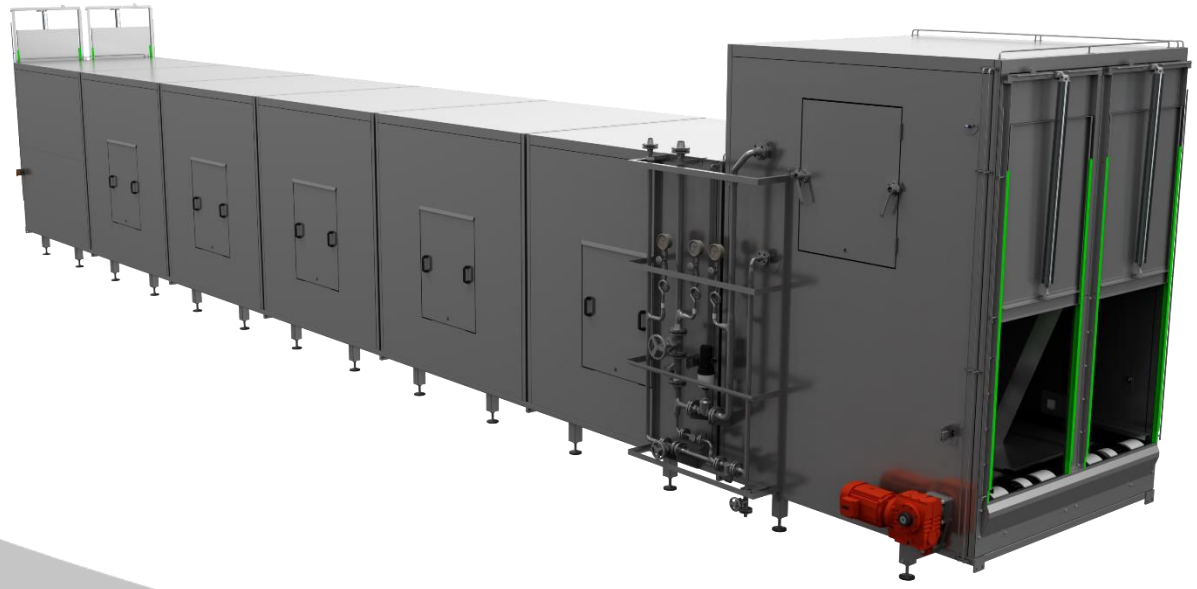
# MACHINE SPECIFICATION

## THAWING TUNNEL



| | | | |
|---|---|---|---|
| Machine name | Thawing tunnel | Manufacturer | Fluidor Equipment B.V. |
| Publication date | 06-05-2024 | Address | Ramgatseweg 25, 4941VN<br>Raamsdonksveer, The Netherlands |
| Version | 1.1 | Telephone | +31(0)162 581 450 |

## DESCRIPTION

The Fluidor Thawing Tunnel is designed to pre-thaw the outer shell of the ice block, allowing for easy tipping of 200 L drums containing deep-frozen fruit juices, fruit pulps and fruit purees. This thawing process facilitates the release of products from the drum during dumping into the Drum Dumper Ice Crusher (DPRICS).

Frequency driven shuttles transport the drums in pairs in and out of the Thawing Tunnel. Two driven chain tracks take care of the transport inside the Tunnel. On top of the Tunnel hot air is created by circulating air through a steam / air heat exchanger. A frequency driven fan circulates the hot air through an air duct from which the air is precisely guided along the drums.
Only the outer shell and top surface of around 2-3 cm is thawed, the rest of the product remains deep frozen to maintain product quality. The capacity of the Thawing Tunnel is adjustable by duration time per track or drum and temperature (per tunnel). These parameters make it possible to pre-thaw smaller batches of different products with different pre-thawing times. The modular built configuration offers a flexible pre-thawing process. For a corresponding maximum capacity to the DPRICS and CIM, two Thawing Tunnels of 32 drums each are advised.

## DESIGN SPECIFICATION

- According actual CE-regulations, only in combination with a Fluidor machine
- Developed and build according quality system ISO 9001
- Clean design according actual EN1672-2 and HACCP-regulations
- Good Manufacturing Practice Regulation (EC) 2023/2006
- Components according Fluidor standard components list
- Machine control by HMI (Siemens or Allen Bradley)
- Control cabinet IP55 / NEMA 12 (VX25….,various sizes, AISI 304)
- Module for remote internet access
- AISI304 housing and construction, modular built, containing 2 chain driven tracks.
- 1 Steam/Air heat exchanger for one section Thawing Tunnel.
- Air temperature in tunnel adjustable up to 90 °C.
- Inspection/access doors at one side.
- Alternative heating by electric power instead of steam on request.
- Height roller conveyor system 700 mm
- Machine is designed to be used 12 hours a day 5 days a week and 52 weeks a year with proper maintenance and an expected service life of 20 years

## REQUIREMENTS

- Layout (dimensions, utility & requirements drawing) available upon request
- Earthquake area extra fixation needed (anchors option)
- Machine is designed for indoor use in a Basic hygiene area

**STEAM REQUIREMENTS:**

| Parameter | Value |
|---|---|
| Quality | Dry saturated steam |
| Humidity | Max 5% condensate |
| pH | 8.5 – 9.2 |
| Carbon dioxide | Max 2 ppm (mg/l) |
| Chloride | Max 5 ppm (mg/l) |
| Solid particles | Max 0.5 ppm (mg/l) |
| Turbidity | Max 1 NTU |
| Ammonia ($NH_3$) | Max 5 mg/l |

- Steam must free from condensate and particles.
- Steam supply line must be equipped with a pressure controller in order to maintain a constant feed pressure.
- Condensate traps must be provided close to the process line in order to produce dry steam.
- A master shut-off valve must be installed in the steam supply line.
- Steam pipes must be insulated as protection against personal injury and to avoid condensation.
- Before connecting the steam supply to the process line, the steam pipes must be blown clear with repeated blasts of steam, lasting 5-10 minutes.
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## TECHNICAL DATA

| | EU | USA |
|---|---|---|
| **Based on one tunnel for 32 drums** | | |
| · Total weight empty | : 6800 kg | 14990 lbs |
| · Total weight Full | : 14000 kg | 30800 lbs |
| · Product | : -20, 20 °C | -4, 59 ˚F |
| · Air circulation adjustable | : 20, 90 °C | 59, 194 ˚F |
| · Ambient temperature | : 5 - 25 °C | 41 - 77 ˚F |
| · Relative humidity | : 30 - 70% | |
| · Noise level | : < 85 dB(A) | |
| · IP value (control cabinets + drives) | : IP55 | |
| · Adjustable machine support legs | : 80 -160 mm | 3.15 - 6.3 inch |
| **Tunnel module information :** | | |
| ***sections weight:*** | | |
| · Start section (1x) | : 1020 kg | 2250 lbs |
| · Middle section (5x) | : 700 kg | 1540 lbs |
| · End section (1x) | : 2010 kg | 4430 lbs |
| ***sections dimensions h*w*d:*** | | |
| · Start section (1x) | : 3240*2180*2340 mm | 128*86*92 inch |
| · Middle section (3x) | : 2500*2180*2500 mm | 99*86*99 inch |
| · End section (1x) | : 3290*2730*2575 mm | 130*107*101 inch |

## CAPACITY

- Depending on drum infeed & product: Maximum capacity based on batches is 20 drum/hour
- Drums will stay in tunnel approx. 70 minutes, depending on product specifications.
- Up to 32 drums per Thawing Tunnel (16 drums/track), number of sections is per customer's request.

## PRODUCT INFORMATION

- Product type : Frozen fruit juices (NFC), fruit pulps or fruit purees.

## CLEANING

- Inspect the tunnel every three months and remove any contamination, such as labels. The inside of the tunnel is accessible through the doors on one side of the thawing tunnel.

| DRUM SPECIFICATION | EU | USA |
|---|---|---|
| · Dimensions drums: | Width: Ø480 to Ø630 mm<br>Height: 810 to 1000 mm | 19.0” to 24.8” inches<br>31.8” to 39.4” inches |
| · Max weight drum: | 300 kg | 775 Lbs |

## MACHINE EXECUTIONS

- Thawing tunnel left
- Thawing tunnel right

## POWER SUPPLY / CONTROLES

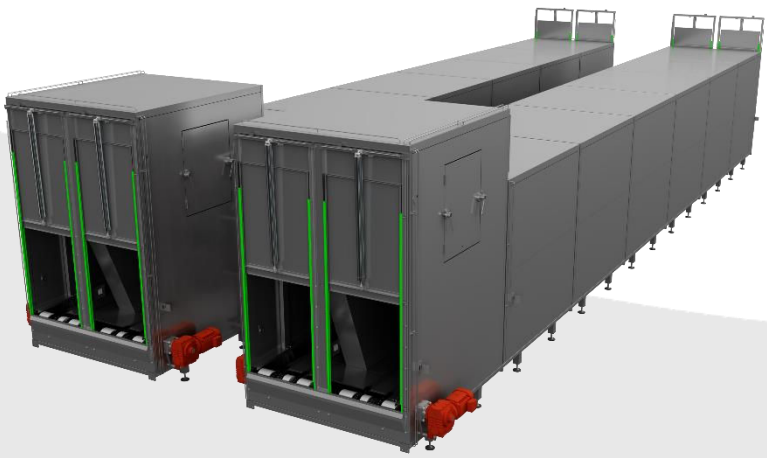
- 3 Phase 400V 50Hz 60 A+ neutral + earth, Siemens controls
- 3 Phase 480V 60Hz 40 A + earth, Allen-Bradley controls, UL prepared

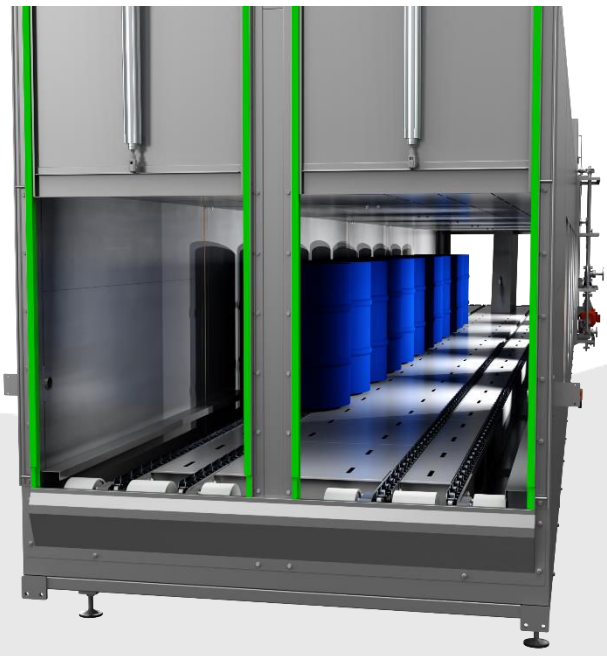
## COMMUNICATION

- PROFINET connections pre- installed at Siemens controls
- Ethernet/IP connections pre- installed at Allen Bradley controls

## OPTIONS

- Standing enclosure cabinets, IP66 / NEMA 4x (VX25, basic cabinet 800x2000x600, AISI 304)



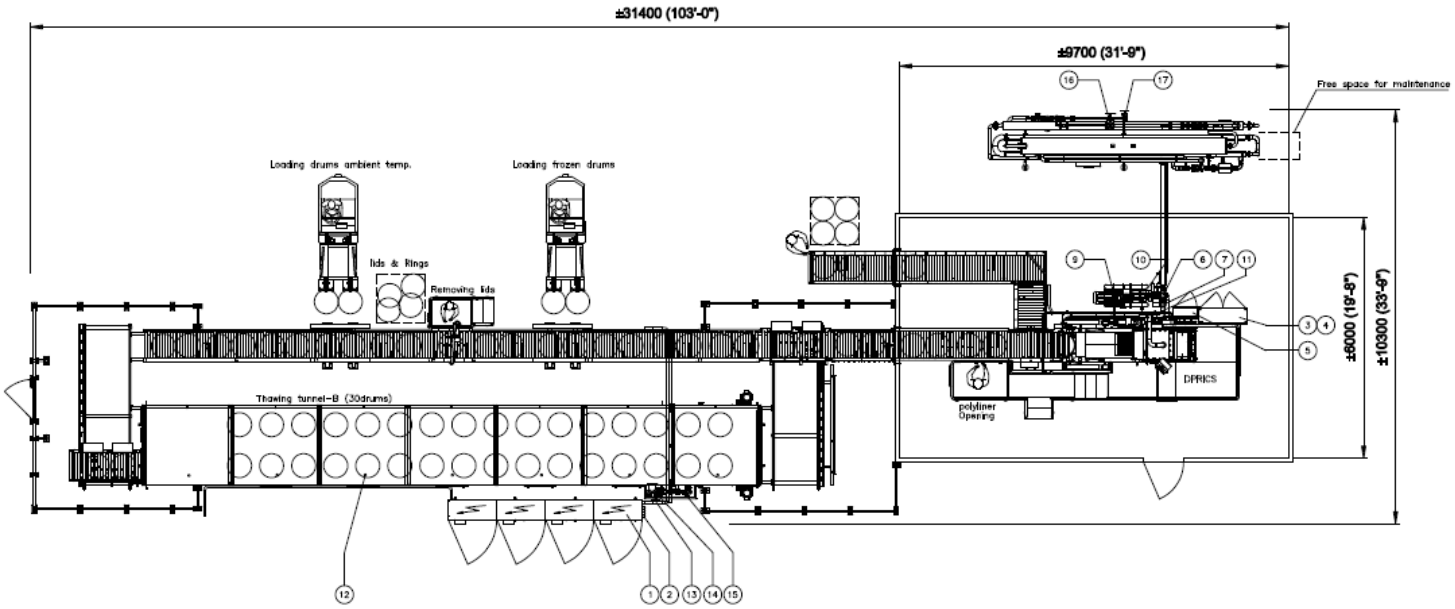


## PROCESS OPTIONS

The Thawing tunnel can be combined with the following Fluidor machines
Machine specification available upon request

- Drum Dumper Ice Crusher (DPRICS)
- Crushed Ice Melter (CIM).
- Conveyor system: Drum opening station, Drum crusher, Drum weighing system, Drum conveyor loading full drums, Full or empty drum washing station etc.

## PROJECT LAYOUT EXAMPLE




## ANNEXED DOCUMENTS

- Machine Lay-out
- Machine P&ID
- Fluidor standard components

## GENERAL INFORMATION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|---|---|
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