

# GEA Refrigeration Africa Concludes Deal with Besseling

**The concept of controlling the composition of the atmosphere in cold stores to extend the storage life of apples and pears to beyond even 8 months has been practiced in South Africa since the late 1930's.**

The uncontrolled atmosphere in a cold store has 78% nitrogen and 21% oxygen. By reducing the oxygen to 1% and controlling the CO<sub>2</sub> to 1% and the temperature held at -0,5°C, the fruit becomes dormant (respiration is reduced) and the shelf life extended.

What has just been described is the basic concept of the controlled atmosphere storage of perishables to extend their useful storage life.

The techniques and equipment used to create and maintain CA conditions has undergone continuous development to reduce the dependence on hands on skills and to extend the application to other fresh fruits and produce. The energy used to maintain the oxygen levels and the scrubbing of the CO<sub>2</sub>, which is generated by the product, has also become an important factor.

Besseling was one of the first farmers to erect CA cold stores in The Netherlands. Later in 1987 the Besseling Group was founded and Besseling changed his business from being a farmer to the research of CA/ULO (Ultra Low Oxygen) storage techniques and development of the required equipment e.g. nitrogen generators, CO<sub>2</sub> scrubbers, ethylene converters and atmosphere control systems.

## International Association

During a visit to South Africa by Eric van der Zwet (Sales Manager, Besseling Group) in November 2010, a distribution agreement with GEA Refrigeration Africa was concluded. The agreement signed with GEA Refrigeration in Cape Town is a follow on from the association which has been established by the Besseling Group as a supplier of equipment and technology for GEA Projects in other parts of the world.

A recent Besseling/GEA project was done for the Bonduelle Group in Péronne, France. The application was somewhat different from the normal CA storage of fruit or produce. Instead the Besseling CA/ULO system was installed to prevent fires in a -25°C cold store for frozen vegetables.



Eric van der Zwet (second from right) presented a product seminar to technical staff in the GEA Refrigeration Africa head office.

Safety regulations required that the 150,000m<sup>3</sup> Péronne store have a sprinkler system and dividing fire walls. As an alternative to the fire walls and sprinkler system, Besseling installed nitrogen generators to keep the oxygen level below 17% as at that level combustion cannot take place. The low level of oxygen also meant that product can not be taken into and out of the store by the conventional method of manually driven fork trucks as the human requires a level of oxygen above 17% for normal respiration. Automatic product conveyor systems were installed for this purpose.


energy efficiency. As an indication, a Besseling nitrogen generator will need 11 Kw to produce 48m<sup>3</sup>/hr at a purity of 1% residual oxygen as compared with an other competitive system which absorbs 31 Kw per 40m<sup>3</sup>/hr at 1% residual oxygen.



Projects as the Péronne store are one of many based on research and technology developed by Besseling.

After 20 years of research and development of controlled atmosphere technology, Besseling claim to have the simplest equipment with a high level of

“We are excited about the Besseling agreement as it will complete our basket of products which we offer as part of our total project management service which goes far beyond the design and installation of a refrigeration plant. Our team are able to provide all the infrastructure surrounding a refrigeration plant”, Ilise van der Merwe, General Manager, GEA Projects.

Soon after the signing of the agreement, all GEA Refrigeration technical staff attended an in house Besseling seminar to become familiar with the full range of systems and equipment which will be available to the South African market. 

## The Besseling product range includes:

Carbon activated CO<sub>2</sub> scrubbers.

PSA (Pressure Swing Adsorption) nitrogen generators which produces nitrogen from normal air and controls the oxygen level within a CA room.

Ethylene converters for removal of ethylene from the storage areas.

Atmosphere Control System in combination with BatNetWin software to control and monitor the atmosphere within storage areas.

The Pallet Fresh System for controlled atmosphere storage of single pallets of delicate fruits e.g. berries.