

LELY L4C

Controlled lighting system



Improved wellbeing for cows and farmers
plus increased milk production



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innovators in agriculture



Lely L4C – Light for Cows: optimal light control and distribution

Lely L4C – Light for Cows, is much more than just a number of lights to light your barn; it is an altogether different approach to barn lighting. This new system – the first of its kind – has been developed to ensure optimum light distribution in the barn, using specially designed lamp units. Due to the unique fact that each lamp unit has its own node box, connected to a network, the individual lights have their own lighting programme according to their place in the barn. Thus, the system ensures optimum light levels throughout the barn while keeping energy consumption as low as possible.

The influence of light on milk production

Proper lighting in barns ensures optimum cow performance. It has been proved that proper lighting inside the barn – including an optimal time schedule – may increase milk production by 6 to 10%.

How does this work?

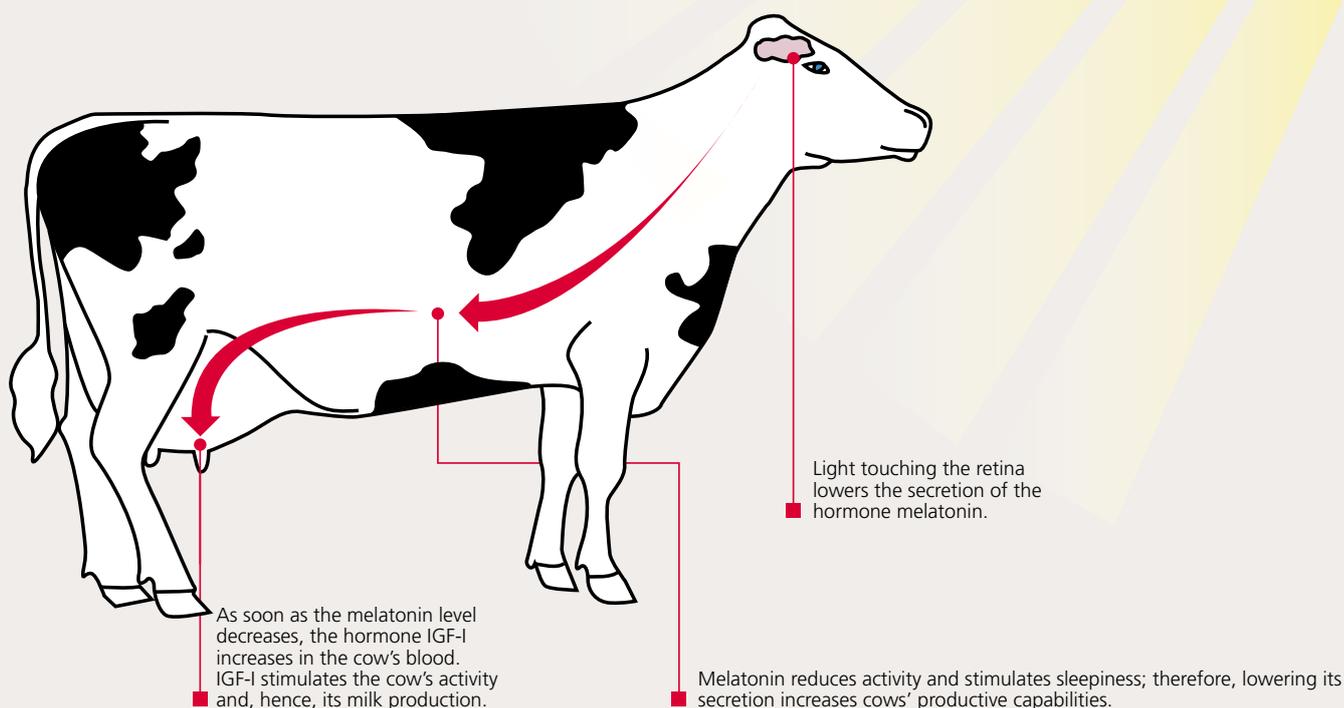
Cows are sensitive animals and their day-and-night rhythm is of paramount importance. Particular light levels are necessary to impact the difference between the night-and-day rhythms on the cow's body. A carefully planned lighting scenario will provide sufficient light to the cows in daytime and ensure a (dark) resting period as well.

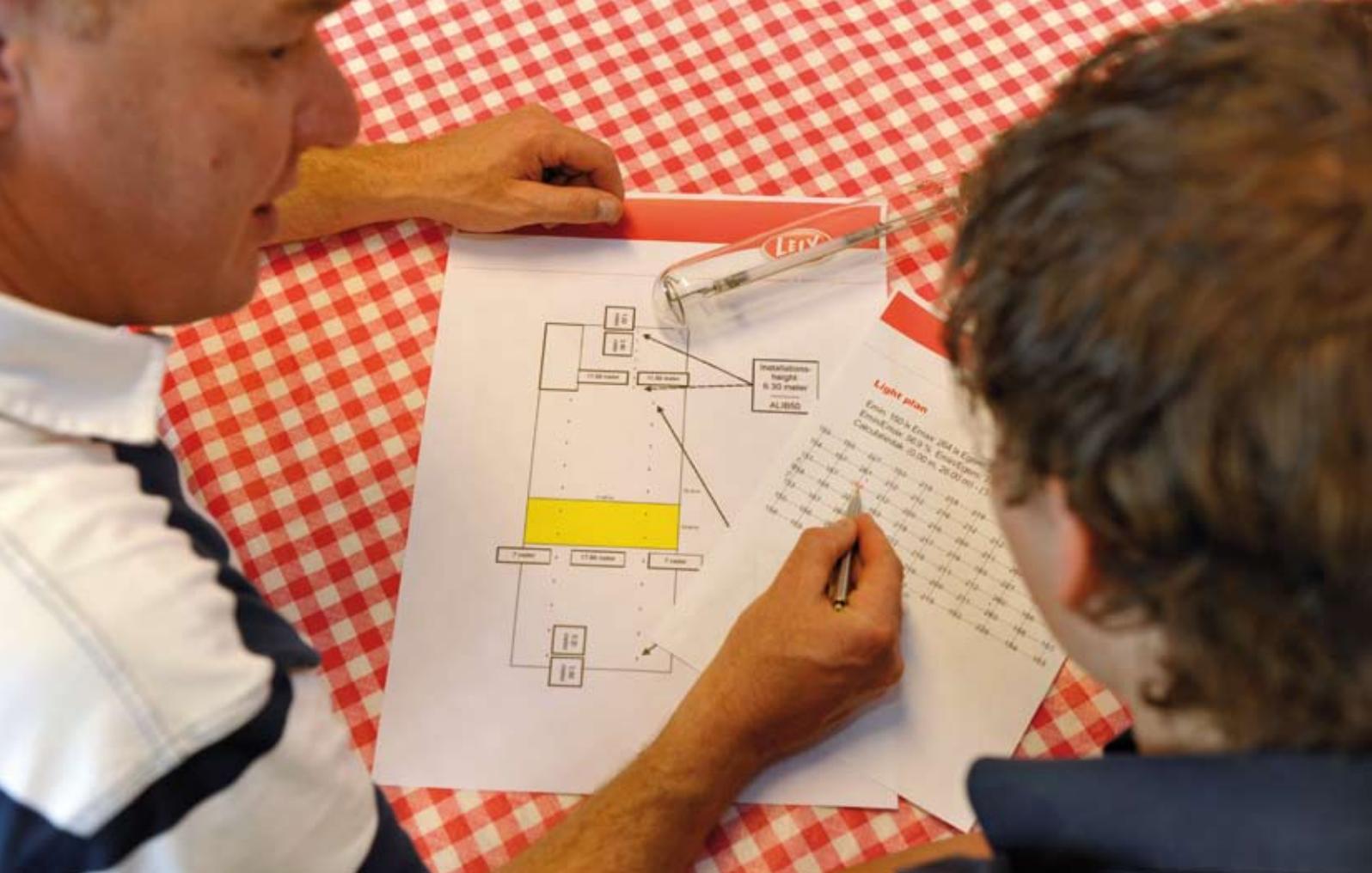
Outside, in daytime, as soon as a certain light level reaches the retina, the cow's nerves will send a signal to the hypophysis in the brain to lower the

secretion of the hormone melatonin. This hormone results in sleepiness, increases the percentage of body fats, and disturbs the animal's productive capabilities. When the melatonin level decreases, another hormone, viz. IGF-I, increases in the animal's blood. The function of the IGF-I hormone is to stimulate animal activity and, hence, its milk production. Therefore, more light means an increase of milk production.

In barns there is usually not enough light, especially in winter time, to reach a natural light level. With correct lighting control, cows benefit most from a light intensity between 150 and 200 lux during a 16 hour period, combined with an 8 hour dark period. In the summer season, the natural light level may often be sufficient in itself, although lighting control may – even in summer time – provide benefits on cloudy, darker days.

How light stimulates the milk production.





Lely L4C makes light and bright barns available for dairy farmers

“Thanks to the option of a pre-calculated lighting programme, we are able to supply a fully custom-made lighting plan that is totally geared to the dairy farmer’s needs. And... with just a few steps”.

For many years, research has been conducted into the actual influence of light on the wellbeing of cows and their milk production. An important part of this research focused on lighting of barns. It became perfectly clear that modern barns are much more open and that lighting facilities have been dramatically increased. A good example of this evolution is the greenhouse barn, a type of cow barn that has been increasingly built over the past few years.

On the other hand, many modern barns which can still be used for many years to come often are

very dark and badly lit. Even for progressive dairy farmers, lighting alone is not sufficient reason to invest in a new barn. Now, with its L4C – Light for Cows – package, Lely offers a highly affordable option to ensure cows can benefit from the lighting conditions that are standard for most of today’s state-of-the-art barns. And there is more to this excellent option: L4C is a controlled barn lighting system, which also provides the facility of an advanced and custom-made lighting plan.

Lely L4C includes an advanced, custom-made lighting plan

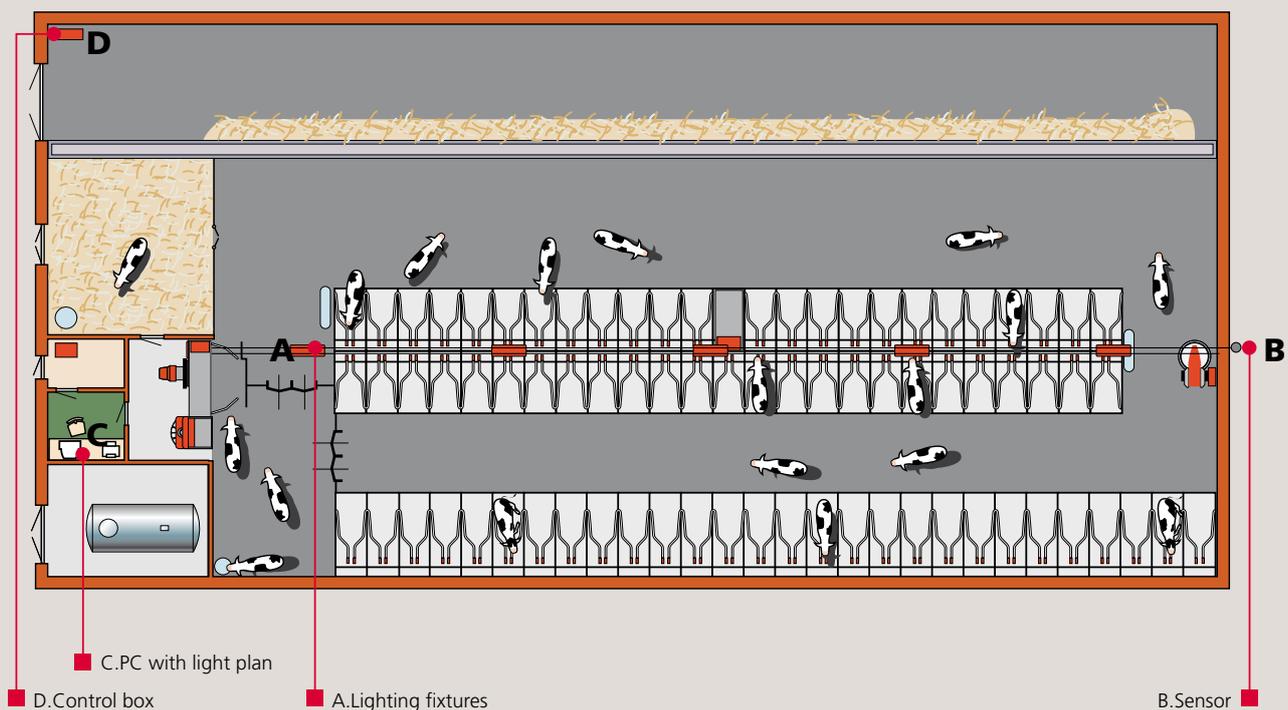
Thanks to the facility of a custom-made lighting plan, L4C makes it possible to define the optimum number of lamp units prior to the installation plus there are various options to meet all individual needs of the dairy farmer.

Within a network, each lamp unit has its own node box and its own IP address. Consequently, lighting can be controlled not only from a control box, but also via the PC. The L4C network includes a smart facility making it possible to install the lights according to an individual or grouped lighting programme.

During dusk and dawn periods, not all lights need to burn in order to achieve a well-balanced light level in the barn. A light sensor ensures that lighting is only switched on when the outside light level is such that light levels in the barn become too low. Over time, this reduces energy costs as not all lights will be switched on.

Within the L4C software programme, installation can be easily adapted while in addition the burning hours per light can be easily checked and controlled. This makes it possible to set up an efficient and comprehensive bulb replacement programme, which is cheaper and less time-consuming than replacing bulbs one at the time.

Plan of a barn with a Lely L4C lighting system.



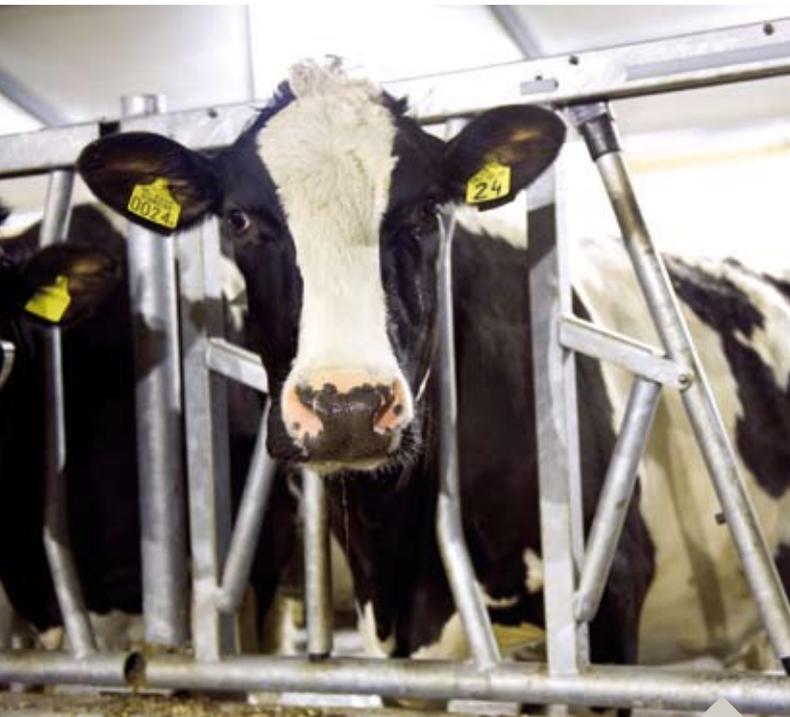
Lely L4C provides lamps for every situation

A minimum of 150 lux* is needed to ensure optimal cow performance. Within the L4C programme this level can be reached through two different options: **1** metal halide lamps or **2** high pressure sodium lamps. In both types of lamp units, 400W lights are used.

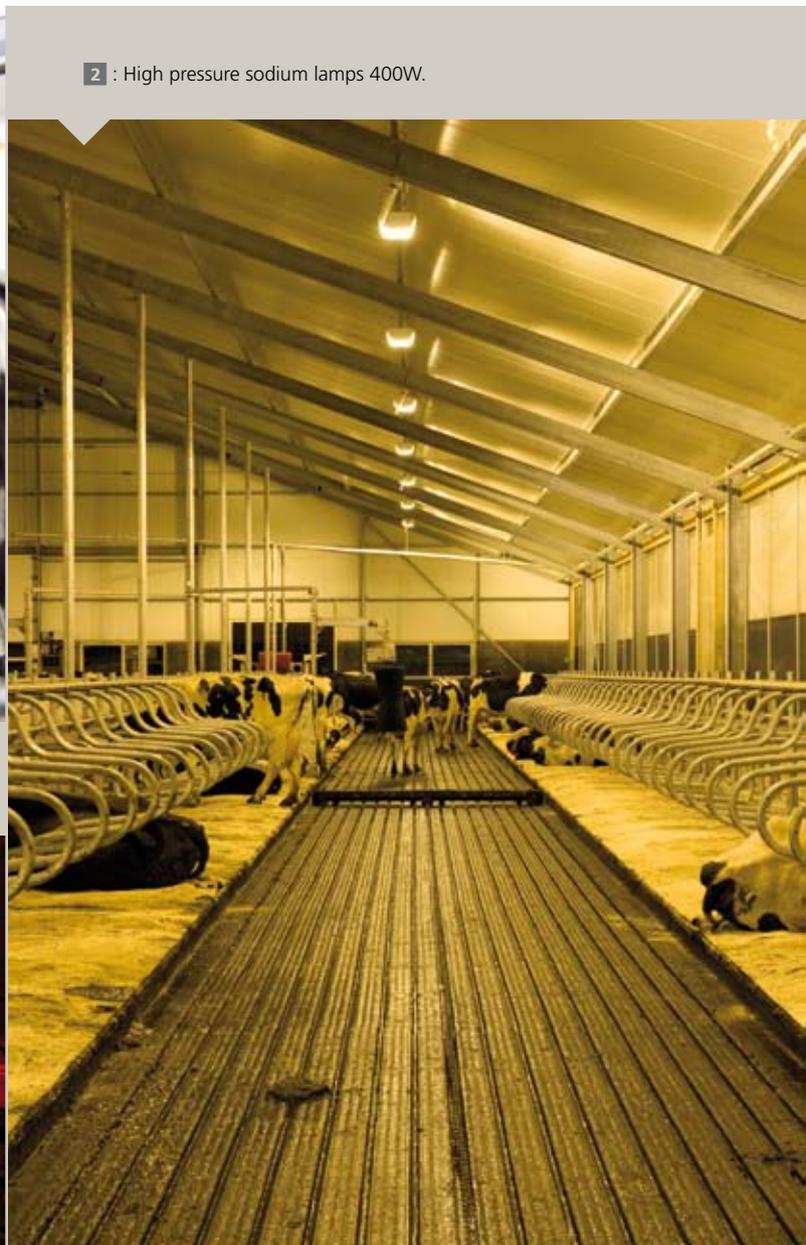
The lighting plan also includes a third option: **3** metal halide 250W. This option is mostly used for lower barn buildings, cattle housings for dry cows and young stock or as a facility to ensure an environment with efficient work lighting.

The fourth option, night light is added to the barn by means of **4** night lights. Cows cannot see red light, but it can be spotted by the human eye. This type of light makes it possible for the dairy farmer to enter the barn and monitor his animals without disturbing them.

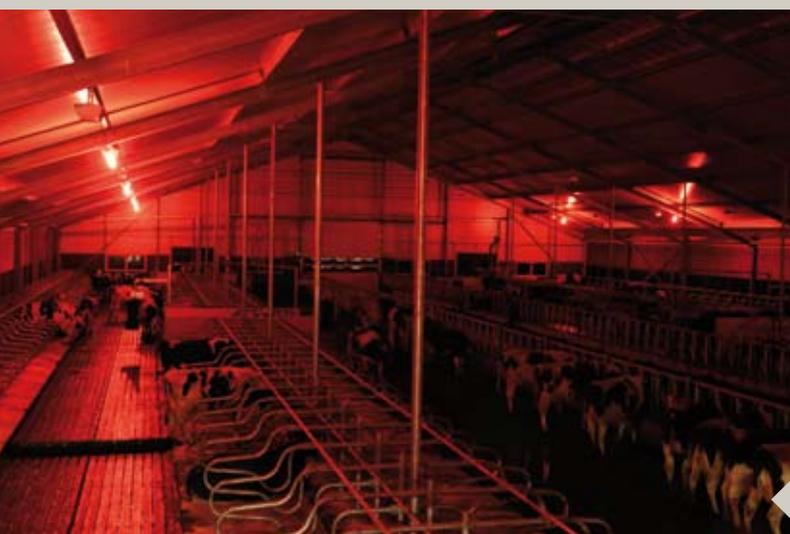
*) 1 lux = 1 lumen/m² (lux (lx): unit of apparent light intensity, lumen (lm): unit of perceived power of light)



1 and **3** : Metal Halide 400W (comes also in a 250W version).



2 : High pressure sodium lamps 400W.



4 : Night lights.

The benefits of Lely L4C for you and your herd

Increased milk production

It has been proved that a consistent light level and a constant distribution in keeping with a time-related schedule substantially increases the milk production of each individual animal.

Fully automated

Due to the combination of a light sensor and the network plus its settings, the dairy farmer can operate a fully automated system that guarantees optimal light distribution without any additional labour.

Saving energy

Thanks to the lighting plan, an optimum lighting programme can be set up to ensure perfect light distribution using a minimum number of lamp units. All lamp units are made of outstandingly high-grade and sustainable material with maximum life span, even in highly soiled barns. L4C adjusts its lighting schedule to the programme installed, and takes into account outside light levels so the lights will only burn when strictly necessary. Due to the unique fact that each lamp unit has its own node box, connected to a network, the individual lights have their own lighting programme according to their place in the barn.

Improved animal wellbeing

Not only your dairy cows, but your young stock and dry cows will also benefit from optimal light distribution. In the set-up of the lighting programme, these special groups have been given particular attention. This is because young stock and dry cows prefer a different light distribution, which is easily – and automatically – managed through the L4C lighting programme.

Increased intakes

Optimal light distribution is linked to a dramatically improved intake of forage, since there is an optimised balance between the cows' day and night rhythm.



Quotes from testing farmers

'Beforehand, I was a little sceptical about the energy savings with L4C, but now even I am convinced.'

'Thanks to the Lely L4C lighting system, I don't have to control the lighting programme anymore once I have made the settings complete on my computer.'

'A new barn has been planned for about ten years' time, but with the L4C lighting system my cows already enjoy optimal light consumption right now.'

'Each light has its own settings so that the best conceivable lighting system is provided.'



60 years of unstoppable agricultural progress

At the beginning of the last century Cornelis and Arij van der Lely, when children, were busy with a Meccano box shaping their ideas to ease heavy physical labour in the agricultural industry. In 1948, with the invention of the finger-wheel hay rake, Lely was put on the map as an agricultural business. Subsequently, developments followed one after another in rapid succession. Around 1958 Lely started developing and producing a unique fertiliser spreader; in 1965 Lely introduced the Lely Lotus hook tine with its unique shape. However, Lely's real breakthrough was marked by the development of the Lelyterra power harrow in 1968. This development also signified the internationalisation of the company. In 1983 the mower system received a huge improvement through the introduction of the modular cutter bar. Undoubtedly, the milking robot – introduced in 1992 – is the most important invention for dairy farmers in the twentieth century.

It is also under the inspirational leadership of the second Van der Lely generation that the company is permanently seeking methods that improve the lives of dairy farmers, both financially and socially. In addition to the introduction of rakes and tedders with the largest working width, the development of increasing numbers of automated equipment for barns fits in with this pursuit. And... our 60 years' jubilee promises many good things for the years to come!



Lely really cares for the environment.

Lely, Astronaut, Atlantis, Hibiscus, Lotus, Splendimo, Astri, Astrodata, Calm, Commodus, Compedes, Cosmix, Discovery, E-link, Fertiliner, Gravitor, Grazeway, Hubble, Juno, L4C, Lely Center, Lelywash, Luna, Nautilus, Orbiter, Shuttle, T4C, Viseo and Voyager are registered trademarks of the Lely Group. The right of exclusive use belongs to the companies of the Lely Group. All rights reserved. The information given in this publication is provided for information purposes only and does not constitute an offer for sale. Certain products may not be available in individual countries and products supplied may differ from those illustrated. No part of this publication may be copied or published by means of printing, photocopying, microfilm or any other process whatsoever without prior permission in writing by Lely Holding S.à r.l. Although the contents of this publication have been compiled with the greatest possible care, Lely cannot accept liability for any damage that might arise from errors or omissions in this publication.

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