

# Refrigeration on much less energy



**The shipping company Maersk is using 65 percent less energy to keep fresh produce cool, thanks to a new control system for keeping sea containers at the right temperature.**

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Every day, the vessels of shipping company Maersk transport more than 240,000 refrigerated sea containers carrying fruit, vegetables, meat, plants and flower bulbs. Maersk is now using 65 per cent less energy to do this, thanks to Quest II, a new control system for refrigerating containers developed by Wageningen UR Food & Biobased Research. The corresponding CO<sub>2</sub> emissions have also fallen by 65 per cent, a drop of around 350,000 tons of CO<sub>2</sub> a year. ‘That is a major achievement and signifies substantial savings. Everyone gains from this,’ says Henrik Lindhardt, head of container innovation at Maersk Line.

The new control method adjusts the internal air circulation and the activity of the refrigeration compressor according to the product’s cooling requirements and the heat load (which depends on the difference between the ambient temperature and the desired temperature). ‘In the past, the air was pumped round continuously as fast as possible to minimize the temperature differences in the cargo. But that is inefficient,’ says Leo Lukasse at Wageningen Food & Biobased Research. ‘Sometimes the temperature outside is 20 degrees and the container is supposed to be at 20 degrees as well. Then you don’t need to do anything.’ ‘Instead of having the refrigerated container’s energy-guzzling compressor running non-stop, Quest II enables controlled tem-

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perature fluctuations. That way, the compressor is either running at the most efficient speed or it’s turned off,’ explains Lukasse. He sees potential for the use of Quest II in road transport and chilled storage as well.

**HUNDREDS OF TESTS**

The software’s predecessor, Quest I, had already reduced the energy consumption of refrigerated containers by 50 percent. Quest II has added another 15 per cent to that achievement.

The researchers started on the development of Quest II in 2009, in collaboration with Maersk Line and Carrier Transicold, a manufacturer of refrigeration equipment. Then hundreds of tests were carried out. In some cases, the products are actually fresher on arrival with the new software than they were in the past. ‘Quest keeps the quality at a satisfactory level for longer,’ says Lindhardt. ‘Especially if the cargo is warm when it is loaded into the refrigerated container. Take bananas: we usually get them delivered at 30 degrees Celsius but they have to be transported at 13.5 degrees. The faster and more efficiently we can cool them down, the better.’ Quest II has now been installed in most of the Maersk fleet. ‘Another advantage is that we can now load more refrigerated containers onto the same ship because they use less energy,’ says Lindhardt. ■

Info: [www.wageningenur.nl/quest](http://www.wageningenur.nl/quest)