



## CRETA FARM CUTS ENERGY BILL IN HALF WITH SECONDARY COOLING (TEMPER -15) AND MITA ADIABATIC COOLING TECHNOLOGY

After a devastating fire Creta Farm decided to rebuild and install a cutting edge energy efficient solution for the production plant in Crete. The prestigious assignment to design the new cold storage went to ecoRef in Athens. They designed an indirect cooling system with R407F and Temper -15 as secondary fluid using **adiabatic Mita technology**. The results have exceeded the expectations with significantly reduced energy costs.

### Rethymno Production plant

To comply with the new F-gas regulations and to reduce the energy consumption, Creta Farm and ecoRef installs a modern secondary refrigeration system with a high reliability.

### The refrigeration installation

The old R22 compressors was in good condition and could be saved and used in the new installation. The new system was designed with R407F as the primary refrigerant and Temper -15 as heat transfer fluid.

The system is water-cooled via a high efficient **Mita evaporative condenser which operates with adiabatic method**. Aerodynamic type of fan blades are used which minimize energy input from the motors. The motors are directly coupled in the fans minimizing moving components (less maintenance). **Mita electronic management system** controls condensing temperature and pressure, by continuous calibration of fan speed and water consumption.

Due to the design of taking into consideration condensing pressure and outside temperature the system can run in dry mode, wet mode and mix mode(dry/wet) maximizing energy efficiency and minimizing water consumption.

A buffer tank of 8m<sup>3</sup> stores Temper -15 at -6 °C and service the refrigerated areas through a set of electronically controlled pumps. The freezer circuit remained a R407F-DX system with electronic expansion valves and Energy Efficient Defrosting.

### Installation Facts:

**Primary refrigerant:** R407F,  
(GWP 1824, ODP 0)

**Secondary Refrigerant:**  
Temper -15 (15 000L)

**Temperatures:** HTF -6 °  
C, evap. temp -10 °C

**Cold room temp. and kW:**  
@ 0-2 °C, 330 kW

**Freezer room temp. and kW:**  
@ -20 °C, 170 kW,

**Condensing Method**  
Mita High Efficiency Evaporating  
Condenser 800KW @35°  
C/26,5°C WB

**Plastic Pipes:** AquaTherm

**Brine defrost:**  
Temper -40 defrosting the air-  
coolers (-20 °C)

### Advantages:

Significantly reduced energy  
consumption >50%.

**Smaller & cheaper**  
components low pressure  
system with increased reliability

Increased **food quality** due to  
more even temperature  
Compliance to F-gas regulations

**Mita Energy efficient**  
**management system** controlling  
speed of inverter fans and water  
(Dry-wet operation) in relation to  
condensing pressure and outside  
temperature

**Defrosting of the DX air**  
**coolers** with Temper -40 that  
uses free energy from the warm  
side.





Energy efficient defrosting was achieved by a heat exchanger placed before the evaporative condenser that gained heat from the refrigerant's hot side (discharge line going to the evaporating condenser from the compressor). The refrigerant warmed up temper-40 through the heat exchanger, which was stored in a hot buffer tank serving defrosting circuit. By this method condensing temperature and pressure were also reduced before entering the condenser, achieving a more efficient refrigeration cycle. This system significantly reduced the energy consumptions and the CO<sub>2</sub> emissions compared to electrical defrost systems.

### Creta Farm Facts

Greece most important manufacturer of deli meat.  
Pioneers in adding unsaturated vegetable fat to the products.

Exporting their innovative production methods to:  
USA, Spain and Cyprus

Certified according to:  
ISO 9001:2008, ISO 14001:2004.

The journey of **Creta Farms** began in 1970 in Crete the land of the olive tree. In whose fruit lies the Greek treasure the "liquid gold" as Homer called it. It was in this favored land that Stilianos Domazakis, the present owners' father, raised his animals and later founded the first organized pork production facility in Crete and thus set the foundations for the extensive business operations of Creta Farms today. The two sons of the founder, Stylianos Domazakis, Emmanuel and Konstantinos, are very passionate for innovation and products made from

pure ingredients, thus in 1987 they open the deli meat department of the firm and in 1990 they expanded the facilities of Rethymno (Crete) taking over the management and reforming the firm as "Creta Farm S.A."



Antonios Pentaris Technical Manager at Creta Farm and Danos Pappas at ecoRef.

### Creta Farm

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**ecoRef Consulting Engineers** are based in the Historical Center of Athens. With a combined experience of more than 45 years and more than 750 projects both in Greece and abroad. They are focused in innovation, energy efficiency and are Members of Greek Association of Cold Storage, ASHRAE and Technical Chamber of Greece.

### ecoRef

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### Mita Facts

Since 1960 the Italian company manufactures non-corrosive products for cooling (Cooling Towers, Evaporative Condensers, Adiabatic Coolers) that result in energy efficient Systems.

Mita has always been pioneer in Energy Efficient Cooling products using prototype material and technologies that gave a strong position in the market especially in the industrial field.

Mita smart energy management systems that can be adopted by all Mita products combine maximum energy efficiency and minimum water consumption, contributing in less expenses to the customer.



### Mita Srl

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