

# Fresh off the boat

*Energy-efficient compressors help a top banana company save millions.*





Here's a business model that could drive any company bananas. Imagine you sell a commodity every country in the world wants but that only grows in a few places on Earth. It's so fragile it must be refrigerated the moment it's harvested. Then it has to ride a truck to port, cross the ocean, pass through a distribution warehouse, and take a final road trip to the store. A temperature change of just a few degrees either way will ruin the entire load.

Oh, and did we mention you have a razor-thin profit margin?

That's the daily reality faced by Dole Food Company, Inc., the world's largest producer and marketer of fresh fruits and vegetables. Thanks to recent improvements



in shipping technology, however, Dole's top bananas are sleeping more soundly, saving money on fuel and spoilage while reducing their carbon emissions.

### ***Getting there is more than half the battle***

Thirty-seven billion pounds of bananas are shipped globally each year, making bananas the world's most popular produce. While bananas are consumed in every country on Earth, they are only grown in a few. So, they must travel thousands of miles before arriving at your local grocery store.

Successfully transporting bananas is no easy task. In the field, bananas are first loaded into refrigerated containers that must be quickly brought to 58.0 °F (14.4 °C). If the temperature drops even a few degrees below this ideal temperature at any time during shipping, the banana skin will develop dark spots and will not ripen properly. If the temperature rises a few degrees, premature ripening and shrinkage occurs.



Throw in the harsh weather conditions frequently encountered by seagoing vessels that carry perishable product containers, and it's easy to see why tight temperature and humidity control are critical to protecting quality. In the food industry, where profit margins are particularly narrow, degradation of product at any point in this process is a recipe for significant financial loss.

### ***Technology to the rescue***

In the last decade, major innovations in compressor technology have changed the way Dole and other major food shippers do business. At the turn of the 21<sup>st</sup> century, less than 5 percent of all refrigerated container users employed scroll compressors, but today that number has risen to more than 50 percent. That's because shippers like Dole and many others are finding that scroll compressor technology helps them better protect their valuable perishables, save on energy costs, and deliver environmental benefits.

Today's state-of-the-art refrigerated seagoing containers are equipped with digitally modulated scroll compressor technology that provides precise temperature and humidity control. They have been shown to maintain temperature to within +/- 0.5 °F (+/- 0.3 °C), which is particularly critical for perishable products like fruits and vegetables.

Dole switched almost exclusively to the use of refrigerated container systems equipped with digitally modulated scroll compressors in 2005 to rapidly remove heat from containers. At the point of harvest in the field, the digital modulation "pulls down" the temperature to the ideal level up to 25 percent faster than traditional compressors, and enables a 46 percent more energy-efficient method for maintaining temperature control throughout the remainder of the bananas' journey.

As an added benefit, the compressors used by Dole and others are smaller and lighter (95 pounds) than typical semi-hermetic compressors, which weigh around 325 pounds. That leaves room for a few more bananas in every container.

### ***An appealing bottom line***

While Dole hasn't released precise figures of its own savings, industry experts estimate that the use of energy-efficient compressors in refrigerated containers can enable the banana industry to save more than \$10 million in fuel costs and reduce shrinkage and spoilage by \$500 million annually. In addition, scroll compressors already have a proven track record of reducing carbon emissions related to banana transportation by 15 percent.



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