Hamnen Corporate Finance

Mr Rolf H. Sprunk-Jansen is the CEO and co-founder of LED iBond since 2014. Mr Sprunk-Jansen has extensive international experience within commercial development of high-tech products and technology companies. He has also worked as a management consultant. He holds an MSc in Economics and Business Administration and is a major owner of LED iBond through his ownership in Laromini, NLR Invest and Green Technology Investment, corresponding to an ownership of around 15 percent in LED iBond International.

Mr Lars Frederiksen is the CTO and a co-founder of LED iBond since 2014. Lars has been a business entrepreneur, business leader and investor in the greentech industry since 1994. His experience includes R&D, technical solutions, and business management. Typically, he takes companies from the early stage of an idea into promising market growth. He has been a board member of many greentech companies and has invested in several such companies. He is a major owner of LED iBond through his ownership in Laromini, NLR Invest and Green Technology Investment, corresponding to an ownership of around 15 percent in LED iBond International.

Three people control 45 percent of the company

Owners and financing

The list of direct owners is headed by three companies who together own 64.0 percent of the shares. The three are NLR Invest ApS, LAROMINI ApS and Green Technology Investment ApS. Uncovering the control structure behind these companies is somewhat complicated, as all three companies have largely the same individuals as main owners. Untangling their indirect ownership in LED iBond, one can deduce that CEO Rolf H. Sprunk-Jansen and CTO Lars Frederiksen plus an associate of theirs, Niels Henrik Aksel Hansen, each control around 15 percent of the shares.

A fourth company that holds a substantial number of shares is Midroc Invest AB, who bought a 6.9 percent stake in the company in conjunction with the IPO. Midroc Invest is totally unrelated to the other main owners. It is the venture capital arm of the Swedish industrial and real estate group Midroc Europe AB and a well-known investor in young companies in Sweden. In the interest of full disclosure, we should mention that Midroc Invest also owns a minority stake in Västra Hamnen Corporate Finance AB, but it has in no way been involved in the writing of this report.

Three persons, namely Søren Houmøller, Søren Toft-Nielsen and Michael Friis Jörgensen each control between 2 and 4 percent of the shares of LED iBond. Their ownership is interesting as they have an even bigger direct ownership in two of LED iBond's spin-offs, LED Aviation and LED VirusKill, with whom the fully owned subsidiary LED iBond A/S has a commercial relationship. We do not think there is any conflict of interest however, see later under the chapter *What is behind the numbers?*.

History

- 2001:** First patent family is applied for regarding an adapter for a light source
- 2006:** Lars Frederiksen invests in the technology and starts basic product development
- 2014:** LED iBond is founded by Rolf H. Sprunk-Jansen and Lars Frederiksen
- 2016:** Sales initiated with gas stations, DTU, Copenhagen University Hospital and elevator suppliers
- 2018:** Automated production line for Tracy is up and running
- 2019:** LED Aviation initiates a UV-C project within the airport industry
Delivery of orders to DTU and Deichman Library in Oslo
- 2020:** First IoT-sensor prepared for Tracy integration is ready for sales
LED VirusKill is established, and a light-weight handheld UV-C device is developed
LED iBond International is listed on Nasdaq First North Growth Market in Copenhagen, Denmark
LED Aviation announces the order of 50 UV-C LED-based disinfection systems to Vanderlande
LED iBond enters a strategic partnership with Senmatic for OEM delivery of vertical farming solutions

LED market estimated at EUR 56 billion

What is the market potential?

The market for lighting solutions has undergone a comprehensive transformation in the last decade. The advent of LED technology has coincided with heightened awareness around energy consumption, triggering government regulation of acceptable standards in recent years. This has accelerated a shift from older technologies such as the traditional incandescent bulbs, fluorescent lights or high-pressure sodium (HPS) lamps to the much more energy-efficient LED alternatives. LED solutions have gone from niche to dominance in the course of a decade and now account for around 64 percent of the lighting market according to McKinsey & Company, up from only 7 percent in 2010. In value terms, the combined LED market is estimated at EUR 56 billion in 2020.

LED iBond's products can be adapted to many different applications in the area of lighting solutions. In some of them, they will simply replace older, non-LED solutions while in others, they will take what used to be plain light fixtures and substitute them for a full IoT platform where lighting is just one of a series of features. By way of segmentation, LED iBond divides its markets into **smart buildings**, **UV disinfection** and **vertical farming**. We will discuss each of them in turn.

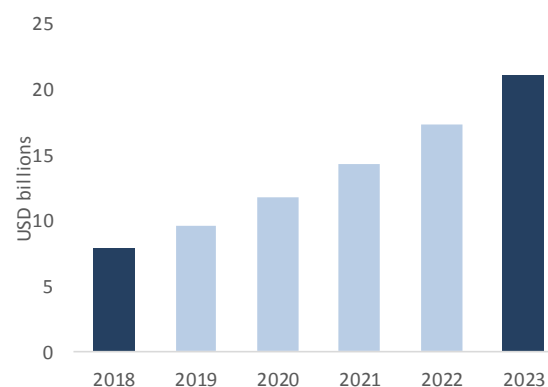
Smart buildings

The smart building market comprises indoor as well as outdoor fixtures, from façade lighting to ceiling lights and illumination of specific objects. The “smart” part refers to a building’s use of automation to control such functions as lighting, heating, ventilation, security etc. LED iBond’s products are well adapted to this market with their integration of lighting and a host of IoT devices such as sensors, cameras and communication equipment on the same platform.

Smart lighting market to double between 2018 and 2023

The global smart building market is growing rapidly. According to the research firm MarketsandMarkets, the market totalled USD 60 billion in 2019 and was expected to grow at an annual growth rate of 12 percent in the subsequent five years. More importantly for LED iBond, the subset of the market named smart lighting was estimated at USD 8 billion in 2018 and was forecasted to more than double to USD 21 billion by 2023.

Figure 7: Smart lighting market, 2018-2023



Source: MarketsandMarkets

The trend towards smart buildings and LED installations has several major drivers:

Cost savings – LED is significantly more energy efficient than older technologies and enables energy savings and thereby cost savings.

Building codes – new requirements put increasing emphasis on automation and control.

Smart lighting – embedded sensors and digital communication facilitates new and improved functionality via integrated networks.

Regulatory mandates – government initiatives aimed at energy efficiency are encouraging a shift from older technologies to LED solutions.

16 million elevators in the world

LED iBond is targeting three particular application areas where the strength of their offering can be leveraged. The first is **elevator ceilings**. The company’s aluminium composite panel can be used to form a ceiling in elevators, where not only lights can be embedded but anything from fire detectors to communication systems. The company estimates that there are 16 million elevators around the world, of which many are in desperate need of refurbishment. The number of elevators in Europe is reportedly around 6 million and in the US around 1.1 million.

Public spaces in need of illumination

The product Tracy is especially well adapted to all kinds of **office and other public access areas**, such as office workplaces, libraries, education facilities, healthcare facilities, retail spaces etc. In all these applications, the opportunity to combine lighting with advanced sensors and control systems could provide strong benefits. Taken together, this represents a huge market opportunity. Counting only offices in 42 main cities in Europe, the bank BnP Paribas estimated an area of 13 million square meters in 2018. LED iBond’s addressable market in all potential kinds of real estate is obviously many times that.

Nobia produces 140 000 kitchen cabinets per week

A third specific application where LED iBond could make a big impact is in home furnishing, where it taps into the “smart home” trend. The company has targeted the **kitchen market** in particular, where the Tracy’s slim form factor makes it ideal for installing e.g. under hanging kitchen cabinets. LED iBond has entered into an agreement with Nobia, the leading

European kitchen specialist and home to fifteen different brands. The Nobia platform constitutes a large potential market for LED iBond, as Nobia claims to manufacture more than 140 000 kitchen cabinets per week.

UV disinfection

The knowledge that UV light can be used to kill germs has been around since the 1870's. It has primarily been used for water purification, where the UV radiation can be an efficient means of deactivating bacteria and viruses. The light technology has traditionally been mercury-vapor lamps. They have obvious drawbacks in being bulky and involving toxic substances such as mercury and sometimes emitting hazardous ozone gas, as well as having short lifetimes. LED-based UV-C diodes offer a much better solution, as they are slimmer, longer-lasting, mercury-free and can have their wavelengths calibrated so that no ozone is emitted.

**UV disinfectant
market worth USD
2.9 billion**

UV-C diodes have now become standard products and are a door-opener for a much wider use of UV light for disinfection, in particular air purification and disinfection of surfaces commonly touched by crowds of people. MarketsandMarkets estimates that the global market for UV disinfectant equipment totals USD 2.9 billion in 2020.

**Market potential:
17 000 commercial
airports**

An immediate use case for LED iBond in the area of UV disinfection is in **airport hand luggage security checks**. Hand luggage trays at airport terminals are touched by nearly every visitor to the airport and may be notorious virus transmitters. The affiliated company LED Aviation has already landed a partnership deal with Vanderlande, a Dutch equipment maker and a global leader in logistics automation for airports. Vanderlande supplies more than 600 airports around the world with logistics systems. On average, each airport can be assumed to run at least tens of hand baggage check-in lines, implying a market potential that can be roughly estimated to at least 20 thousand UV-C disinfection systems. The 600 airports using Vanderlande's systems are still just a fraction of the total addressable market. According to estimates, the total number of commercial airports in the world is more than 17 000.

Another relevant market is for **handheld disinfectant devices**, which can be used by a human operator to radiate surfaces in public areas to purify them between users. The application areas could be rental equipment, e.g. rental cars, or visitor areas such as hospital rooms or hotel rooms. LED iBond intends to address this via the product puriZAP, a product that will be marketed by the spin-off LED VirusKill. LED VirusKill has placed an order for the first 100 units with LED iBond, which is expected to be delivered before the end of this year.

**20 million hotel
rooms to cleanse
every few days**

The market for handheld devices is still under formation and it is difficult at this point to estimate to what scale it may grow. For reference though, it is worth noting that there is said to be around 20 million hotel rooms around the world and more than two million rental cars. In both categories, there must be a thorough cleaning between users, usually meaning what amounts to full disinfection at least every few days.

Vertical farming

The world population is growing ever faster and concentrating to urban areas. At the same time, houses and other constructions occupy more and more land, causing the available arable land to shrink. Climate change puts further pressure on the remaining arable land by deteriorating growing conditions and making crops more unpredictable. Food supply is therefore a growing concern.

**Indoor farming
means absolute
control**

To compensate, agriculture needs to increase productivity and predictability. This has started a trend to grow more and more produce with the help of artificial lighting, either as a supplement in traditional greenhouses or as the only source of light in indoor facilities. Bringing production indoors enables the grower to control all aspects including temperature, humidity, light and soil quality, thereby improving the consistency of output. It also means little or no vulnerability to pests and diseases, removing the need for pesticides.

Finally, indoor farming means opportunities to grow anywhere, even in the middle of large population centres.

When farming indoors, it is important to make efficient use of space and **vertical farming** is one way to achieve this. By farming vertically one can grow on an area many times the floor space, by organising the grow beds on shelves on top of each other. Each shelf needs its own light source, so the number of lamps required in vertical farming can get substantial. LED lamps are the favoured choice in vertical farming as they give off little heat. This enables the farmer to minimise the vertical distance between grow beds without risk of overheating the plants. LED iBond's solution, where the light is integrated into the shelf itself, enables superior cooling even compared with other LED equipment. If needed, LED iBond has developed an integrated active ventilation solution to supplement the temperature control. This solution fits very well with the needs of vertical farming operators.

Vertical farming seen growing at 28% per year

Vertical farming is still a young industry but is assumed to grow very fast in the years ahead. The research company Global Markets Insight has estimated that the global market totalled more than USD 3 billion in 2018 and is on a path to turn over USD 22 billion in 2026, corresponding to an annual growth rate of nearly 28 percent. Agricultural products that are found to be especially well adapted to vertical farming include lettuce and leafy greens, tomatoes, cucumber, bell and chili peppers, and strawberries.

How is the competition?

LED iBond has positioned itself in-between lighting and technology, which is an area where not many other companies operate. This is a strength for LED iBond because it makes it less exposed to competition. Pure lighting companies and IoT-technology companies may be seen as a compliment to LED iBond's solutions more than a substitute.

Market giants dominate the general market

But at the core, LED iBond is a lighting company, and there are several players in this market that also have a focus on smart lighting. As they further develop their offerings, they might be a threat to LED iBond's technological solutions within LED lighting. Two of the biggest companies within smart lighting are described in more detail below.

Signify (Euronext Ams: LIGHT) was spun out of **Philips N.V.** (Euronext Ams: PHIA) and listed in 2016. Signify has an extensive product portfolio within smart lighting market that is compatible with various technologies, such as DALI, KNX and BACnet. The company invests heavily in further developing connected lighting systems and adopts an active strategy of acquisitions to further expand its product portfolio and customer reach.

Legrand (Euronext Paris: LR) is a global specialist in electrical and digital building infrastructure. The company has a strong product portfolio in the smart lighting market, enabling it to maintain a leading market position. For instance, in 2019, it launched a digital lighting management system which focuses on easy installation and IoT functionality. Legrand focuses on growth strategies through partnerships and new product launches, but also through acquisitions.

Fragmented competition in UV-C disinfection

In the UV-C disinfection market, the competition is somewhat more unclear. LED iBond has a competitive advantage in its slim and low temperature UV-C solution for airport security, since it is easy to install in existing airport security checkpoints.

It would be possible to imagine that UV-C component manufacturers could enter competition against LED iBond. However, the fact that LED iBond has developed the slimmest and most cooling effective system on the market puts it in a considerable lead against the competition in the area of disinfection at airport security, and this obstacle may discourage potential competitors.

Several players target indoor growers

Lastly, LED iBond is targeting the market for vertical farming through its strategic partnership with Senmatic. The competitive advantage for LED iBond is the low operating temperature of its lighting solution, in combination with a built-in ventilation function. However, there are many players on the vertical farming market. We will touch upon a few below.

Fluence Bioengineering (Private: US) was acquired by Osram Licht AG (Xetra: OSR) for an undisclosed amount in May 2018. Fluence was founded in 2013 and introduced its first range of LED lamps in 2015. Its product line includes four LED lamp series aimed at greenhouse as well as indoor farming. All of the lamps have a very compact form factor and one has been optimised for vertical farming. Most models are dimmable and have a choice of fixed spectra.

Heliospectra (Nasdaq STO: HELIO) was founded in 2006 and today has customers across six continents. Heliospectra is the global leader in innovative horticulture lighting technology, custom light control systems and specialized services for greenhouse and controlled plant growth environments. Heliospectra has developed LED-based lighting solutions that optimize crop performance by securing that plants get just the right quality and quantity of light.

What is LED iBond's competitive advantages?

When looking at the strengths and robustness in LED iBond's value proposition, we have identified several competitive advantages that should contribute to the company's success:

Innovative technological platform. LED iBond has developed a super-thin design that brings the full potential of smart lighting within commercial reach. The patented sandwich structure requires no cabling, is easy to install and extremely versatile.

Superior cooling. The low operating temperature translates directly into longer lifetimes for the LED components. The company estimates LED lifetimes of more than 100 000 hours, which is twice the lifetime of most other LED installations. This implies markedly improved cost of ownership for the customer. In addition, the possibility to change malfunctioning LEDs individually instead of replacing the whole panel also contributes substantially to lowering the cost of ownership.

Full IoT integration. The technology platform enables full IoT integration, giving customers the possibility to add new features as new applications are developed. We are moving into a more data-driven society with increasing levels of automation, and with the company's open source platform, it makes IoT accessible by easily adding IoT features to existing infrastructure.

Attractive business model. By entering spin-offs with carefully selected partners, the company can take advantage of the partners' existing network and marketing activities. In return, the spin-offs can use LED iBond's patented technology platform. LED iBond does not use its own staff for the operational work in the spin-offs and is normally not required to provide any financing. The business model gives LED iBond many potential revenue streams with minimal resource allocation and moderate risk. Revenues will take the form of product orders from spin-offs and royalties based on the spin-offs' own sales. In addition, through part-ownership, LED iBond will even be entitled to its shares of the profits earned by spin-offs.

Validated product line. The company has already entered several promising agreements with OEM customers as well as strategic partnerships. Many of these are well-established customers, and their commitment to LED iBond is a strong endorsement of the technology platform.

Technology platform protected by patents. The company has a strong patent portfolio, where the most important patents run until 2035. Currently, the company has 8 international patent families, covering the LED lighting panel concept and the IoT integration into the panel, and the company continuously expands and strengthens the patent portfolio.

In addition to these competitive advantages, the company has high insider ownership with the CEO and CTO jointly controlling around 30 percent of the company. Further boosting the outlook is the fact that the competition is somewhat unclear with no direct competitor niched like LED iBond at the intersection of lighting and technology.

What is the earnings outlook?

To help us estimate a fair value of the company and its stock, we have developed a set of economic projections for the company's future earnings. In this economic scenario, we have only included earnings from smart buildings (Tracy + elevator ceilings), LED Aviation and the vertical farming market. We acknowledge that there is considerable potential in the company's other market segments, notably LED VirusKill (puriZAP), LED Livestock and intelligent shelves for smart building applications, but we have not included them in our valuation model at this stage. In order to keep our model simple and conservative, we have focused for now on the, in our opinion, most immediate market opportunities. That way we also leave room for the company to surprise on the upside.

We focus on smart buildings, LED Aviation and vertical farming

Smart buildings to reach DKK 250 million in sales in 2030

For Tracy, we have modelled a sharp increase in near-term sales, and thereafter a more modest growth rate throughout the projection period. At the end of the projection period, in 2030, we have made the conservative estimate that the current production line has reached its full capacity of 300 000 units annually. The company has stated that this capacity is compatible with annual sales revenues of DKK 150 million, hence we assume a unit sales price of DKK 500 and DKK 150 million is our revenue estimate from Tracy in 2030.

As regards elevator ceilings, we have also assumed a fast increase in sales in the near-term and thereafter a more stable growth until 2030. At the end of 2030, we assume an annual rate of around 20 000 ceilings being delivered with an estimated price of DKK 5 000 per ceiling. This yields an estimated turnover of around DKK 100 million from elevator ceilings in 2030.

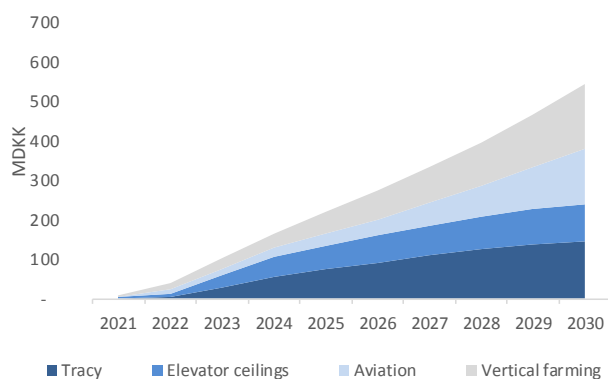
First LED Aviation order delivered in Q1/Q2?

For LED Aviation, we have assumed the first order of 50 units of UV-C LED-based disinfection systems to Vanderlande to be delivered in Q1 and Q2 next year. Thereafter, we see a stable growth path until the end of the projection period. Our guess is that one unit of UV-C disinfection system could sell from LED iBond for DKK 100-200 thousand. Again, we go for conservatism and assume the lower end of that range. For the year 2030 we have assumed annual sales of 2 000 units, which is equivalent to DKK 200 million in sales. For the privilege of using LED iBond's technology platform, LED Aviation is obliged to pay a royalty fee based on the end-sales to customers, which we have assumed to be 5 percent. Also, since LED iBond owns 41 percent of LED Aviation, we have assumed that LED iBond will book the profit from this spin-off in its accounts under the line item *Profit/loss from affiliated companies*. We have assumed a profit margin of 10 percent in LED Aviation.

Vertical farming kicks off in Q1 2021

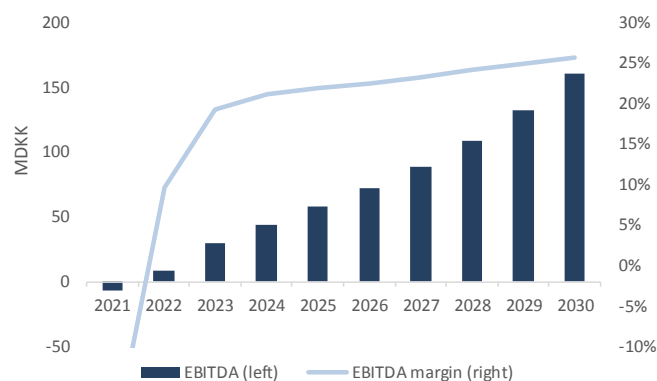
Lastly, for the vertical farming market, we have assumed the first order of vertical farming lighting to be delivered in Q1 2021 via the partnership with Senmatic. We have assumed a fairly modest volume in the first year, but in 2022, we have reckoned with a sales volume equivalent to one average sized greenhouse for an order value of DKK 20 million. Thereafter we see increasing sales and at the end of the projection period, we foresee an annual order rate corresponding to 10 average greenhouses, with a value totalling DKK 200 million.

Figure 8: Rolling 12M revenues, by application



Source: Västra Hamnen Corporate Finance

Figure 9: Annual EBITDA and EBITDA margins



Source: Västra Hamnen Corporate Finance

EBITDA-margin to reach 25 percent

LED iBond runs a slimmed-down organisation with its spin-offs carrying some of the development and distribution costs. In addition, by using strategic partnerships we believe that the company can scale up its revenues significantly but still maintain a lean organisation. We therefore assume moderate investments in our economic scenario to expand the operations. Hence, we see increasing EBITDA-margins throughout the projection period, ending up at around 25 percent at the end of the period. This is a little bit shy of the company's own financial target of a long-term EBITDA-margin above 30 percent, but we choose to take a conservative stance for now.

We expect breakeven to occur in 2022

In 2030, which is the last year in our economic scenario, our projections point to an annual turnover of around DKK 600 million. We expect the company to reach breakeven in 2022 and thereafter we expect to see all industry segments showing significant growth and therefore rapidly growing net profits. Because of the company's tax carry forward of DKK 32 million, we do not expect the company to have any tax outlays until 2024, however the tax cost will have to be recognised on the income statement as the capitalised tax asset depreciates during 2022-24.

Table 2: Summary income statement

MDKK	2018	2019	2020e	2021e	2022e	2023e	2024e
Net turnover	6,5	11,8	4,2	31,9	81,5	152,5	205,9
Total revenues	6,5	13,6	4,2	32,5	82,3	153,5	207,3
COGS	(4,3)	(7,3)	(2,8)	(20,8)	(53,4)	(100,0)	(135,5)
Opex	(11,6)	(11,4)	(12,7)	(19,0)	(20,9)	(23,8)	(28,1)
EBITDA	(9,3)	(5,2)	(11,4)	(7,3)	8,0	29,7	43,7
Amortisation & Depreciation	(6,8)	(12,3)	(5,7)	(5,4)	(4,5)	(3,8)	(3,3)
EBIT	(16,1)	(17,5)	(17,1)	(12,6)	3,5	25,9	40,4
Net financial items	(2,9)	(3,8)	(4,3)	(0,5)	(0,2)	0,3	0,9
Taxes	4,2	4,4	4,3	2,9	(0,7)	(5,8)	(8,0)
Net profit	(14,8)	(16,9)	(17,1)	(10,3)	2,5	20,4	33,3

Source: Västra Hamnen Corporate Finance

How is the cash situation?

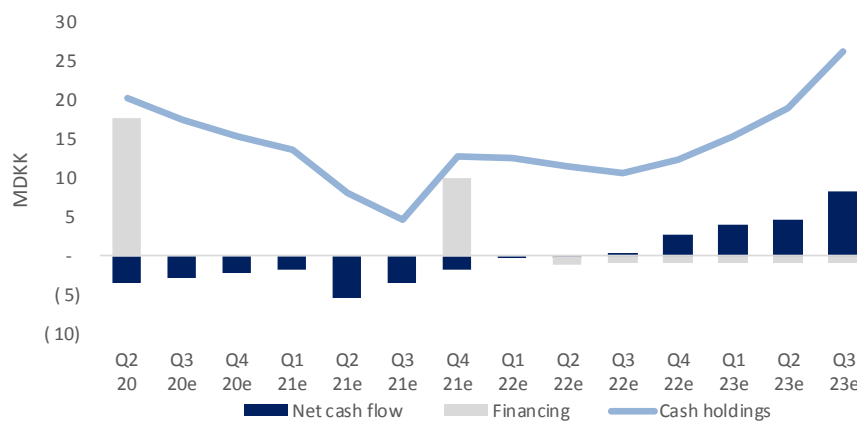
In the most recent financial report for Q2 2020, the company reported cash holdings of DKK 20.4 million. The cash reserve still benefits from the capital raised in connection with the IPO where the company added DKK 32.3 million in new equity. Some of the equity was converted from outstanding convertible debt, however. Therefore, the net financing from the IPO was roughly DKK 18 million. After Q3, we estimate the cash balance to be around DKK 17 million.

Possible capital injection in 2022

We have estimated the company to become cash flow positive in the middle of 2022. This is a little bit later than the company's own financial objective of achieving a positive cash flow from operations (after changes in working capital) in full-year 2021. However, we have

again chosen a conservative stance. Even though the organization is kept lean, the company will have to tie up working capital during the expansion phase and invest in capital expenditures. We see a risk that the current cash holdings may run out before cash flows turn positive. In our model we have therefore pencilled in a capital injection of DKK 10 million in Q4 2021 to make sure that the cash balance is kept positive. The timing, size and type of financing are all uncertain. The financing need could be covered in other ways than an equity issue, for example through debt financing or upfront payments from major customers. After the company becomes cash flow positive, we expect to see steadily increasing cash flows which can be reinvested or paid out as dividends to shareholders.

Figure 10: Cash flow and cash holdings



Source: Västra Hamnen Corporate Finance

What is fair value for the stock?

We apply two techniques to estimate fair value for the company. The first is a discounted cash flow (DCF) model based on the economic scenario described above and the second is a peer valuation. We perform the DCF valuation using two steps (see details in the appendix). In the first step, we estimate fair enterprise value assuming that the company survives until it reaches sustainable profitability. In the second step, we multiply this enterprise value with a risk coefficient, reflecting the probability of it reaching the profitable stage.

We apply a WACC of 16 percent

Since the risk coefficient adjusts for the risk of non-survival, we can apply a lower discount rate than would otherwise be the case. We have chosen to discount future cash flows by a weighted average cost of capital (WACC) rate of 16 percent. One could argue for a lower WACC since the company has a wide and diversified range of applications for its technology, a relatively asset light business model, and solid patent protection. However, even after reaching profitability, LED iBond will be a small company in a sector with rapid technological change and with industry giants operating in neighbouring segments. The company is also very dependent on a few key people and, as with all investment goods, its demand is heavily exposed to business cycles. By using a WACC of 16 percent we compensate for the risk and leave room for future valuation upgrades as the company demonstrates robustness to the risk factors.

The net present value of cash flows during the model's explicit period until 2030 sum up to DKK 186.0 million. To this we add a discounted terminal value of all cash flows from 2031 onward, assuming a growth rate of 2.5 percent in perpetuity. Together this implies a fair enterprise value of DKK 411.1 million before adjusting for survival risk.

Many young companies struggle to make it from the start-up and growth stages and into a stage of stable profitability. Many fail along the way. That is why we multiply the enterprise value by a coefficient that represents the chance of this particular company making it to the profitable stage. Over time we may revise this coefficient, and the closer the company comes to delivering sustainable profits, the higher the coefficient.

Considering LED iBond's present stage and our assessment of the risk, we regard 50 to 80 percent to be a reasonable probability range. We use these figures as multiples to risk adjust our estimated enterprise value. Our estimate of fair enterprise value is DKK 205.6 million using 50 percent risk weight and DKK 328.9 million using 80 percent weight.

DCF model yields fair value of DKK 16.60 – 26.30 per share

To go from fair enterprise value to fair market capitalisation we add the company's cash holdings and subtract all interest-bearing debt. We also subtract the market value of outstanding warrant programmes as they represent a liability for the company. This leaves us with a fair market valuation of the equity at DKK 210.3 million using 50 percent risk weight and DKK 333.6 million using a weight of 80 percent. **This is equivalent to a fair value per share of DKK 16.60 and 26.30, respectively.**

Table 3: DCF model assumptions

MDKK	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e
Total revenues	4,2	32,5	82,3	153,5	207,3	264,7	321,2	382,6
EBIT	(17,1)	(12,6)	3,5	25,9	40,4	55,0	70,0	87,0
EBIT margin	-409,9%	-38,9%	4,2%	16,8%	19,5%	20,8%	21,8%	22,7%
Adj. Taxes	-	-	-	-	(8,8)	(12,1)	(15,4)	(19,1)
NOPLAT (= EBIT - tax)	(17,1)	(12,6)	3,5	25,9	31,6	42,9	54,6	67,9
Plus: Profit/loss from affiliates	-	0,5	0,6	0,9	1,2	1,6	2,2	2,9
Depreciation	5,7	5,4	4,5	3,8	3,3	2,9	2,5	2,2
Capex + Working cap	(2,5)	(3,6)	(4,8)	(5,0)	(5,5)	(3,9)	(4,2)	(4,4)
Net cash flow	(13,9)	(10,4)	3,8	35,5	30,6	43,4	55,0	68,6

DCF (MDKK)

WACC	16,0%	16,0%
Enterprise value (EV)	411,1	411,1
Prob of profitability	50%	80%
Risk adjusted EV	205,6	328,9
Options	(0,5)	(0,5)
Net cash	5,2	5,2
Fair value market cap	210,3	333,6
Number of shares (M)	12,69	12,69
Fair value/share (DKK)	16,60	26,30

Sensitivity analysis (value per share, DKK)

		Prob of profitability			
		50%	60%	75%	80%
WACC	20%	11,10	13,30	16,50	17,50
	18%	13,40	16,00	20,00	21,30
	16%	16,60	19,80	24,70	26,30
	14%	21,00	25,10	31,30	33,30
	12%	27,50	32,90	41,00	43,70

Source: Västra Hamnen Corporate Finance

We have also performed a so-called peer valuation, meaning a valuation based on what values the market assigns to comparable companies. The difficulty in comparing young companies against one another is that they often lack profits, and sometimes even revenues, to use as scaling parameters for comparison. In the case of LED iBond, it is also difficult to find listed companies with a comparable business orientation.

We have chosen to compare its valuation against European and North American listed companies in the same industry subsector, electrical products, see Table 4 below. Many of the companies in this subsector have yet to advance from a growth stage to a stage of sustainable profits but we have selected a handful of companies with stable profits, EBITDA-margin between 25 and 35 percent and representative key figure valuations. The comparison with LED iBond is far from perfect but it serves as a helpful reality check on our DCF valuation when we compare these peers with a discounted future version of LED iBond. We have chosen to zoom in on the year 2025, when LED iBond according to our model enters a somewhat more stable growth path, while delivering a profit of DKK 44.1 million on a revenue of DKK 264.7 million.

Peer valuation suggests DKK 15.60 – 33.20 per share

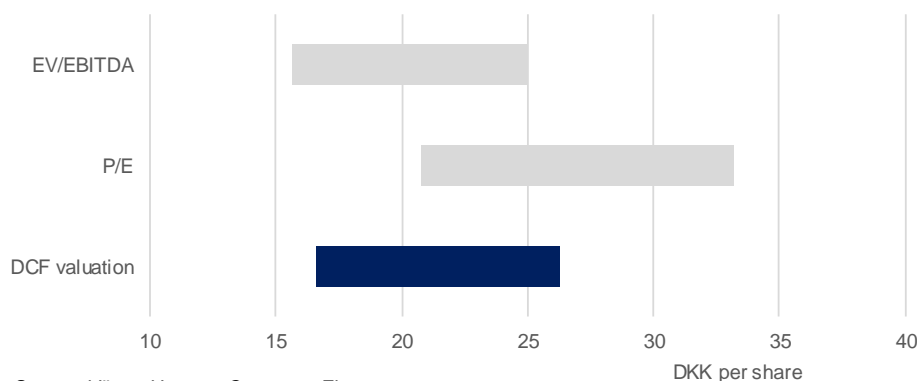
We have taken the average profit multiples of the peer group and applied them to LED iBond's estimated profits in 2025, discounted the resulting company valuation to the present, and finally applied the two risk coefficients 50 and 80 percent as in the DCF model. **In summary, the peer analysis suggests a fair value of between DKK 20.80 and 33.20 per share using P/E and between DKK 15.60 and 25.00 based on EV/EBITDA.**

Table 4: Peer analysis

MDKK	Market cap	Net profit T12M	P/E	Enterprise value (EV)	EBITDA	Sales	EV/EBITDA	EV/sales
LED iBond International A/S	189,1	(18,0)	neg	172,1	(7,9)	8,3	neg	20,8
AMETEK, Inc. (US)	155 963,7	5 745,4	26,6	169 362,2	1 411,4	34 411,1	17,9x	4,9
Cembre S.p.A. (IT)	2 137,8	161,9	18,5	2 957,0	37,0	1 092,3	10,7x	2,7
Legrand SA (FR)	138 193,7	6 232,8	23,2	164 649,1	12 684,3	49 443,2	13,0x	3,3
OJSC Turboatom (UA)	940,1	81,2	14,1	1 248,2	189,7	729,4	6,1x	1,6
Average			20,9x				11,8x	
LED iBond 2025e		44,1			57,8	264,7		
Fair value per share, DKK				20,80 - 33,20				15,60 - 25,00

Source: Factset, Västra Hamnen Corporate Finance

Figure 11: Football field - P/E, DCF, EV/EBITDA



Source: Västra Hamnen Corporate Finance

What is behind the numbers?

In our research we try to look beyond the reported numbers to see if the company uses accounting methods, or reports items off the income statement or balance sheet, that could impact our interpretation of its official figures. The underlying economics of the company could be stronger or weaker than they appear at first glance and this could be important for our valuation.

A thing to note is that the LED iBond group has three individual owners that each own between 2 and 4 percent of the company, who also have substantial ownership interests in the spin-offs LED VirusKill A/S and LED Aviation A/S. Their ownership interest is even bigger in the spin-offs than in the LED iBond group. Since the spin-offs have a customer relationship with LED iBond, this could give rise to a conflict of interest. However, none of the three owners hold executive roles or board positions in LED iBond and neither are assumed to influence the group's operations, hence the conflict of interest should be negligible.

Warrants could cause minor dilution

Another point to note is that there is an outstanding warrant program related to an incentive programme for key employees. When fully vested, the programme entitles the holders to subscribe for 329 380 shares at a strike price of DKK 16.85 per share. This would constitute a dilution of existing shares by 2.5 percent. The warrants are currently out of the money and we have accounted for the potential dilution in our valuation by treating the current market value of the warrants as a liability for the company.

The company will in the future enjoy the benefit of having accrued tax losses that could be carried forward and reduce cash taxes during the first few years of profits. We estimate that the accrued tax losses sum up to DKK 32 million with a tax rate of 22 percent. A deferred tax asset of DKK 7 million has been capitalised on the balance sheet, so on the income statement, the company would have to recognise the full burden of the tax cost from the first year of profits. Finally, we note that the company had a total of DKK 27.6 million in intangible assets on the balance sheet at the end of Q2 2020. Companies usually have a choice of capitalising or expensing investments in intangibles, and the more conservative choice is to expense as much as possible. By capitalising, the company has merely postponed recognition of the cost which will eventually show up as depreciation.

What could go wrong?

COVID-19 is a wildcard

A major uncertainty for any company right now, not least companies on the verge of commercial breakthrough, is the fallout from the COVID-19 crisis. The pandemic on the one hand enhances interest in LED iBond's UV-C disinfection solutions, but on the other it holds back the company's sales activities due to travel restrictions. We still cannot say how deep and long the recession is going to be and how much it will dampen investment demand.

Financial risk until positive cash flows

We believe that there is a financing risk in the company. The company has announced a financial objective of reaching positive cash flow from operations in 2021. If it should fail to reach that target, additional financing might be needed. A rights issue will most likely have a negative effect on the share price through dilution. In addition, if the company's sales expansion takes longer time than expected, it might require a more substantial round of financing which could affect the share price considerably.

Business model implies dependency on others

There is a risk that the development taking place in the spin-offs takes longer time than expected and there is also uncertainty about whether the development partners fulfil their commitments. Since LED iBond is a small organisation it might be hard to oversee everything that goes on in the development projects. Also, if the corona crisis continues for a long time, there is a risk that the development partners will cut back on costs which might affect the resources being allocated in the joint development projects.

The company relies on third party developers to adapt their IoT solutions to be compatible with LED iBond's hardware. This is a cost-effective business model but also involves the risk of not having the right applications in order to attract new customers, and there is a risk that the IoT development might not pick up in the near future, which could negatively affect the probability of reaching the company's financial targets.

Technical progress could erode competitive advantage

For any given company, the risk of competition is always present, and LED iBond is no exception. However, the company has positioned itself at a point in between lighting and technology, which might help from a competitive standpoint. The technology platform is patent protected, but there could be breakthroughs in the LED lighting development that leads to LED products with significantly lower heat generation. This could erode the technical lead that the company currently enjoys from a superior cooling technique.

Dependent on key personnel

Finally, the company runs a small and efficient organization. This comes with a dependency on key employees, and a loss of a key employees has the power to disturb the progress of the company. In particular, the company is reliant on CEO Rolf H. Sprunk-Jansen and CTO Lars Frederiksen, whose departure would constitute a serious setback for the company. LED iBond is not very dependent on any particular supplier as LED units, power supplies and aluminium structures can all be sourced from a number of suppliers in similar qualities. However, the company is exposed to general price fluctuations in the market for LED components and aluminium since it might take time to transfer such price changes unto the final customers.

Coming events

LED iBond became a publicly traded company in June this year and has since then announced a steady stream of news regarding both new orders and development upgrades. Going forward, we believe that there is ample potential for a continued news flow.

Given the still raging COVID-19 pandemic, interest in UV-C disinfection is high and this could affect LED iBond in the near term. The puriZAP product can be easily administered to disinfect objects in public areas. We would not be surprised to see orders or major partnerships relating to this product.

The pandemic also puts urgency on airports to implement disinfection systems, which LED iBond will supply under LED Aviation's partnership with Vanderlande. In Q4, the company is set to start supplying Vanderlande with UV-C LED-based disinfection systems. When the first such systems are delivered, we expect it to be announced by the company. Subsequent orders could likewise follow in its wake.

The company recently announced a new strategic partnership with Senmatic for jointly developing vertical farming shelves based on LED iBond's patented lighting fixtures. The joint vertical farming offering is set to be launched at the end of Q4, and announcements of orders could follow shortly thereafter.

The company is operating in several industry segments and many of these business areas are in continuous development. The business model is also very responsive and flexible. This could result in announcements of new partnerships or OEM agreements, new spin-offs to develop additional market segments or new product designs, integration of new applications, or additional software upgrades.

Financial calendar

23 Nov 2020	Q3 report 2020
22 Mar 2020	Annual report 2020
26 Apr 2020	Annual general meeting

Appendix: Valuation method

Companies in an early stage usually report negative net profits and may have many years left until they turn a profit. Sometimes they even have years until their first significant sales revenues. The difficulty in valuing growth companies with limited historical records is that the valuation rests on uncertain estimates of future earnings; more uncertain than for companies with years of stable profits on record. There is little in terms of historical figures on which to base estimates of future revenues, future profit margins and other items.

To handle these challenges, we choose to follow a generally accepted method for valuing growth companies described by finance professor Aswath Damodaran¹⁾ among others. Instead of scaling the discount rate (WACC) to account for all the risks and uncertainties associated with a young company, we use a two-stage valuation approach:

- First, we estimate fair enterprise value under the explicit assumption that the company survives until its first year of sustainable profits. We use a WACC commensurate with the circumstances of the company once it reaches profitability.
- Second, we adjust the estimated enterprise value by multiplying with a probability factor reflecting the likelihood that the company survives.

With each passing period after the initial valuation, the probability factor may be adjusted based on the company's development and our updated assessment of its chances of survival.

1) **Damodaran, Aswath**, "Valuing Young, Start-up and Growth Companies: Estimation Issues and Valuation Challenges", Stern School of Business, New York University, May 2009

Income Statement - Annual Data

kDKK	2018	2019	2020e	2021e	2022e	2023e	2024e	2025e
Net turnover	6 549	11 788	4 172	31 942	81 522	152 457	205 910	262 798
Other operating income	-	1 782	-	563	766	1 043	1 418	1 930
Total revenues	6 549	13 570	4 172	32 505	82 288	153 499	207 328	264 727
Cost of goods sold	(4 253)	(7 318)	(2 813)	(20 799)	(53 390)	(100 005)	(135 550)	(173 525)
Gross profit	2 296	6 252	1 359	11 706	28 898	53 495	71 779	91 202
Staff costs	(6 553)	(6 416)	(7 138)	(10 652)	(11 728)	(13 345)	(15 753)	(18 722)
Other external costs	(5 001)	(5 007)	(5 597)	(8 340)	(9 183)	(10 449)	(12 335)	(14 659)
EBITDA	(9 258)	(5 170)	(11 376)	(7 286)	7 987	29 700	43 691	57 820
Amortisation & depreciation	(6 798)	(12 312)	(5 727)	(5 355)	(4 523)	(3 848)	(3 300)	(2 856)
EBIT	(16 056)	(17 482)	(17 103)	(12 641)	3 464	25 852	40 391	54 965
Net financial items	(2 895)	(3 757)	(4 269)	(521)	(234)	312	940	1 577
EBT	(18 952)	(21 239)	(21 372)	(13 162)	3 229	26 164	41 332	56 542
Taxes	4 194	4 377	4 292	2 896	(710)	(5 756)	(8 014)	(12 439)
Net profit	(14 757)	(16 861)	(17 081)	(10 266)	2 519	20 408	33 317	44 102
Earnings per share (DKK)	n.a.	n.a.	(1,70)	(0,77)	0,25	1,68	2,72	3,60
Growth (%)								
Net turnover	na	80,0%	-64,6%	665,6%	155,2%	87,0%	35,1%	27,6%
EBITDA	na	na	na	na	na	271,9%	47,1%	32,3%
EBIT	na	na	na	na	na	646,4%	56,2%	36,1%
Net profit	na	na	na	na	na	710,2%	63,3%	32,4%
% of revenues (%)								
Gross margin	35,1%	37,9%	32,6%	34,9%	34,5%	34,4%	34,2%	34,0%
EBITDA margin	neg	neg	neg	neg	9,7%	19,3%	21,1%	21,8%
EBIT margin	neg	neg	neg	neg	4,2%	16,8%	19,5%	20,8%
EBT margin	neg	neg	neg	neg	3,9%	17,0%	19,9%	21,4%
Profit margin	neg	neg	neg	neg	3,1%	13,3%	16,1%	16,7%
Personnel costs	100,1%	54,4%	171,1%	33,3%	14,4%	8,8%	7,7%	7,1%
Total OPEX	176,4%	96,9%	305,2%	59,5%	25,7%	15,6%	13,6%	12,7%
Profitability (%)								
ROE	neg	neg	neg	neg	5,4%	30,2%	32,7%	29,9%
ROIC	neg	neg	neg	neg	3,2%	24,3%	34,5%	40,3%
ROCE	neg	neg	neg	neg	4,9%	27,7%	30,5%	29,0%

Source: Västra Hamnen Corporate Finance

Balance Sheet - Annual Data

kDKK	2018	2019	2020e	2021e	2022e	2023e	2024e	2025e
Cash and cash eq	12 999	6 356	15 318	12 775	12 366	33 560	67 936	110 509
Inventory	7 066	4 564	12 011	25 821	20 646	18 526	24 774	30 665
Accounts receivables	802	817	921	8 484	18 935	28 207	37 588	46 421
Deferred tax assets	4 143	6 179	9 147	11 941	11 968	7 185	-	-
Receivables corporate tax	2 458	2 342	750	-	-	-	-	-
Accrued income and deferrrec	393	615	420	2 903	2 880	2 145	2 858	3 530
Other receivables	1 134	308	450	4 131	5 162	4 632	6 194	7 666
Total current assets	28 995	21 181	39 017	66 055	71 957	94 255	139 349	198 791
Tangible assets	9 109	7 718	7 196	7 466	7 710	7 930	8 130	8 310
Intangible assets	28 189	28 872	24 935	20 310	16 543	13 474	10 975	8 939
Financial assets	186	252	922	922	922	922	922	922
Total fixed assets	37 484	36 843	33 053	28 698	25 174	22 326	20 026	18 171
Total assets	66 480	58 023	72 070	94 752	97 131	116 581	159 376	216 962
Short-term part of LT debt	959	1 300	1 229	1 229	929	529	129	-
Bank debts	1	1	-	-	-	-	-	-
Accounts payable	2 715	4 159	10 885	24 030	23 743	27 789	37 161	45 997
Other liabilities	6 048	2 997	4 795	14 137	16 956	15 496	18 839	23 318
Total current liabilities	9 723	8 457	16 908	39 396	41 627	43 814	56 129	69 315
Long-term liabilities	37 157	16 910	12 285	12 285	9 285	5 285	1 285	-
Total equity	19 600	32 656	42 876	43 072	46 219	67 482	101 962	147 647
Total equity and liabilities	66 480	58 023	72 070	94 752	97 131	116 581	159 376	216 962

Source: Västra Hamnen Corporate Finance

Cash flow statement

kDKK	2018	2019e	2020e	2021e	2022e	2023e	2024e	2025e
Operating CF ex chg in WC	-	-	(8 717)	(4 449)	7 670	25 111	37 780	48 540
Changes in working capital	-	-	3 249	(7 094)	(4 080)	1 083	1 596	(3 682)
Investing activities	-	-	(3 161)	(1 000)	(1 000)	(1 000)	(1 000)	(1 000)
Financing activities	-	-	17 610	10 000	(3 000)	(4 000)	(4 000)	(1 285)
Cash flow for the period	-	-	8 980	(2 543)	(409)	21 194	34 376	42 573
Beginning cash balance	-	-	-	8 980	6 437	6 028	27 222	61 598
Adjustments	-	-	-	-	-	-	-	-
Ending cash balance	-	-	8 980	6 437	6 028	27 222	61 598	104 171

Source: Västra Hamnen Corporate Finance

Income Statement - Quarterly Data

kDKK	Q2 2020	Q3 2020e	Q4 2020e	Q1 2021e	Q2 2021e	Q3 2021e	Q4 2021e	Q1 2022e
Net turnover	354	750	1 050	6 730	7 268	8 268	9 677	13 692
Other operating income	-	-	-	125	135	146	157	170
Total revenues	354	750	1 050	6 855	7 403	8 413	9 834	13 862
Cost of goods sold	(386)	(500)	(685)	(4 399)	(4 739)	(5 379)	(6 283)	(8 981)
Gross profit	(32)	250	365	2 457	2 663	3 035	3 551	4 882
Staff costs	(1 947)	(1 835)	(1 909)	(2 631)	(2 646)	(2 671)	(2 703)	(2 815)
Other external costs	(1 474)	(1 437)	(1 494)	(2 060)	(2 072)	(2 092)	(2 117)	(2 204)
EBITDA	(3 453)	(3 022)	(3 038)	(2 235)	(2 054)	(1 728)	(1 269)	(138)
Amortisation & depreciation	(2 679)	(1 558)	(1 490)	(1 427)	(1 366)	(1 309)	(1 254)	(1 202)
EBIT	(6 132)	(4 580)	(4 528)	(3 662)	(3 420)	(3 037)	(2 523)	(1 340)
Net financial items	(3 778)	(246)	(246)	(143)	(135)	(126)	(117)	(106)
EBT	(9 910)	(4 825)	(4 774)	(3 805)	(3 555)	(3 163)	(2 639)	(1 447)
Taxes	2 180	1 062	1 050	837	782	696	581	318
Net profit	(7 730)	(3 764)	(3 724)	(2 968)	(2 773)	(2 467)	(2 059)	(1 128)
Earnings per share (DKK)	(0,86)	(0,30)	(0,29)	(0,23)	(0,21)	(0,18)	(0,15)	(0,08)
Y-o-Y Growth (%)								
Net turnover	(88,0%)	(74,6%)	(64,4%)	233,5%	1953,0%	1002,4%	821,6%	103,5%
EBITDA	na	na	na	na	na	na	na	na
EBIT	na	na	na	na	na	na	na	na
Net profit	na	na	na	na	na	na	na	na
% of revenues (%)								
Gross margin	-9,0%	33,3%	34,8%	34,6%	34,8%	34,9%	35,1%	34,4%
EBITDA margin	neg	neg	neg	neg	neg	neg	neg	neg
EBIT margin	neg	neg	neg	neg	neg	neg	neg	neg
EBT margin	neg	neg	neg	neg	neg	neg	neg	neg
Profit margin	neg	neg	neg	neg	neg	neg	neg	neg
Personnel costs	550,0%	244,7%	181,8%	39,1%	36,4%	32,3%	27,9%	20,6%
Total OPEX	966,4%	436,3%	324,1%	69,7%	64,9%	57,6%	49,8%	36,7%
Profitability (%)								
ROE	neg	neg	neg	neg	neg	neg	neg	neg
ROIC	neg	neg	neg	neg	neg	neg	neg	neg
ROCE	neg	neg	neg	neg	neg	neg	neg	neg

Source: Västra Hamnen Corporate Finance

Balance Sheet - Quarterly Data

kDKK	Q2 2020	Q3 2020e	Q4 2020e	Q1 2021e	Q2 2021e	Q3 2021e	Q4 2021e	Q1 2022e
Cash and cash eq	20 383	17 462	15 318	13 589	8 151	4 659	12 775	12 623
Inventory	4 795	9 315	12 011	22 173	23 372	23 577	25 821	17 224
Accounts receivables	9	658	921	5 900	6 372	7 248	8 484	9 003
Deferred tax assets	7 035	8 097	9 147	9 961	10 719	11 389	11 941	12 229
Receivables corporate tax	2 373	1 500	750	-	-	-	-	-
Accrued income and deferrec	295	375	420	2 019	2 180	2 480	2 903	2 054
Other receivables	301	384	450	2 892	3 116	3 537	4 131	2 953
Total current assets	35 191	37 790	39 017	56 535	53 910	52 890	66 055	56 085
Tangible assets	7 050	7 124	7 196	7 266	7 334	7 401	7 466	7 529
Intangible assets	27 629	26 248	24 935	23 688	22 504	21 379	20 310	19 294
Financial assets	922	922	922	922	922	922	922	922
Total fixed assets	35 601	34 293	33 053	31 876	30 760	29 702	28 698	27 745
Total assets	70 792	72 083	72 070	88 411	84 670	82 591	94 752	83 831
Short-term part of LT debt	2 048	1 229	1 229	1 229	1 229	1 229	1 229	1 229
Bank debts	-	-	-	-	-	-	-	-
Accounts payable	4 205	8 219	10 885	21 691	20 775	20 630	24 030	14 763
Other liabilities	1 890	3 750	4 795	13 196	13 033	13 446	14 137	13 471
Total current liabilities	8 143	13 198	16 908	36 115	35 037	35 305	39 396	29 463
Long-term liabilities	12 285	12 285	12 285	12 285	12 285	12 285	12 285	12 285
Total equity	50 364	46 600	42 876	40 011	37 349	35 001	43 072	42 083
Total equity and liabilities	70 792	72 083	72 070	88 411	84 670	82 591	94 752	83 831

Source: Västra Hamnen Corporate Finance

Cash flow statement

kDKK	Q2 2020	Q3 2020e	Q4 2020e	Q1 2021e	Q2 2021e	Q3 2021e	Q4 2021e	Q1 2022e
Operating CF ex chg in WC	(4 278)	(2 206)	(2 233)	(1 439)	(1 296)	(1 039)	(676)	213
Changes in working capital	3 374	(465)	340	(40)	(3 892)	(2 203)	(958)	(115)
Investing activities	(2 661)	(250)	(250)	(250)	(250)	(250)	(250)	(250)
Financing activities	17 610	-	-	-	-	-	10 000	-
Cash flow for the period	14 045	(2 921)	(2 144)	(1 729)	(5 438)	(3 492)	8 117	(152)
Beginning cash balance	6 338	20 383	17 462	15 318	13 589	8 151	4 659	12 775
Adjustments	-	-	-	-	-	-	-	-
Ending cash balance	20 383	17 462	15 318	13 589	8 151	4 659	12 775	12 623

Source: Västra Hamnen Corporate Finance

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