



# FOODWA

INNOVATIVE SYSTEM FOR DRYING FOOD WITH RENEWABLE ENERGY

... a Solwa Innovation

# SOLWA

## THE COMPANY

**SOLWA** is an Innovative Company part of the Multinational Corporation **SANTEX RIMAR GROUP**, which works worldwide with manufacturing branches in Italy, Switzerland, India and China.

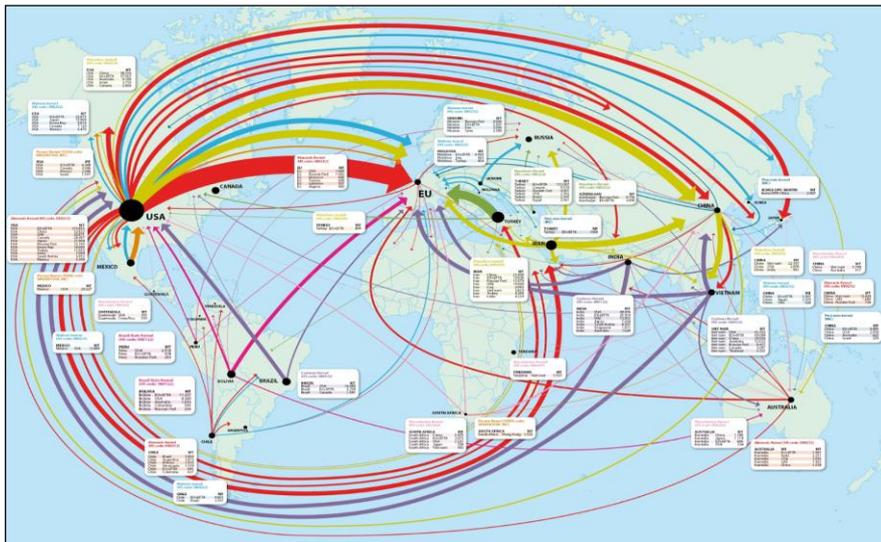
Solwa is a specialist in the water treatment sector and dehydration processes, using solar & renewable technologies, awarded by national and international Organizations (i.e. MIT as “Italian innovation of the year”, the UN as “Innovation for Human Development”, “Success Story” for UE Commission).

Solwa Technology is employed in different fields:

- **DryWa** for drying sludge
- **DigeWa** for drying digestate
- **WastWa** for treating leachate
- **FoodWa** for drying food
- **SolWa** for water treatment
- **IrriWa** for agriculture in barren areas

## THE FOOD DRYING MARKET

According to the Global Statistic Review, the dried food market is around 33 billion dollars, with around 9



million tons of dried food (INC, International Nut and Dried Fruit Foundation, 2013). The target market is also composed of dried meat, dried fish, dried vegetables, medicinal and aromatic plants. The market trend of dry food registers an increase of 5% each year, with the opening of new markets.

Currently, in Developing Countries the 56% of fresh fruit is wasted due to the lack of conservation technologies and not hygienic procedures. The solution is a sustainable system

able to achieve an off grid operation and to close the gap between field and the market, which allows saving food and opening these Countries to new international trades.

## FOODWA SYSTEM

The lack of suitable preservation and storage systems causes losses in food or fish production. Sun drying is the most popular way to preserve food in many Countries. However, traditional methods of drying (e.g. spreading the crops on mats) do not guarantee good food quality. Therefore, the use of solar dryers effectively decreases the risk of contamination by dust, insects and micro-organisms.

The Solwa Company has adapted its Innovative Solar Technology to the food dehydration, planning and constructing FoodWa. The FoodWa dryer is able to dry faster the product put inside, compared to the solar traditional methods.

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FoodWa is an innovative system to dry food. It keeps the inner temperature thanks to its specific ventilation system, which allows a continuous dehydration of food.

The system is suitable for domestic and industrial needs. FoodWa is designed to eliminate the problem of bad odours outside the system, thanks to its air recirculation and filtration. Moreover, it removes the humidity produced by the drying process. The whole system is completely autonomous and it is powered only by renewable energies.

## FOODWA ADVANTAGES

Reduction of food weight
Uniformity of the dry final product
Surface reduction
Faster dry process
High hygienic conditions
Easy to transport directly to the field
Reduction in transportation costs
ROI in the short period
Stand-alone system using only renewable energies

## FOODWA TECHNICAL DESCRIPTION

FoodWa is a revolutionary product compared to the current technologies on the market, thanks to its performances, design, technology and size.



*FoodWa module (without solar panels)*



*FoodWa module on a truck for the crop field (without solar panels)*

FoodWa is a modular system for food industry needs, able to dry up to 50 Ton/month. The system is very easy to transport, thanks to its naval container shape (40 ft). FoodWa is powered only by renewable energies, assuring high efficiency and quality, low maintenance, safe and health dried products. The improved fluid and thermal dynamic process guarantees a constant and perfect inner temperature, ideal for each kind of food.

The bad odours elimination outside the system is an additional technical value, thanks to the specific closed air recirculation system and the humidity removal by the drying process. FoodWa dry process introduces a new patented technology in the management of air circulation and heat distribution, increasing the system efficiency and decreasing the time needed to dry food.

The module can be placed directly in the field during the harvest, thanks to its energy autonomy and easy transport.

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FOODWA INPUT		
Capacity per year	Ton/year	≤ 600 <sup>§</sup>
Capacity per hour	Kg/hour	≤ 70 <sup>§</sup>
FOODWA OUTPUT		
Final food Dry Matter achievable	%	± 95
Modulable temperature	°C	40 - 65
TECHNICAL CHARACTERISTICS		
Electrical power consumption	KWh	± 1,5 (use of solar radiation)
Thermal power consumption	KWh	20 (use of solar radiation)
Volume of air circulation	nm <sup>3</sup> /hour	1.000
Standard working temperature	°C	50
Size (l * w * h)	m	12 * 2,5 * 2,5
Size during operational time	m	variable according with latitude

<sup>§</sup> depending from type, shape and thickness of food

FoodWa has a size of a 40 ft naval container during the transportation time. When FoodWa is running, two wings are opened on the top of the module. The two wings are thermal air solar panels and PV panels able to satisfy all the electric and heat energy module needs, as shown in the picture below.



FoodWa module ready to be sent



FoodWa module during the operation time

## FOODWA TECHNICAL ADVANTAGES

- **REVOLUTIONARY HIGH PERFORMANCES FOOD DRYER**  
with a specific patented technology able to optimize the water extraction performances with less energy and less hot air volume needs
- **SAVING UP TO 90% OF YOUR TRANSPORTATION COSTS**  
with the reduction of food weight directly in the field
- **DIRECTLY WHERE YOU NEED**  
thanks to its specific shape (naval container), it is possible to use the dryer in the field or in the food factories
- **ZERO OPERATIONAL COSTS**  
thanks to the use of renewable energies, you can eliminate the operational costs as fuel and electricity
- **ONLY 40 FT NAVAL CONTAINER**  
the smallest food dryer with the same yield. The compact shape is the result of high performances in the drying process and efficiency
- **20% HIGHER EFFICIENCY**  
the heat recovery, combined with the perfect fluid dynamic process, allows achieving the best performances compared to competitors
- **600 TON/YEAR WET FOOD DRYED**  
high scalability of each module to solve all the food dry needs
- **FASTER EVAPORATION BY AN INNOVATIVE AIR FLUX**  
higher water evaporation from food thanks to a specific air circulation system, which breaks the air boundary layer on food, and a horizontal flux, which varies during the dry process
- **HIGH HYGENIC SYSTEM**  
to achieve always the best food security, FoodWa systems are made with food certified materials and covered by an innovative anti-microbes nanoparticles layer
- **FLEXIBLE TREATMENT**  
FoodWa recognizes automatically the food characteristics and it is self-regulating to achieve always the best performances
- **EASY ICT MANAGEMENT**  
a special software has been developed for all the devices (pc, tablet, smart phone, etc.) to monitor and manage FoodWa remotely as locally, recording all the main data for your report
- **FOCUS ON YOU**  
all performing data are continually sent to Solwa offices to optimize the machine to your needs and give you the best customer assistance as well as provide you with spare parts