



Introduction

Trilobes

an engineering company in liquid food storage & transport

Trilobes is an independent and innovative company with ample experience in aseptic liquid storage & transport solutions focused on the design, engineering of supply chain projects with activities such as consultancy for logistical studies for supply chains, port-ship-port solutions, storage & transport of bulk volumes in a unique cold & aseptic way.

The team has over 30 years of experience in the orange juice industry and is operating a juice supply chain with a juice vessel for aseptic transport within Europe.

Our mission is to be the most dependable and trusted source for our customers and partners, excellence via expertise and commitment, doing what it takes to deliver on promises.



History

Projects for juice vessels

Trilobes' history started in the 90's with Holvrieka in Sneek



Citrovita Bilobe Tanks 1993



Southern Juice Terminal 1997



MV Southern Juice Vessel 1997





History

Projects for juice worldwide

Trilobes' history continued



Cargill Modular Terminal Chiba Japan 1998

LDC Juice Terminal Ghent 1999

Costa Rica MV Joint Frost 1998



History

MV Ibis Arrow, in Wismar, Germany



In 2011, supplying cargo tanks, aseptic process and CIP system



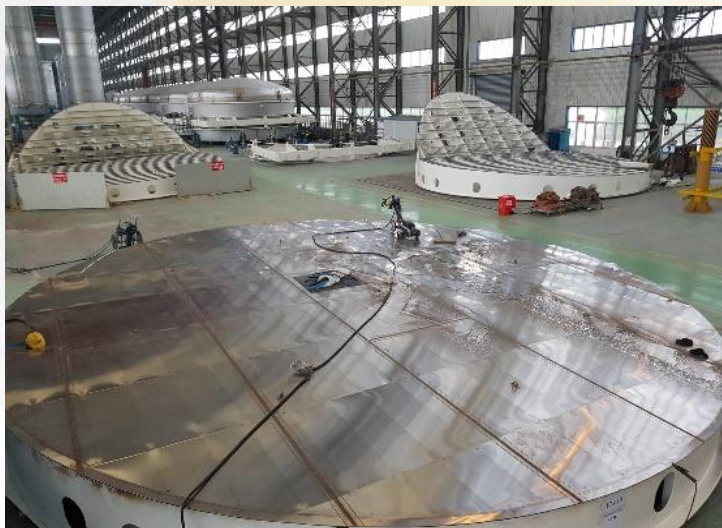
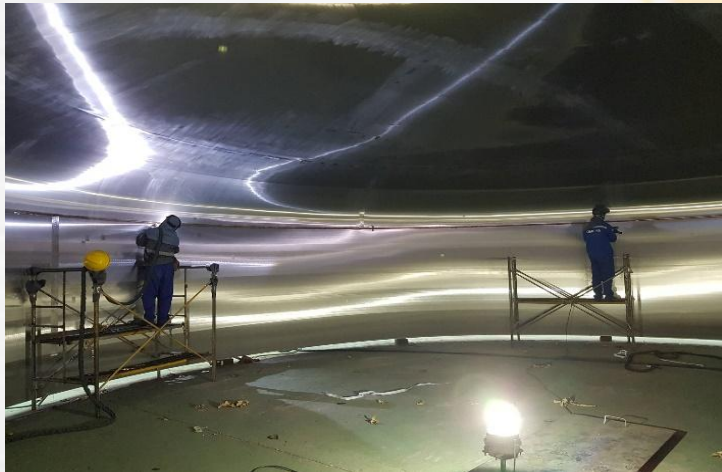


History

MV Citrus Vita Brasil, in Nantong, China



In 2017, supplying all cargo tanks, aseptic process and CIP system



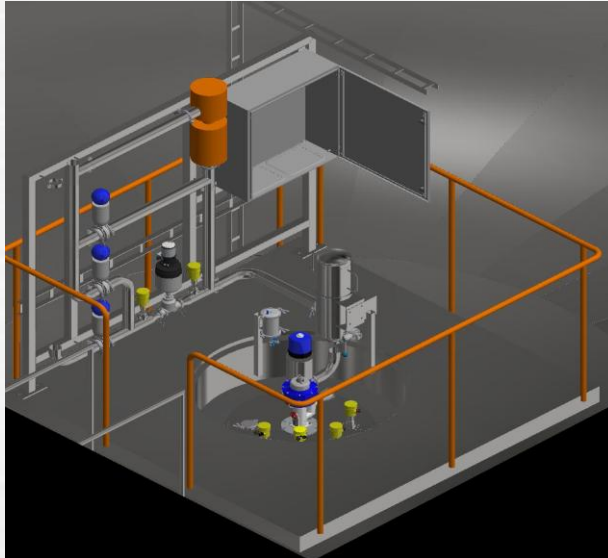


History

Citrofrut ATF, in Paso Largo, Mexico



In 2019, supplying storage tanks, aseptic process, pasteurizer and CIP system





History

Medibel Juice Terminal, in Vlissingen, The Netherlands



In 2021, a turn-key supply, storage tanks, aseptic process, pasteurizer, CIP system and civil works





Activities

Active in the following segments

Supply Chain & Business Development, Consultancy & Engineering, Commissioning & Training, Maintenance & Service

Supply Chain & Business Development

- Logistical study for supply chain
- Port-ship-port solutions
- Inland, coastal and deep-sea shipping

Consultancy & Engineering

- Aseptic tank farms
- Port terminals
- Vessel cargo systems
- Process and automation

Commissioning & Training

- Commissioning with our trained supervisors
- Operational training of our supplied installations

Maintenance & Service

- Aseptic process systems
- Cargo tank systems
- Refrigeration plants

Previous and ongoing affiliations:





Activities

Supply Chain Studies for Liquid Food

Juice Supply Chain

Egyptian Juice Supply Chain

The future for Orange Juice from Egypt

Egyptian Juice Supply Chain

Introduction

The map from drum in a solar evaporator and 3D tank container logistic to bulk logistic has proven to be necessary when both reduce the volume to MTC to attract the market the target volume. Bulk transport will give a reduction in cost and in number of containers to be used when especially transporting the MTC Juice.

Implementing the Egyptian Juice Supply Chain will give Egypt the same advantages:

- Transfer the development of a Port Terminal and Juice Vessel are required to have access to the 3 major market.

Egyptian Juice Supply Chain

Port Terminal and Juice Vessel

The Port Terminal will be able to receive MTC orange juice, via road tanker, where it will be filtered, deaerated and stored in a large tank under aseptic conditions, i.e. size during of lesser storage production. Juice loading from the terminal will be done via an aseptic pumping system and under aseptic transfer operations.

After processing, leaving the Juice Vessel, it will transport MTC orange juice and storage juice containers land operations between the port in Egypt and Europe. The vessel will have a dedicated deck tanks in loading and discharging orange juice under aseptic conditions.

The vessel will be equipped with Cargo Tanks to transport the juice, it has all the equipment on board that is needed to operate in the long term storage of orange juice, it has its own DP, refrigeration and nitrogen generation system on board.

Once at a receiving terminal in Netherlands or other port area location, the orange juice will be off-loaded by pumping aseptically in the terminal or non-aseptically via road tanker and transported to customer locations within Europe.

There are many benefits of transporting MTC orange juice and containers via a Juice Vessel:

- The Juice is aseptically stored and kept aseptically during transport.
- Lower operating/operational costs.
- Reducing emissions.

Egyptian Juice Supply Chain

Port Terminal

Example of an export and import terminal with a Juice vessel along side

Egyptian Juice Supply Chain

Port Terminal

Export Terminal to be built in an Egyptian port area

- Container terminal with 2 aseptic storage tanks of about 1100 m³ each
- Processing area with 2 aseptic storage tanks of about 1100 m³ each
- Juice loading area with 2 aseptic storage tanks
- Central steam distribution system, DP, deaer and nitrogen system
- Civil construction to receive and store goods, multiple operating
- Requires per area about 100 x 100 m² along the quay side

Egyptian Juice Supply Chain

Vessel Route

Volumes and Voyages from Egypt to NW-Europe

Route	Volume (m ³)	Voyage (days)
Egyptian (Alexandria) to NW-Europe	11,000	18
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22
Egyptian (Suez) to NW-Europe	11,000	22

Egyptian Juice Supply Chain

Juice Vessel

Possible candidate (with shipyard required modifications, executed in China)

Egyptian Juice Supply Chain

Juice Vessel

Possible Cargo Tank configuration

- Insular Cargo Tanks installed in the vessel (4000 m³)
- MTC Cargo Pressurization system and pure N₂ Nitrogen system
- Dedicated aseptic storage system with pumps, agitators and valves
- DP and deaer, nitrogen and nitrogen system
- Multiple deck construction and complete finishing

Egyptian Juice Supply Chain

Juice Vessel

To be constructed (in China), a Cargo Tank and System for Juices

Egyptian Juice Supply Chain

Juice Vessel

Installation of the Cargo Tanks and System

Egyptian Juice Supply Chain

Juice Vessel

Loading/discharging of a Juice Terminal or directly into road tankers

Egyptian Juice Supply Chain

Trilobes Group

Trilobes is a world leading engineering company in liquid food transport

Trilobes is an independent and innovative company with ample experience in aseptic liquid transport. Trilobes solutions focuses on the design, engineering of liquid transport vessels and systems such as: equipment for liquid food, from pump, aseptic storage and transport of bulk volumes in a unique and aseptic way.

The team has over 30 years of experience in the orange juice industry and is operating a Juice Vessel ship with a Juice Vessel for aseptic transport within Europe.

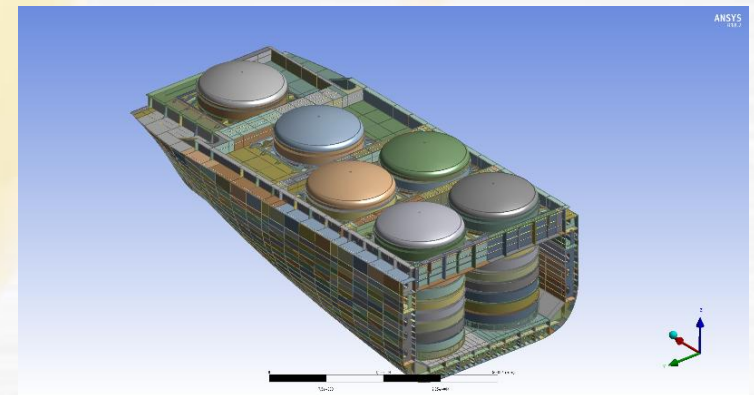
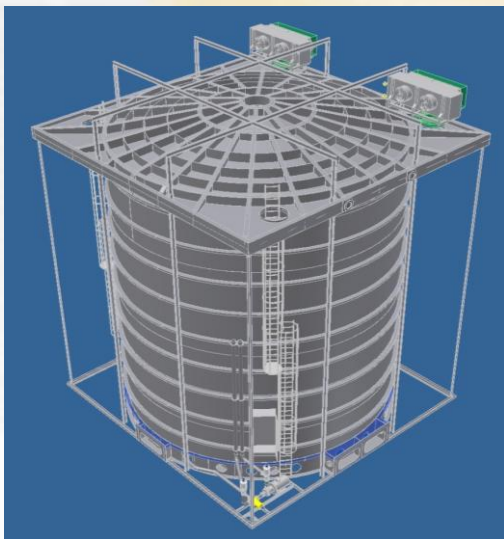
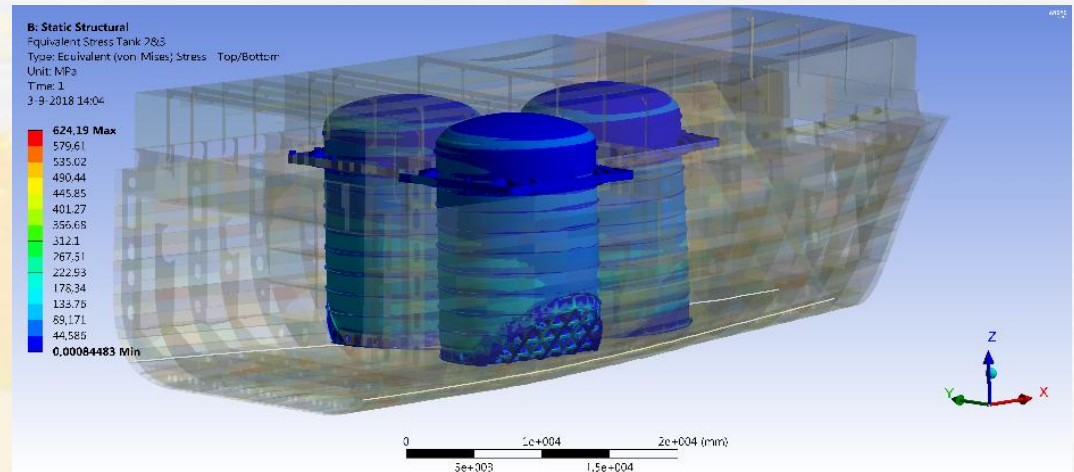
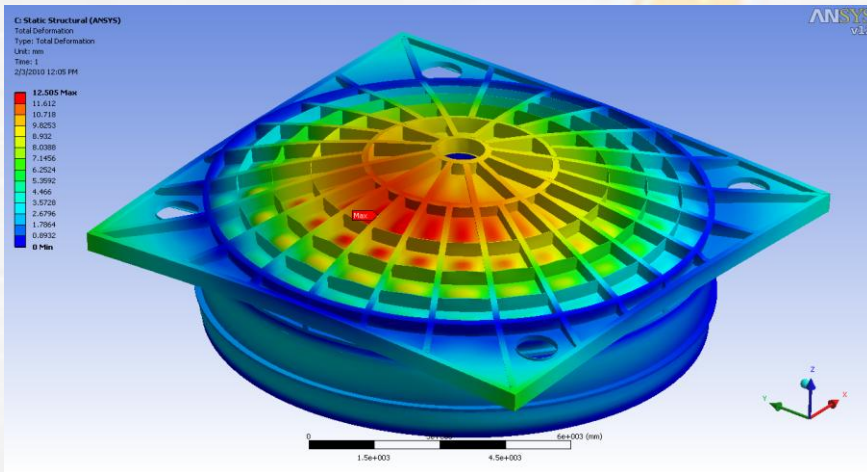
The mission is to be the most experienced and trusted source for our customers, assistance, the expertise and commitment being what it takes to deliver on promises.



Activities

Structural Engineering for vessels and tanks

ANSYS Finite Element Analysis

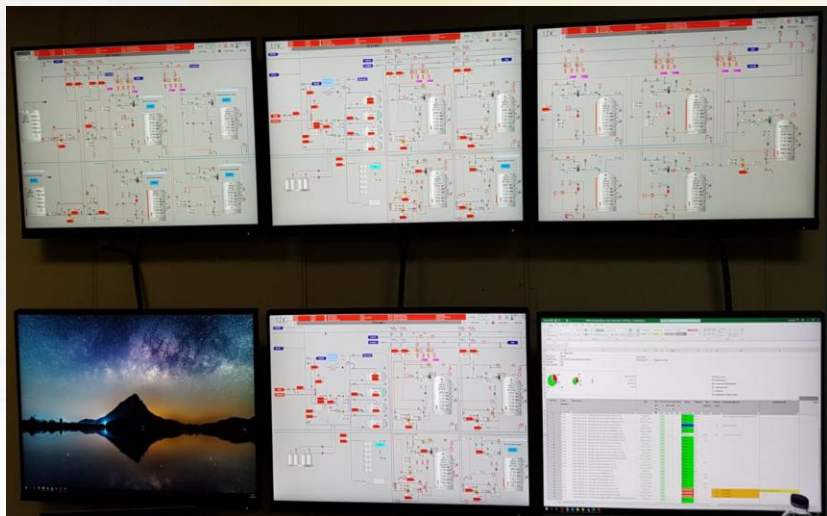
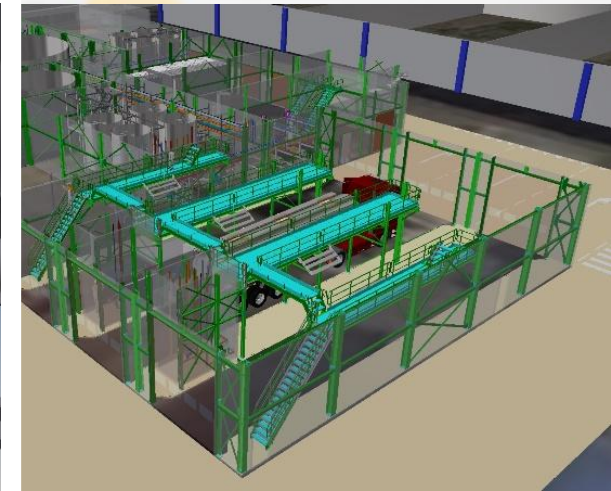
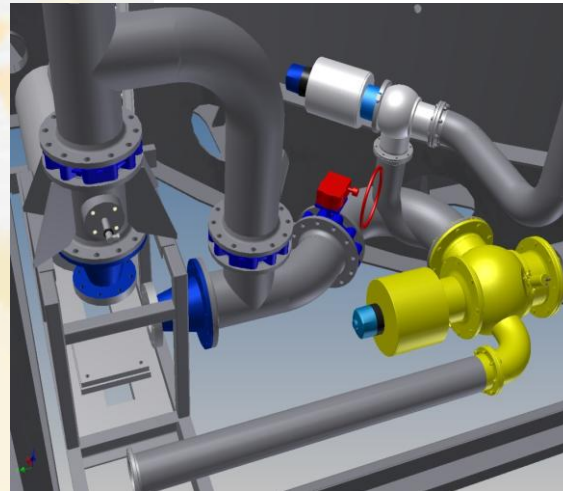
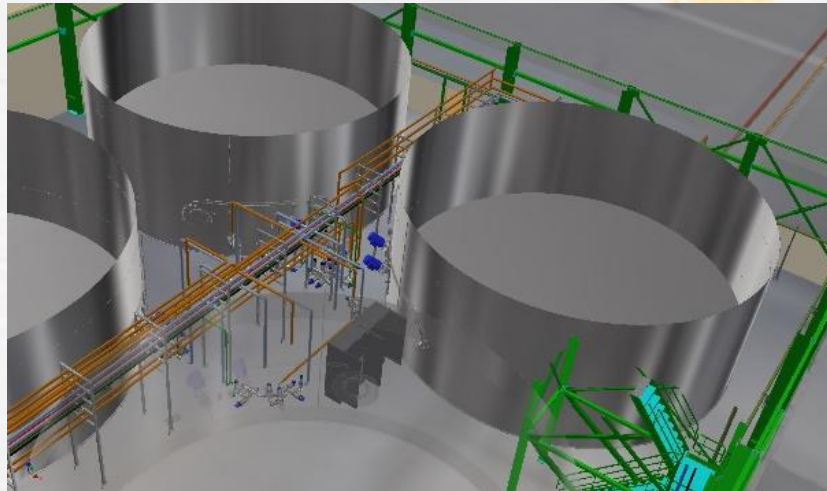




Activities

Process Engineering for sanitary and aseptic processes

Process calculation, engineering, automation and design for liquid foods



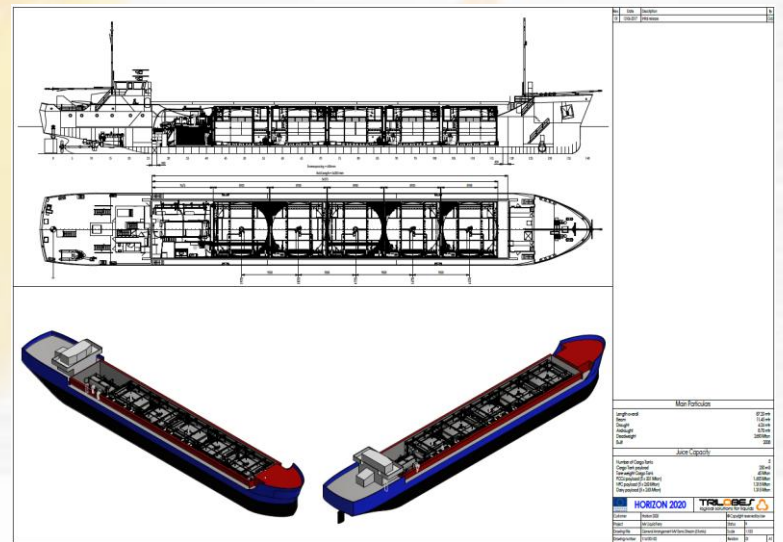


Activities

MV Marlie with aseptic cargo system



JuiSea Shipping started in 2021, which is a Joint Venture shipping company between Trilobes and Refresco





Contact

Trilobes BV
Madame Curieweg 9
8501 XC Joure
The Netherlands
Phone +31 513 412717
info@trilobes.com

Previous and ongoing affiliations:



citrosuco

LDC.
Louis Dreyfus Company



Citrofrut



Medibel
a taste of the sun



DÖHLER



Refresco



JuiSea SHIPPING