THORN
LIGHTING PEOPLE

Energy Savings: 82%

CO_2 Savings: 100 tonnes/yr

Case Study

Abeking & Rasmussen Shipyard, Germany

Lighting partnership with famous German shipyard delivers energy savings and more

Germany's famous Abeking & Rasmussen shipyard was founded in 1907 and has developed a global reputation for the highest quality custom-made motor yachts. A world-class manufacturing facility, it currently consists of five ship production halls, environmentally friendly workshops, modern office buildings, an inner harbour and a ship lift.

In 2012, Abeking & Rasmussen approached Thorn because the company wanted to refurbish some of its ageing lighting installations.

Lighting objectives

Improving energy efficiency to reduce energy consumption and carbon emissions was Abeking & Rasmussen's key objective. Another important objective was to improve the quality of the lighting to maintain excellent working conditions for staff.

Following a successful initial presentation by Thorn to Abeking & Rasmussen about its competences in energy efficiency lighting, Thorn went on to do an energy audit together with the chosen installer, Dieter Bunke, of the entire shipyard. The results of this audit were transferred into a master plan and highlighted many potential areas for savings as well as several priority areas for substantial energy efficiency gains.

A partnership approach to lighting

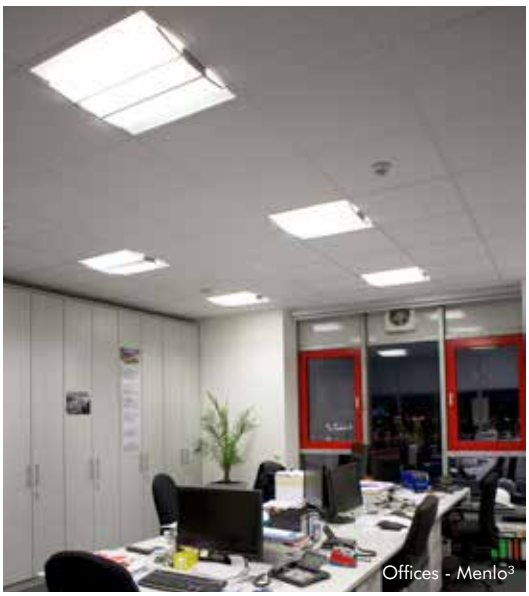
Thorn has since become Abeking & Rasmussen's preferred lighting partner and works flexibly with the shipyard and its chosen partners, on an individual subproject basis. This includes projects sourced through a tendering process, and others that are procured through the installer as well as directly with Abeking & Rasmussen.

Importantly, since Dieter Bunke started working with Thorn in conjunction with Abeking & Rasmussen he decided to join the Thorn Energy Partnership to become a dedicated Thorn Energy Partner. This has ensured he receives expert training in energy efficient lighting to keep ahead with technology advances and ensure best practice. It also reflects his commitment to providing the very best energy efficient lighting.

Business Initiatives Manager at Thorn, Wolfgang Bernecker, explains: "The refurbishment of an industrial site is quite challenging and involves dealing with several business models. In some cases lighting is only one element of the activity. In these situations luminaires are part of a general tender process and the specifier needs the correct input. As a consequence, such a partnership needs open minded flexibility as well as a consistent approach based on a database of installed solutions, an individual master plan and a clear understanding of requests."


Before


After



Lighting solutions
Covering an area of 6 500 m², the lighting refurbishment of Abeking & Rasmussen's shipyard to date has included several ship production halls, the ship lift and the offices. The industrial areas contained a mix of low pressure sodium lamps up to 400W and HIT lamps up to 250W. The office area contained mainly products using T8 lamps and finally the outdoor lanterns were employing 125W Mercury.

The office areas were one of the first refurbishment installations to be completed in 2013. Menlo³ was chosen because of its design for office environments with outstanding photometric performance for comfort. Menlo³'s design aesthetics also reflected the company's modern state-of-the-art identity while representing good value for money.

In the industrial areas the high bay HiPak Pro LED luminaire was installed throughout 2013/2014. HiPak Pro LED was chosen for its exceptional system efficacy (93 Llm/W) and great control options. The product also allows staff to immediately increase or decrease the lighting levels as required.

Hall H2, the first ship production hall to have a complete before and after picture in terms of measurement, shows an actual energy cost reduction of 82%. Light output has also increased from 240 lux to 300 lux. Similar results are expected in the other halls.

Most recently, for the outdoor areas and shipping lift, Isaro LED was installed due to its excellent system efficacy (83 Llm/W) and elimination of upward light (ULOR=0) to prevent light pollution and obtrusive light.

Abeking & Rasmussen was also impressed with Isaro LED's adjustable tilting (-20° to +10°), which enabled the existing columns to be utilised and made the refurbishment easy. For maximum energy efficiency, several control options were also deployed for these areas.

In the lighting master plan the parameters and algorithms for a controls solution have been defined. The realisation employs the DALI protocol and is solved via KNX, which is used as the general installation standard throughout the whole facility. The lighting master plan includes scene plates, daylight control, constant light output as well as failure and energy management. The 15 icons approach of the Thorn Energy Partnership program is the ideal foundation to connect the high end lighting solution with the preferred installation control standard and therefore making the installation easier for all parties involved.

eControl From Thorn's 15 ways to save energy, the following are key to minimising energy consumption at Abeking & Rasmussen shipping yard:

System efficacy
The use of high efficacy LED light sources combined with precision optics results in a high system efficacy, producing maximum light output for minimum energy input.

Maintenance schedule
Measuring the maintenance factor in the industrial sites and taking into account the maintenance schedule have made energy savings of 35%. We demonstrated that an initially regular luminaire service every two years which moves to an annual cycle in the later stage of the lifetime to allow for cleaning and exchange of defect drivers will dramatically reduce the initial required illumination. This in turn delivers running and investment cost savings.

Daylight
There are high levels of natural daylight in the industrial areas. By taking daylight into account using Thorn's daylightCalc software a 31% energy reduction has been achieved. Measuring real-time lighting values underlined the importance of using daylight lighting controls.

Timed off
Defining timed off scenarios for various zones has resulted in a 14% energy reduction. The occupancy levels at different sites vary depending on what stage the yacht build is in. There are also times when the engineers need to work overtime. During these times the lighting can now be turned on only in the specific area where it is required. As LED lighting responds immediately, a scene plate to adapt to local lighting requirements has been installed.

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Results and benefits

What does the customer say?

Chief Financial Officer of Abeking & Rasmussen, Dr. Erich Bischoff, says: "Working with Thorn was a good step forward. Thorn shows the right level of interest in our manufacturing processes and has the skills and breadth to create a continuous improvement process. This has led to a real partnership."

"Although the main reason for kicking-off of these projects was to save energy and carbon emissions, we have a major secondary result of the lighting solution giving our people the right environment to build our high quality yachts. Our people have noticed a marked improvement in the quality of light they are working under and are really happy with the results."

What does the installer say?

Dieter Bunke, Senior Electrician, Installer and Thorn Energy Partner, says:"The collaboration with Thorn and Abeking & Rasmussen is excellent. By partnering with Thorn we were able to develop a lighting solution that is at the highest level for our customer."

"In addition, Thorn supports us with control parameters and the implementation of a maintenance plan. This creates an extremely economical solution in the short-term and importantly, ensures long-term lighting performance."

"Since working with Thorn we have joined the Thorn Energy Partnership and become Thorn Energy Partners. We receive regular training and are now recognised experts in energy efficient lighting."

What does Thorn say?

Thorn Energy Partnership and Business Initiatives Manager, Wolfgang Bernecker, says: "This project is an excellent example of how we work in partnership with our customers. Being Abeking & Rasmussen's preferred lighting partners means we have developed a great understanding of their business, which benefits us all."

"Of course, over the years we have come up against challenges but when you work in a long-term partnership, you're running a marathon. You have to deal with the challenges and enjoy the great moments. The true value of our relationship with Abeking & Rasmussen actually comes into play when we deal with and solve challenges together. This is very satisfying. We're still running our marathon so have many more miles to carefully and successfully manage."

Products used

HiPak Pro LED

Isaro LED

Menlo^3

Key facts

- Energy saving: **82%**
- CO_2 saving per annum: **100 tonnes**
- Lux levels increased from 240 lux to **300 lux**
- Installer joined: **Thorn Energy Partnership**

Industrial areas - HiPak Pro LED

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