

New philosophy in Drying Mangoes

Problem

In a revolutionary approach towards drying mangoes, Munters and Landman Dried Produce embarked on a journey of research and proved a new drying method that is conceptually and thermodynamically ground-breaking in the fruit-drying industry. Landman Dried Produce has been exporting fresh mangoes to Europe for many years prior to embarking on drying their mangoes for export. Munters and Landman Dried Produce got together with the mutual goal of setting a new standard in quality dried mango.

Landman Dried Produce were contracted to produce a specific tonnage of dried mango for export to Europe and worked together with Munters to ensure this outcome. Two drying chambers were erected to accept 7500 kg of wet fruit when fully packed. The chambers are designed to cope with the heavy drying-load of batch drying as an alternative to a continual-flow “first in first out” method, which is a much less productive.

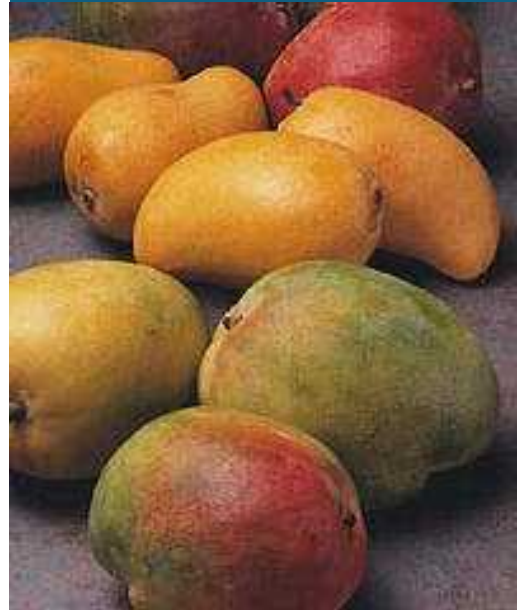
The batch drying approach was previously complicated due to the exponential change of the rate at which moisture is given off by the product. With Munters help the batch drying approach has now been perfected. The most significant effect during the drying process to be avoided, is the formation of an outer skin on the product, as this will inhibit any further moisture loss from the fruit.

Quality Solution...

Munters supplied an enhanced MX7600 system to supply low humidity air through a tunnel holding wet mango layered out on trays. 7500kg of wet mango were batch dried to 1500kg in 30 hours.



Drying tropical fruit



A Quality Solution

- Increased productivity
- No skin formed during drying
- Optimised air distribution
- Maximised evaporative effect
- Extremely good colour retention
- More natural taste and texture
- Lower risk of mould and yeast formation
- Optimised energy-efficiency



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come with an increased risk of yeast and mould formation. With Munters system, a producer can control how much is dried and its quality. Continuity of flow through any drying facility is important, as the fresh fruit cannot be stored indefinitely without becoming spoiled.

Energy efficiency

Munters approach optimises the energy-efficiency in two areas of temperature and enthalpy. Because the drying chamber removes moisture from the fruit, the air needs to be conditioned to create the right climate condition for the fruit to relinquish its moisture efficiently and naturally. Munters method utilises 40% less energy consumption than envisaged by the producer. Landman Dried Produce has had very positive feedback from their international clientele and the new approach produces superlative quality. While the mango-drying season typically ends mid-April, Landman Dried Produce can now continue throughout the year, drying other fruits such as banana and papaya, where the results have also been more than satisfactory.

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Layers were created to maximise air distribution over the mangoes for maximum evaporative effect. Munters found an optimised three-step humidity approach suitable for the varying conditions required during the process. Temperature and humidity is kept constant in the re-circulated air and care is taken not to surface dry the product. The evaporative effect is extremely strong in the first step of the drying cycle, so Munters create the optimum humidity level whilst maintaining the supply air at 35oC.

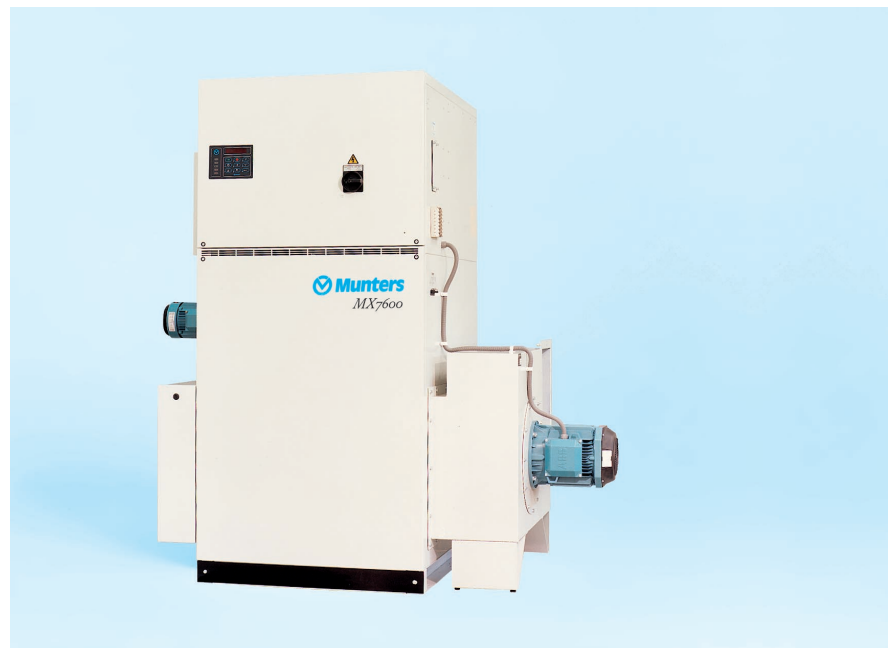
the possibility of being contaminated with unnecessary fresh air.

Because Munters have a carefully controlled climate inside this “enclosed-loop” system, the producer does not feel the effects of varying ambient climate conditions which can result in a reduction of output from the drying chamber. Extended drying times

This new drying process is revolutionary because at no stage is the fruit warmer than 36oC. This has a major impact on quality, as too much heat affects both colour and taste. With this new Munters approach, colour retention is extremely good and taste more natural, with improvements in the dried product’s texture too.

Hygiene and Reliability

Hygiene is more easily controlled in Munters “enclosed-loop” system. If all care is taken with hygiene from the beginning of the process, there is a low risk of yeast formation in this type of system. This is because the air is recirculated and reconditioned without



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