

Case story | JD Cooling Group

It's not enough
to be green.
You also have
to be ripe.



GRUNDFOS 

Possibility in every drop



Worldwide Fruit's avocados are picked unripe and shipped to the UK, where they finish the ripening process.

Perfect avocados? A new low-hanging fruit for reducing energy and food waste

The situation

Avocados have posed a challenge in the UK – to wholesalers, retailers and consumers. It starts at the tree. The green fruit grows mostly in the southern hemisphere, where mature fruits are shipped north after harvest.

They continue to ripen after they are picked, and they journey north under a controlled atmosphere in special shipping containers.

Wholesalers and distributors continue to ripen the fruits in their facilities before supplying them to retailers, but the results are inconsistent. “Historically the consumer would buy four avocados, and one would be ripe, one would be okay the next day, one would be hard and then one’s gone soft,”

says James Tumber, Specialist Services Director of JD Cooling Group, a temperature control system builder. Conventional ripening systems work mostly manually – resulting in uneven ripened fruits and wastage.

“With the conventional ripening system, you’re taking an unripe avocado and you place it into a room and warm it up, and you use forced air to try and ripen the fruit,” says Mark Everett, Avocado Business Unit Director at Worldwide Fruit in the UK.

This “old fashioned” but standard process works more by feel than precision, says Ilona Stylińska, Ripening Manager at Worldwide Fruit. “

“The operator tells the computer: what product, what country of origin, how much is in the rooms”

James Tumber

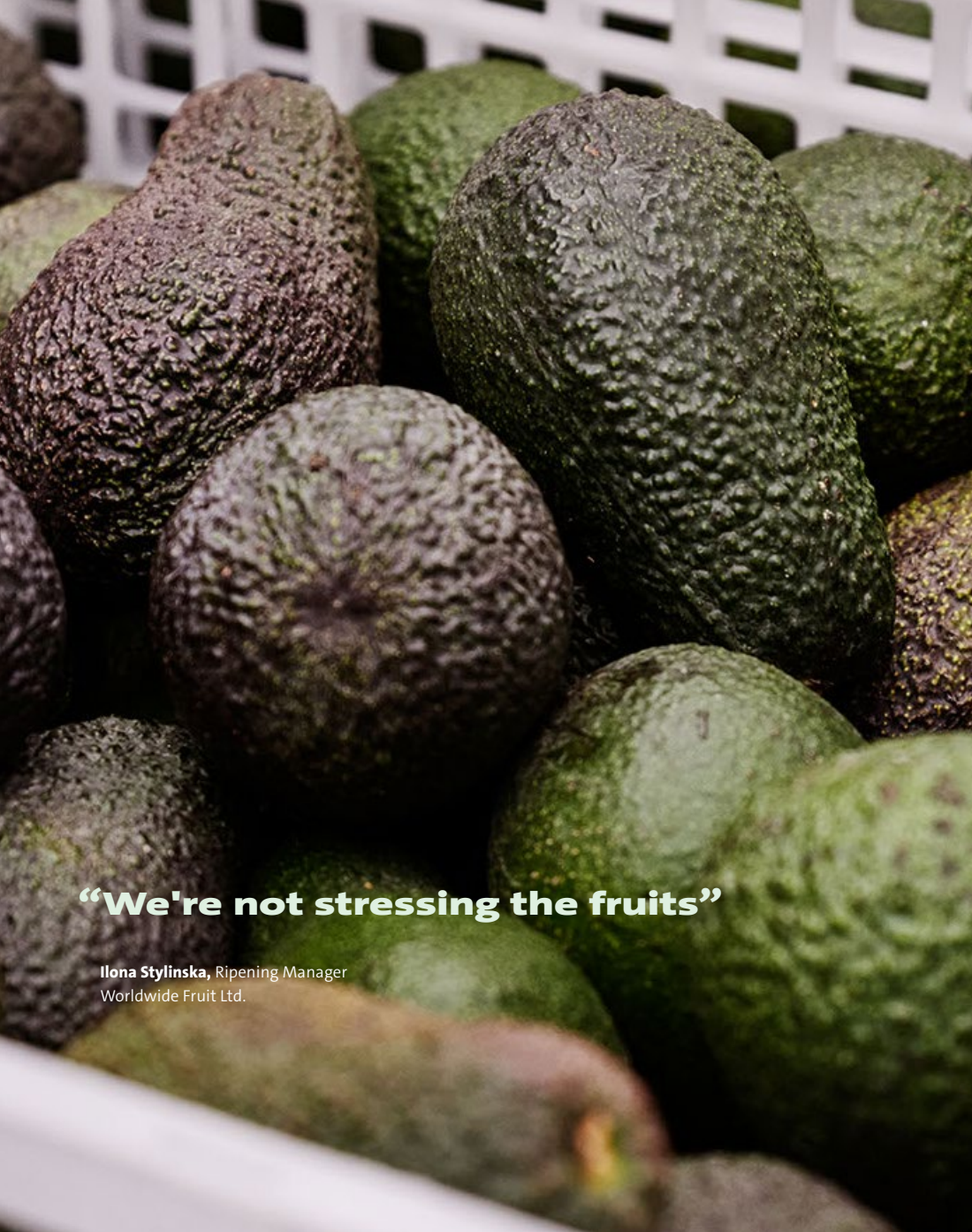
Specialist Services Director of JD Cooling Group



James Tumber with Ilona Stylinska, Ripening Manager in charge of Softripe at Worldwide Fruit.

“You open the door, put the pallets in the hot room and close the door. You will need to open the door maybe two or three more times every day to insert or extract other pallets, day after day – which stresses the fruits. You cut the fruits to test them and wait for them to be ripe.”

Cutting the fruits destroys them. Worldwide Fruit was losing around 3.6% of its avocado batch from cuttings, says John Dye, Chairman and Founder of JD Cooling Group. “That might seem like a small number, but if you take that figure for the European-wide supply of avocados, you’re talking an equivalent of about 20,000 tonnes of fruit a year – or 1,000 containers – that are destroyed just to test their ripeness,” he says.



“We're not stressing the fruits”

Ilona Stylinska, Ripening Manager
Worldwide Fruit Ltd.

The solution

JD Cooling has supplied a solution that modernises the ripening process, making the whole value chain more sustainable.

The system, called Softripe, not only drastically reduces the number of avocados destroyed in the ripening process, but it ripens them faster and more consistently. Worldwide Fruit reduces its waste and energy in ripening and handling the fruits. Supermarkets and consumers enjoy a doubly long shelf life with better and tastier avocados.

“The Softripe system has allowed us to achieve more consistency than ever before,” says Mark Everett. “When it says a product is ripe and ready, we can be sure it really is.”

Softripe attempts to give the ideal ripening environment for the fruit – as close to being on the tree as possible. “With Softripe we place the pallets of avocados into an airtight room,” says Mark Everett. “And then we can control every part of the process – the temperature, the gas mix – to ripen

the fruit in an optimum way.”

The gas mix includes oxygen, nitrogen, carbon dioxide and the “fruit gas” ethylene. “The operator tells the computer: what product, what country of origin, how much is in the rooms,” says James Tumber. “The algorithm then starts the process. From that point, the system will do what it needs to do when the fruit needs it.

There is no human intervention with the Softripe system until that fruit is ripe. The computer will then tell you: Yes, it's ready. You can then carry on this journey to the supermarket, to the consumer.

“With the Softripe process, we are listening to the fruit. We're talking to the fruit,” Tumber says. “We're giving the fruit what it needs when it needs it.” “We're not stressing the fruits,” says Ilona Stylinska.

Avocados in the production area after Softripe.



“When you shut the door, let’s say on a Monday, then you will open the door again on Friday. We are not going inside the room. We’re not collecting any fruit, we’re not wasting the fruit, we’re not cutting any fruit. We’re not disturbing the ripening. When you shut the door, you shut the door and wait for the fruit to ripen.”

During the process, Softripe monitors the fruit’s respiration for the optimum level of ripeness. “We trust the Softripe system to determine when the fruit is ripe,” says Everett. “Because of that, we destroy or cut less fruit, but the result is actually better.”

Before Softripe, avocados came out of Worldwide Fruit with a shelf life of three or four days. The Softripe process has allowed this to increase to typically five to seven days. John Dye says there are no formal figures of avocado food waste at the consumer level. “One can only assume there must be a lot less food waste at home. If you just take a figure like 10% of reduced waste, that’s another 60,000 tonnes coming from Peru or elsewhere we can save every year. That’s an awful lot of movement of containers and their contents we’re saving across the world.”

“We trust the Softripe system to determine when the fruit is ripe. Because of that, we destroy or cut less fruit, and the result is better”

Mark Everett,

Avocado Business Unit Director at Worldwide Fruit Ltd.



“Reliability is key. That’s why we’ve chosen Grundfos”

James Tumber
Specialist Services Director of JD Cooling Group



Softripe’s algorithm controls the perfect ripening supply of gases, heat and time. The computer tells the operator when the fruit is ready.

Pumps as key components

Behind Softripe’s shiny surface, pumps play a key role. “We rely on a main circulation pump for our warm glycol and our cold glycol. That is a key component, because we need to put heat into the room and then we need to get the heat out of the room,” says James Tumber. In addition to saving energy, the system reclaims the heat from the cooling process and uses it for heating.

The Grundfos E-pumps not only increase efficiency, but add an extra level of control, he says. “We’ve actually got a temperature-compensated pressure control on the pumps for ensuring absolute efficiency, which is something I’ve never seen within a pump system

before.” He adds that reliability is key. “We needed a solution from a partner that could guarantee us that reliability, but also understand the technology.” John Dye adds, “There was no doubt in our mind who we wanted to work with on this. We have used Grundfos for years. We know that we can talk to them. It’s important to be able to sit down at the design stage, talk to the suppliers – in this case Grundfos – about what we’re trying to do.

We know that when we put that pump into the system, we haven’t got to even think about it. It’s all been thought through, selected, and installed in a way that we can pretty much commission it and know it’s going to work.”

When the ripening process is finished, plant workers take a small sample of avocados from each pallet to test. Then all pallets are unloaded and sent to production for packing and onward delivery.



The outcome

After three years of use, Softripe has proven to ripen avocados 40% faster. Worldwide Fruit has shown a 30% reduction of electricity consumption per kilo of fruit ripened versus the conventional system.

“The savings that this gives suppliers like Worldwide Fruit is what pays for the system,” says John Dye. “What you get for the payback is unbelievable. It’s all about the sustainability, it’s all about the reduction in fruit wastage, the increase in yield.”

He says that banana ripening has also been proven equally effective in Softripe. “And the

volume of bananas is 10 times that of avocados in terms of European consumption. Which means a potential of saving 600,000 tonnes of bananas a year from wastage – and the resulting savings in energy and CO2 to transport them.”

Worldwide Fruit’s Ilona Stylinska says Softripe has changed everything.

“It changed the way we order fruits. The way we buy fruits. The way we deliver fruits. The way we pack fruits. It changed our process completely. Here we are, and it’s just getting better. It’s just getting better.”



Sources

Information in this article came from interviews with all sources on site at Worldwide Fruit in Spalding, UK, in April 2022

Topic

Temperature control for fruit ripening

Location

Worldwide Fruit, Spalding, UK

Customer

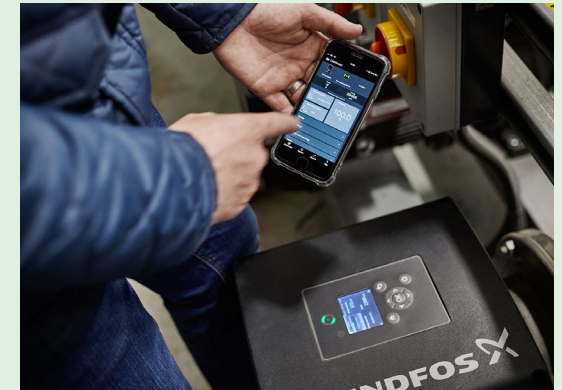
JD Cooling Group

James Tumber checks the status via smartphone app on the main Grundfos NBE circulation pumps for glycol behind the Softripe system.



“In the home we’ve reduced food waste. On supermarket shelves we’ve reduced food waste. Within this facility we’ve reduced food waste.”

James Tumber
Specialist Services Director,
JD Cooling Group.



Grundfos supplied:

For the main temperature control in the Softripe system, Grundfos supplied NBE E-pumps with IE5 motors. These are designated as “Ultra-Premium Efficiency,” the highest efficiency under the International Efficiency (IE) standard rating system for motors. The pumps, which move hot and cold glycol, are also programmed for temperature-compensated pressure control.

Grundfos also supplied a digital communication card on Modbus protocol (CIM200), a pressurisation unit (PHT) to ensure that the sealed hot and cold glycol systems are pressurised in case of leakage, and an expansion vessel for the hot and glycol system to allow for changes in system media temperature (GT).



Ripening time

40% less

From 7% to

0,5%

food waste

96 tonnes

CO₂ savings

per year

30%

energy savings
over conventional
ripening systems

“We’re reducing our level of waste and we improve our final pack-out, which is a win for everybody and the environment as well.”

Mark Everett,

Avocado Business Unit Director at Worldwide Fruit Ltd.

Facts on Softripe

- Ripens fruit in airtight rooms
- Uses mix of heat, cooling, gases and time to ripen fruit
- Ripening time reduced 40%
- From 7% food waste to 0,5% food waste
- Conventional ripening = only 60-80% ripe after one cycle
- Softripe = 95% ripe after one cycle
- Softripe gives avocados double the shelf life and better taste and texture
- Saves 30% energy over conventional ripening systems
- CO₂ savings per year: = 96 tonnes, including savings from growing, shipping and road transport. The equivalent of what’s needed to farm 570 avocado trees.

CASE VIDEO

GRUNDFOS Americas
Brookshire, TX 77423

www.grundfos.us
www.grundfos.ca
www.grundfos.mx

