Tomato paste rework line 5000 kg/h ï¿½ high-capacity aseptic bulk to retail packing

Target application: tomato paste rework line 5000 kg/h

Reference configuration: 3,000 kg/h finished product from aseptic bulk paste (500ï¿½5,000 kg/h configurable)

At 5 000 kg/h of finished product the rework line becomes a full industrial packing factory: two or three emptying stations feed a continuous standardization loop, the thermal section is sized for 24-hour operation and the filling area usually runs two lines in parallel. Over 250ï¿½300 days this configuration packs 15 000ï¿½22 000 t/year ï¿½ the scale at which importers of finished cans normally switch to local packing.

SCOPE OF SUPPLY

- Two to three aseptic drum / IBC emptying stations with hydraulic presses and heated pipework
- Automated ingredient handling: big-bag sugar and salt, vacuum powder induction, dosing by load cells
- Continuous standardization skid with redundant mass-flow and inline refractometer control
- Deaeration and high-pressure homogenization for ketchup and smooth sauces
- High-capacity tubular pasteurizer with regeneration and validated holding tube
- Two parallel filling lines (cans / jars / sachets) with seamers, cappers and vacuum control
- Pasteurization or cooling tunnels, labelling, case packing and palletising
- Automatic multi-circuit CIP, utilities plant, SCADA with per-batch traceability
- Indicative layout: 900ï¿½1 300 mï¿½ process area plus warehouse, 6 m clear height

TYPICAL OUTPUTS

Standardized tomato paste 22ï¿½28 ï¿½Brix ï¿½ Ketchup, pizza and pasta sauces ï¿½ Passata in glass and cans ï¿½ Formats: 70ï¿½4 500 g cans, 350ï¿½720 ml jars, 50ï¿½200 g sachets, doypacks

DIMENSIONS AND BUILDING ENVELOPE

Process and filling footprint	700ï¿½900 mï¿½ at 3,000 kg/h (250ï¿½350 mï¿½ at 500 kg/h, 1,100ï¿½1,300 mï¿½ at 5,000 kg/h)
Clear height	6ï¿½7 m under beam over mixing and thermal section, 4.5 m over filling
Drum unloading station	60ï¿½110 mï¿½, two alternating stations above 3,000 kg/h
Mixing bay	2 ï¿½ 6,000 L tanks, 120ï¿½180 mï¿½ including gravimetric dosing platform
Thermal section	90ï¿½140 mï¿½ for pasteurizer, hold cell, buffer tank and CIP interface
Filling and packing	260ï¿½380 mï¿½ including seamer, pasteurization tunnel, coding and case packing
Bulk and finished storage	500ï¿½900 mï¿½ for inbound drums / IBCs and finished pallets

LAYOUT ï¿½ FUNCTIONAL ZONES IN FLOW ORDER

1 ï¿½ Bulk intake	Drum, IBC and bag-in-box reception, sampling and traceability scanning
2 ï¿½ Unloading	Heated drum emptying stations, filtering, transfer pumps
3 ï¿½ Mixing & recipe	Mixing tanks with agitator, gravimetric dosing of water, salt, sugar and spices
4 ï¿½ Standardisation	Continuous mass-flow loop with inline refractometer, ï¿½ 0.2 ï¿½Brix at steady state
5 ï¿½ Thermal treatment	Tubular or scraped-surface pasteurizer 92ï¿½98 ï¿½C with validated holding section
6 ï¿½ Filling & closing	Cans, glass jars, sachets or doypacks with seaming / capping and vacuum control

7 ï¿½ Pasteurization tunnel	Tunnel or retort, cooling section and dryer before labelling
8 ï¿½ End of line	Coding, labelling, case packing, palletizing and finished-goods staging
9 ï¿½ Utilities & CIP	Steam skid, chilled water, compressed air, water treatment, CIP skid

UTILITIES AND CONSUMPTION

Installed power	350ï¿½450 kW at 3,000 kg/h (90ï¿½140 kW at 500 kg/h, 550ï¿½700 kW at 5,000 kg/h)
Steam	1.5ï¿½2.5 t/h saturated at 6ï¿½8 bar at 3,000 kg/h
Process and cooling water	8ï¿½12 mï¿½/h at 3,000 kg/h, treated and softened before dilution
Compressed air	300ï¿½500 Nmï¿½/h at 7 bar
Effluent	3ï¿½7 mï¿½/h to treatment, mainly CIP and tunnel blowdown
Manning	6ï¿½9 operators per shift including QC and end-of-line
Operating calendar	250ï¿½300 days/year, 16ï¿½20 productive hours/day ï¿½ not a seasonal campaign

CAPEX, OUTPUT AND PAYBACK

5 000 kg/h rework line ï¿½ investment profile

High-capacity packing factory with parallel filling lines and 24-hour thermal section design.

5 000 kg/h finished product (reference)	Turnkey CAPEX: ï¿½3.4 ï¿½ 4.8 million | Annual output: 15 000 ï¿½ 22 000 t/year packed | EBITDA: 17 ï¿½ 23% of revenue | Payback: 2.5 ï¿½ 3.5 years | Commissioning: 12 ï¿½ 15 months contract-to-commissioning

Assumptions behind the figures

- 250ï¿½300 working days per year, 16ï¿½20 productive hours per day: the feedstock is stored aseptic concentrate, not seasonal fresh tomato.
- Inbound bulk paste at 36ï¿½38 ï¿½Brix in 220 L bag-in-drum or 1 000 L IBC, standardized in line to 22ï¿½28 ï¿½Brix.
- Finished product filled in tinplate cans, glass jars or sachets, with pasteurization and end-of-line packing included.
- CAPEX is turnkey scope: emptying station, mixing, standardization, pasteurizer, filler, closing, CIP, automation, installation, commissioning and training; civil works, land and bulk paste stock excluded.
- EBITDA and payback assume retail or food-service pricing of the packed product and no financing cost inside the operating margin.

Indicative engineering ranges used by MCF Technology for budget screening of rework projects, not a quotation and not the audited result of a specific plant. Final figures are fixed in the feasibility study, once inbound ï¿½Brix, packaging formats, utilities cost and working hours are confirmed.

INSTALLATION, SITE CONDITIONS AND SCOPE BOUNDARIES

- Scope of supply: process equipment, automation, mechanical and electrical erection, commissioning, FAT/SAT, HACCP validation and operator training.
- Excluded from the ranges: land, civil works, building steelwork, external utility generation and import duties.
- Installation, commissioning and after-sales service are delivered worldwide by MCF crews, with remote diagnostics on the SCADA.

TECHNICAL FAQ

Utilities for a 5000 kg/h rework line?

Indicatively 550ï¿½800 kW installed power, 3 000ï¿½4 500 kg/h steam at 8ï¿½10 bar, 25ï¿½40 mï¿½/h treated process water, 70ï¿½110 mï¿½/h cooling water and 1 500ï¿½2 200 Nl/min compressed air. Fixed in the technical dossier.

How many drums per hour are emptied?

About 16ï¿½20 drums of 220 L per hour, so at least two stations work alternately with a third for redundancy during changeovers and cleaning.

Indicative CAPEX and payback?

ï¿½3.4ï¿½4.8 million turnkey with an indicative simple payback of 2.5ï¿½3.5 years, depending on packed-product pricing and utilities cost. Not a quotation.

Is the line suitable for 24-hour operation?

Yes: the thermal section has regeneration and CIP circuits designed for daily sanitation between shifts, with 16ï¿½20 productive hours per day as the design basis.

Can bulk paste of different origins be mixed?

Yes ï¿½ the pre-mix tanks and recipe management handle blending of lots with different inbound ï¿½Brix and colour, with per-batch traceability of every drum used.

NEXT STEPS

- Full technical page: https://mcftechnology.group/en/tomato-paste-rework-line-5000-kg-h
- Configure the line and request the feasibility study: https://mcftechnology.group/en/configurator
- Run the ROI simulator: https://mcftechnology.group/en/roi-simulator
- Build the bankable financial plan (3ï¿½10 years): https://mcftechnology.group/en/financial-plan
- Request a quotation: https://mcftechnology.group/en/contact

DISCLAIMER

All figures in this datasheet are indicative engineering ranges used by MCF Technology for budget screening and layout discussion of the reference configuration. They are not a quotation, not a performance guarantee and not the audited result of a specific plant. Final specification, dimensions, utilities and CAPEX are fixed in the feasibility study on your product, packaging formats, utilities cost and site conditions.