

# IDM

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MILK PROCESSING TECHNOLOGY

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GEA

### Dialogue – the key to success

GEA TDS' success – as one of the world's leading suppliers of process technology for the dairy, fruit juice and food industries – is a result of working closely with customers to develop efficient plants for every application.

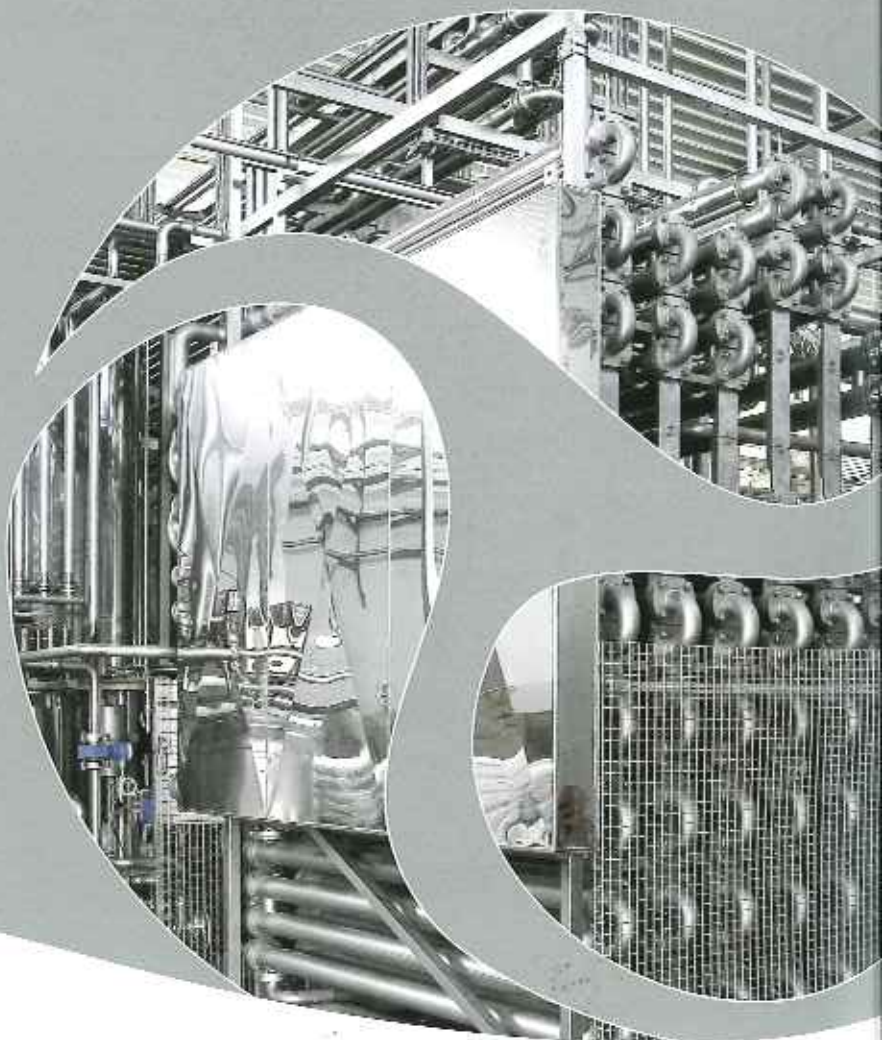
Read all about our new project, "Refreshment from the desert, Juhayna's new plant in Egypt", on pages 6-8

 Innovative Engineering –  
Quality in Line.

**drinktec 09**

14–19 September  
hall A4, stand 314

Process Engineering  
**GEA TDS GmbH**



Juhayna's new plant in the outskirts of Cairo processes frozen concentrated juice

# Refreshment from the desert

**Egypt:** Juhayna's new plant

Juhayna group of companies covers several top positions in Egypt's dairy and beverage Industry rankings. Established some 26 years ago by food engineer Safwan Tahbet, Juhayna have developed into market leaders both in the dairy and the fruit juice business in the country.

People who know Mr. Thabet say he's one with a vision: starting from scratch, in fact in sand, he built his first factory on an area without any existing infrastructure in the 6th October city. Starting with beverages and juice, Juhayna have expanded into dairy as well taking over several competitors over the years.

## Large-size project

In 2005/2006, Juhayna started a pre-evaluation for a complete new fruit juice

and beverage factory with the target to go into operation in three stages. First stage was to install enough production capacity to satisfy market demand within 3 years from the start. The 2nd and 3rd stages were defined for a capacity to meet the market size 5 and 8 years after the start. One should remember that Egypt is one of the countries worldwide with the highest growth in population and at the same time developing prosperity for an ever larger proportion of consumers. 5 or 8 years might mean a capacity increase of 100 or more per cent. This illustrates the dimensions of the Juhayna undertaking.

## Demands

First Food Projects UK was called as consultant for engineering. The company has enormous experience in the Middle



Each of the 4 pasteurisers has its own de-aerator and homogeniser

East and was amongst others involved in several large projects by major Saudi food conglomerate Almarai. Together with Juhayna's Director of Manufacturing, Hugo Harbo, First Food Projects initiated the tender and contracting phase in 2007. Specific highlights of the demanding project were superior product quality, savings in general, accuracy of blending, a minimum of product loss, highest degree of production availability, flexibility of operations and long running times of production without interrupts.

### Main steps

GEA TDS Scope together with Indag was awarded the contract of supplying the liquid processing part to the project – on the basis of their profound knowledge and ample references. To name the main stages in the processing chain, the partners were to supply the water and syrup silo tanks, juice concentrate handling, premix preparation and storage, continuous sugar, gums and ingredients dissolving, dosing and handling of containers. Indag supplied the inline multi-mix installation that feeds 5 pasteurisers, while TDS were also responsible for CIP and automation.

### Production overview

Juhayna's new plant in the outskirts of Cairo processes frozen concentrated juice that is delivered in 200 litre barrels. Upon surface thawing and melting, the juice enters one of eight concentrate tanks that are located in a cold room.

To avoid sub-standard produce, juice concentrate together with a "premix" from flavours, colours and stabilisers and the main components liquid sugar, water, vitamins, acids and rework are mixed to obtain a batch. This batch is checked for quality in the lab before the product enters the pasteuriser. The system chosen by Juhayna makes sure that only top quality product enters the production chain on the basis of optimum mixing.

Water and syrup tanks were installed outdoor. To prevent sand and dust from entering the product, a venting system is installed in the factory.

An automatic handling system for containers with small ingredients ensures minimum loss while a rework collection system allows for re-use after a



Juhayna makes sure that only top quality product enters the production and distribution chain

quality check. GEA TDS have supplied 4 tubular pasteurisers with capacities ranging from 7,500 to 15,000 litres per hour. Another plate heat exchanger processes hot fill products without fibres. Each pasteuriser has its own de-aerator and homogeniser (GEA Niro Soavi). The plant can process clear beverages as well as high pulpy juice with fibres. Long life products are kept in an aseptic tank farm as a buffer between pasteuriser and aseptic carton package fillers while fresh products are stored in an ultraclean buffer tank. There is a separate line for CSD/fizzy juice.

Products are filled in large variety of packages, SIG Combibloc cartons of different sizes, HDPE and PET containers and pouches.

Finally, there are two separate CIP sets with 5 tanks, each. This CIP sets are configured in a way to save water and energy as well as chemicals. CIP can be initiated without waiting times and cleaning fluids are instantly available.

### Pasteurisers

The pasteurisers supplied by GEA TDS, just like piping, were optimised in their flow characteristics to provide low water-product mix phase; these mix phase is reworked into the product so that Juhayna produce virtually without product loss. Phases are monitored and separated using Brix sensors. The tubular heat exchangers model Varitube SK have an impact strip to process products containing fibres. Heat exchange is made product vs. product, the removable heat exchangers compensate for heat strain and have

no dead ends. All heat exchangers installed in the plant have especially long production runs.

The throughput through the heat exchangers can be adjusted to required settings from 50 to 100 per cent. The heat impact on the product is thus kept constant which avoids any heat-induced quality differences between the batches. Degassing works using a special distribution of the product and a falling stream allows for an effective degassing at very low delta t. This requires some extra control but saves Juhayna an enormous amount of energy costs.

### Filling

Juhayna fills its products currently in beverage cartons on SIG Combibloc lines: two CFA124, one CFA112, one CFA209 and one CFA312. Filling volumes range from 200 ml up to 1 litre. In future, there will be available a line supplied by Krones for hotfill in PET bottles in various filling sizes as well as Juhayna has planned for a pouch filler for portion packs and large-size filling of pasteurised juice in 4-litre HDPE bottles.

### Automation

The whole process – from materials intake, quality control, order management, execution of the production until tracking & tracing was automated using the lead system Plant IT from ProLeit.

Installed hardware are Siemens S7 Plc's with network Profibus and ASI networks.

Key of the system is the recipe management tool Batch IT for the whole



Tobias Reiter, GEA TDS, and Juhayna's Production Manager Samir Musallim (left) checking the brand new Niro Soavi homogenizer.

process with stored parameter for recipes, ingredients and process.

Together with local subcontractors, GEA TDS and Indag have taken care for piping, electrics and Insulation. There was a master fitter on site all the time to advise, organise and for quality checks.

GEA TDS Project Manager Matthias Müller and Indag's Stefan Sowa report a number of difficulties they had to overcome during the project: Building construction was delayed, customs procedures were extraordinary complicated and time-consuming, further delays occurred due to blocked transport capacities ... not to mention dust and sand as constant plagues for technical operations.

## Largest CEE food show

POLAGRA

The largest food and catering trade shows in CEE countries will be held in Pozna, Poland in mid September. Five trade shows will take place at the same time (14-17 September): Polagra-Food International Food Product Trade Fair, Gastro Trendy International Trade Fair of Catering, Polagra-Tech International Trade Fair of Food Processing Technologies, International Food Ingredients Show and Pakfood Food Industry Packaging Fair.

Polagra-Food is a venue for presenting new market offers and a meeting

place for producers and distributors with clients.

Polagra-Tech includes: Exhibition of Food Industry Machines and Equipment, Exhibition of Air-Conditioning, Refrigerating and Heating Devices, and International Food Ingredients Show.

Pakfood is targeting representatives of enterprises, production companies and traders from the food sector and the printing industry.

More information: [www.polagra-food.pl](http://www.polagra-food.pl), [www.polagra-tech.pl](http://www.polagra-tech.pl), [www.pakfood.pl](http://www.pakfood.pl)



## Monitoring the water content

BERTHOLD TECHNOLOGIES

The measuring system LB 566 Micro-Polar from Berthold Technologies is used to monitor the water content or the dry substance of dairy products during the production process. The microwave based measurement provides continuous and real-time measuring data. Subsequently, trends in water content or dry substance can be identified at an early stage of production and corrected on time, leading to a significant increase in efficiency.

Micro-Polar provides highly accurate measuring results and is proven to work reliable for many years. The measurement is completely non-intrusive and not affected by colour, viscosity or non-homogeneity of the measured product - maintenance is not required. [berthold.com](http://berthold.com)