

## Tetra Pak Processing Equipment

### Technical Data for homogenizer

|                            |                                     |
|----------------------------|-------------------------------------|
| Machine No.:<br>5870818192 | Model:<br>Tetra Pak Homogenizer 30G |
|----------------------------|-------------------------------------|

#### General:

|                             |                               |  |
|-----------------------------|-------------------------------|--|
| Capacity:<br>5000-10000 l/h | Working pressure:<br>250 bar  | Total weight:<br>3575 kg                         |
| Altitude:<br>1000 m         | Ambient temperature:<br>40 °C | Noise reduction:<br>22. <input type="checkbox"/> |

#### Wetend design:

|                           |  |  |   |   |   |
|---------------------------|--|--|---|---|---|
| Piston diameter:<br>56 mm | Piston design:<br><input type="checkbox"/> Stainless steel<br><input type="checkbox"/> Chromium plated<br><input checked="" type="checkbox"/> Tungsten carbide<br><input type="checkbox"/> Solid Ceramic | Piston packing:<br><input type="checkbox"/> PSB1<br><input type="checkbox"/> PSB3<br><input checked="" type="checkbox"/> PSA1<br><input type="checkbox"/> PSU1 | Valve design:<br>42. <input type="checkbox"/> Mushroom<br>34. <input type="checkbox"/> Cone<br>39. <input checked="" type="checkbox"/> TD<br>1. <input type="checkbox"/> Ball | Valve seat:<br><input checked="" type="checkbox"/> Stainless steel<br>35. <input type="checkbox"/> Cobalt carbide | Pump version:<br><input type="checkbox"/> Pump<br>40. <input type="checkbox"/> Pump with one stage<br>41. <input type="checkbox"/> Pump with two stages |
|---------------------------|--|--|---|---|---|

#### Homogenising device design:

|                                 |                             |   |  |  |   |
|---------------------------------|-----------------------------|---|--|--|---|
| Size of 1st stage:<br>49/58 ABR | Size of 2nd stage:<br>49/58 | Wide gap:<br>33. <input type="checkbox"/> | Abrasive device design:<br>10. <input checked="" type="checkbox"/> | Split head:<br>8. <input type="checkbox"/> | Outlet flange for 20-60 bar:<br>9. <input type="checkbox"/> |
|---------------------------------|-----------------------------|---|--|--|---|

#### Drive motor:

|                     |                            |                         |                             |                             |                   |
|---------------------|----------------------------|-------------------------|-----------------------------|-----------------------------|-------------------|
| Manufacture:<br>ABB | Model:<br>M3BP280SMC 4 IE3 | Revolution:<br>1485 rpm | Protection:<br>IP55         | Thermistor:<br><7.5 V DC    | Weight:<br>725 kg |
| Power:<br>90 kW     | Voltage:<br>400 V          | Frequency:<br>50 Hz     | Full load current:<br>158 A | Starting current:<br>1279 A |                   |

#### Hydraulic motor:

|                     |                        |                         |                          |
|---------------------|------------------------|-------------------------|--------------------------|
| Manufacture:<br>ABB | Model:<br>M2BAX 71MA 4 | Revolution:<br>1425 rpm | Protection:<br>IP55      |
| Power:<br>0,25 kW   | Voltage:<br>400 V      | Frequency:<br>50 Hz     | Rated current:<br>0,75 A |

#### Pressure lubrication motor:

|              |               |                    |                     |
|--------------|---------------|--------------------|---------------------|
| Manufacture: | Model:        | Revolution:<br>rpm | Protection:         |
| Power:<br>kW | Voltage:<br>V | Frequency:<br>Hz   | Rated current:<br>A |

#### Drive unit:

|                     |                        |                                  |                                    |                           |  |
|---------------------|------------------------|----------------------------------|------------------------------------|---------------------------|--|
| V-belt type:<br>XPC | Number of tracks:<br>3 | Motor pulley diameter:<br>250 mm | Gearbox pulley diameter:<br>500 mm | V-belt length:<br>2650 mm | Belt tension (New/Used):<br>1316/1144 N (48,5/45,2 Hz) |
|---------------------|------------------------|----------------------------------|------------------------------------|---------------------------|--|

#### Gearbox:

|                          |                 |                    |
|--------------------------|-----------------|--------------------|
| Manufacture:<br>Benzlers | Model:<br>TV151 | Reduction:<br>5,89 |
|--------------------------|-----------------|--------------------|

#### Oil:

|   |                       |   |                       |  |                      |
|---|-----------------------|---|-----------------------|--|----------------------|
| Crankcase:<br><input checked="" type="checkbox"/> Mineral type<br><input type="checkbox"/> Synthetic type<br><input type="checkbox"/> Food Grade type | Viscosity:<br>220 cSt | Gearbox:<br><input checked="" type="checkbox"/> Mineral type<br><input type="checkbox"/> Synthetic type<br><input type="checkbox"/> Food Grade type | Viscosity:<br>320 cSt | Hydraulic unit:<br><input type="checkbox"/> Mineral type<br><input type="checkbox"/> Synthetic type<br><input checked="" type="checkbox"/> Food Grade type | Viscosity:<br>68 cSt |
|---|-----------------------|---|-----------------------|--|----------------------|

#### Cooling water supply:

|                      |                         |                        |                      |
|----------------------|-------------------------|------------------------|----------------------|
| Pressure:<br>2-4 bar | Consumption:<br>700 l/h | Temperature:<br><25 °C | Hardness:<br><10 °dH |
|----------------------|-------------------------|------------------------|----------------------|

#### Steam supply:

|                      |                         |                            |
|----------------------|-------------------------|----------------------------|
| Pressure:<br>2-4 bar | Consumption:<br>25 kg/h | Temperature:<br>105-110 °C |
|----------------------|-------------------------|----------------------------|

#### Condensate:

#### Automation:

|   |   |   |
|---|---|---|
| Cooling water valve pneumatic:<br>11. <input checked="" type="checkbox"/> | Remote on/off setting of hydraulic pressure:<br>18. <input checked="" type="checkbox"/> | Remote indication of product pressure:<br>14. <input checked="" type="checkbox"/> 1st stage      38. <input type="checkbox"/> 1st + 2nd stage |
| Machine control:<br>28. <input checked="" type="checkbox"/>               | Inlet pressure transmitter:<br>48. <input type="checkbox"/>                             | Remote continuous setting of hydraulic pressure:<br>20. <input type="checkbox"/>  |
|   |   | Remote indication of hydraulic pressure:<br>16. <input type="checkbox"/>  |

|                     |             |                |
|---------------------|-------------|----------------|
| Date:<br>2018-09-30 | Sign:<br>SS | Revision:<br>1 |
|---------------------|-------------|----------------|

**Tetra Pak Processing Equipment**
**Test Record for homogenizer**

|                            |                                     |
|----------------------------|-------------------------------------|
| Machine No.:<br>5870818192 | Model:<br>Tetra Pak Homogenizer 30G |
|----------------------------|-------------------------------------|

**Performance data**

|                               |                        |                       |
|-------------------------------|------------------------|-----------------------|
| Test liquid:<br>Water 40-70°C | Test voltage:<br>400 V | Test location number: |
|-------------------------------|------------------------|-----------------------|

| Test time<br>(h) | Homogenizing<br>pressure<br>(bar) | Capacity<br>(l/h) | Crankshaft<br>revolution<br>(rpm) | Current<br>consumption<br>(A) | Frequency<br>(Hz) | Stage 1                        |                    | Stage 2                        |                    | LPRV                           |                             |
|------------------|-----------------------------------|-------------------|-----------------------------------|-------------------------------|-------------------|--------------------------------|--------------------|--------------------------------|--------------------|--------------------------------|-----------------------------|
|                  |                                   |                   |                                   |                               |                   | Hydraulic<br>pressure<br>(bar) | Signal<br>(%) (mA) | Hydraulic<br>pressure<br>(bar) | Signal<br>(%) (mA) | Hydraulic<br>pressure<br>(bar) | Relief<br>pressure<br>(bar) |
| 1                | 25                                | 10306             | 173                               | 23,6                          | 67,3              |                                |                    | 6                              |                    |                                |                             |
|                  | 50                                | 10445             | 173                               | 35,4                          | 67,3              | 9                              |                    | 6                              |                    |                                |                             |
|                  | 100                               | 10308             | 173                               | 59,1                          | 67,3              | 21                             |                    | 6                              |                    |                                |                             |
|                  | 150                               | 10216             | 173                               | 81,9                          | 67,3              | 38                             |                    | 6                              |                    |                                |                             |
|                  | 200                               | 10044             | 172                               | 105,4                         | 67,3              | 51                             |                    | 6                              |                    |                                |                             |
| 6                | 250                               | 10017             | 172                               | 128,9                         | 67,3              | 65                             |                    | 6                              |                    |                                |                             |
| 1                | 250                               | 5022              | 84                                | 64,2                          | 33,3              | 65                             |                    | 6                              |                    |                                |                             |
|                  |                                   |                   |                                   |                               |                   |                                |                    |                                |                    |                                |                             |
|                  |                                   |                   |                                   |                               |                   |                                |                    |                                |                    |                                |                             |

**Manufacturing No.**

|                                   |                            |                                   |
|-----------------------------------|----------------------------|-----------------------------------|
| Main motor:<br>3G1C18210655587001 | Gearbox:<br>47226142-02    | Starter panel:<br>31829-31732     |
| Pump block:<br>A7526              | Crankcase:<br>2-130718-163 | Frequency inverter:<br>011724G318 |

|                     |                                   |
|---------------------|-----------------------------------|
| Date:<br>09/30/2018 | Test performed by:<br>Bill Shi    |
| Date:<br>09/30/2018 | Test approved by:<br>Samual Sheng |



# TETRA PAK® HOMOGENIZER 30G

Homogenizer or high-pressure pump for liquid food applications



## HIGHLIGHTS

- Maximum capacity 18 900 l/h
- High homogenization efficiency – for high product quality and low cost
- High homogenizer uptime
- Turnable parts – low maintenance and spare parts costs
- Handles a wide range of products

## APPLICATION

The Tetra Pak® Homogenizer 30G handles high-pressure homogenization of low to high viscous, aseptic and non-aseptic emulsions and suspensions, including pasteurized milk, UHT milk, cream, yoghurt, condensed milk, ice cream mix, fruit juices, concentrates, plant based beverages, purees, tomato preparations, dressings, mayonnaise, sauces and gravies.

## WORKING PRINCIPLE

The product enters the machine through the inlet pipe. The pistons pressurize the product at the homogenizing pressure. The high pressure pushes the product through the small annular gap of the homogenizing device. The

pressure is transformed into high velocity, generating extreme turbulence and cavitation, which reduces the size of the liquid droplets and solid particles in the product. The product then exits through the outlet pipe.

## DESIGN

The Tetra Pak Homogenizer 30G is a horizontally mounted 3-piston positive displacement pump with a built-in HD 100 homogenizing device. The seat and forcer disc are reversible for double the lifetime. The wear-resistant parts are made of cobalt carbide.

The unit features a high-pressure pump block of one piece forged stainless steel, designed for both aseptic and non-aseptic processing, with a quick-change piston-seal cartridge system, and fully replaceable suction and discharge valve seats. An efficient serial cooling water system offers low water consumption. The block is backed by a 10-year warranty against cracking.

As a high-pressure pump the machine is delivered with an automatic line pressure relief valve (LPRV), a hydraulically operated valve that protects the line after the homogenizer from overly high pressures.

## TECHNICAL FEATURES

- HD 100 homogenizing device with hydraulic pressure setting for stable pressure (HD 100 not included when the unit is supplied as high-pressure pump only)
- Turnable parts – doubles the lifetime of homogenizing device, valves and seats
- Splash-lubricated crankcase made in high-quality cast iron
- One-piece forged pump block – hygienic and durable with ten year warranty against cracks
- Pulsation dampers and hygienic, heavy-duty clamp connections
- Floating piston connection – self-aligning
- Serial piston-cooling circuit – low water consumption
- Premium efficiency IE3 electrical motor

## OPTIONS

- **Second stage homogenizing device** – mounted after the first, to improve homogenization effect
- **Aseptic version** – piston seals and dampers adapted for aseptic use, aseptic condensers for steam production, automated valve for changing from steam to water during CIP standard for aseptic machines
- **Pneumatic cooling water valve** – less temperature sensitive than standard electrical valves
- **Various remote control functions** – for controlling homogenizing pressure from remote locations
- **Machine control equipment** – optimizes cooling water to crankcase, and monitors inlet pressure and oil level in the crankcase
- **Noise reduction** – further reduction by up to 4 dB
- **Spare parts kit** – one set with the most common spares, such as seals and pistons
- **Wear parts** – key wear parts available in a wide selection of designs and materials adapted to your applications

## TECHNICAL DATA

### Capacity/pressure range

| Pressure, bar (psi) | Max capacity L/h (gph) |
|---------------------|------------------------|
| 160 (2 300)         | 18 900 (4 990)         |
| 200 (2 900)         | 15 000 (3 960)         |
| 250 (3 600)         | 11 800 (3 110)         |
| 315 (4 600)         | 9 300 (2 450)          |
| 400 (5 800)         | 7 500 (1 980)          |

### Service media

|   | Non-aseptic      | Aseptic            |
|---|------------------|--------------------|
| Cooling water (>300 kPa [40 psi], max 25°C [77°F], hardness < 10° dH) | 340 L/h (63 gph) | 740 L/h (195 gph)  |
| Steam (>300 kPa [40 psi], dry and saturated)                          | -                | 25 kg/h (55 lbs/h) |

\* Cooling water can cut to 90 l/h (23 gph) for non-aseptic applications, if recycle unit is available.

### Motor size

$$\frac{\text{Capacity L/h (gph)} \times \text{Pressure bar (psi)}}{30\,600 (87\,400)} = \text{kW(hp)}$$

### Environment

| Consumption data                                       | Non-aseptic | Aseptic |
|--|-------------|---------|
| Energy consumption/1 000 L product (kWh)               | 4.2         | 7.5     |
| Water consumption/1 000 L product (L)                  | 18          | 63      |
| Possible cooling water to recirculate (% of total)     | 74          | 100     |
| Steam consumption/1 000 L product (kg/h)               | N/A         | 2.1     |
| Noise, dB (A)  | 77          | 77      |
| Carbon footprint/1 000 L product (kg CO <sub>2</sub> ) | 1.8         | 3.2     |

### Data based on

**Non-aseptic design:** pasteurized white milk, max capacity at 140 bar.

**Aseptic design:** UHT, white consumption milk, max capacity at 250 bar.

Noise level as per ISO11203, distance 2 metres.

### Shipping data

| Motor type    | Net weight, kg |
|---------------|----------------|
| No motor      | 2 855          |
| 90 kW/120 hp  | 3 485          |
| 132 kW/175 hp | 3 780          |

| Dimensions          | mm            |
|---------------------|---------------|
| Depth (mm)          | 1 720         |
| Width (mm)          | 2 680         |
| Height (mm)         | 1 250         |
| Service area (mm)   | 4 300 x 3 300 |
| Service height (mm) | 1 700         |

Export packaging: add 500 kg

Shipping volume: 11.9 m<sup>3</sup>