Fruit juice processing line ï¿½ aseptic filling machine & bottling line

Target application: fruit juice processing line

Reference configuration: 10 t/h fruit intake, juice / puree with aseptic or hot filling

MCF Technology delivers turnkey fruit juice processing lines for producers of NFC juices, from-concentrate juices, nectars and fruit-based smoothies ï¿½ including pomegranate, orange, apple, pear, peach and multifruit blends.

SCOPE OF SUPPLY

- Fruit reception, washing, sorting and destoning
- Cold or hot extraction and enzymatic treatment
- Falling-film evaporator for concentrate (up to 65ï¿½70ï¿½ Brix)
- Industrial pasteurizer (tubular heat exchanger)
- Industrial homogenizer for cloud-stable juices
- Aseptic filling machine for PET, glass, brik and bag-in-box

TYPICAL OUTPUTS

NFC juice ï¿½ From-concentrate juice ï¿½ Nectar ï¿½ Purï¿½e & concentrate

TECHNICAL DATA

Throughput	2,000ï¿½36,000 bph (0.2ï¿½2 L)
Filling mode	Hot-fill ï¿½ Aseptic cold-fill
Containers	PET ï¿½ Glass ï¿½ Carton ï¿½ Can
Pasteurisation	88ï¿½95 ï¿½C for 15ï¿½30 s
OEE target	>= 85 % with SCADA line supervision

PROCESS FLOW

1. Fruit reception, washing and inspection.
2. Crushing, enzymatic treatment and pressing.
3. Clarification, deaeration and standardisation of Brix / acid ratio.
4. Pasteurisation (tubular or plate) and/or UHT sterilisation.
5. Buffer tank and inline mixer for concentrate + water + sugar recipes.
6. Hot-fill bottling line or aseptic filling machine into PET / glass / carton.
7. Capping, labelling, shrink-wrap and palletising.

ENGINEERING HIGHLIGHTS

- Modular food processing equipment covering NFC, from concentrate and nectar formulations on one bottling line.
- Hot-fill or aseptic filling machine options for PET, glass and carton ï¿½ up to 36,000 bph.
- Deaerator + pasteuriser train tuned for vitamin retention and low DO packaging.
- Ready for cold-chain or ambient distribution with UHT + aseptic filler configuration.
- Global installation, commissioning and operator training as a single-vendor scope.

DIMENSIONS AND BUILDING ENVELOPE

Process building footprint	800ï¿½1,300 mï¿½ for preparation, extraction, thermal treatment and filling

Clear height	7ï¿½9 m under beam over evaporation and deaeration, 6 m elsewhere
Fruit reception	400ï¿½900 mï¿½ covered area with washing channels and cold buffer
Aseptic filling room	120ï¿½200 mï¿½ controlled area
Cold store	300ï¿½700 mï¿½ for raw fruit and frozen concentrate buffer

LAYOUT ï¿½ FUNCTIONAL ZONES IN FLOW ORDER

1 ï¿½ Reception & washing	Tipping, flotation washing, brushing, sorting and destoning
2 ï¿½ Preparation	Crushing, mash heating, enzymatic treatment where required
3 ï¿½ Extraction	Decanter, press or turbo-extractor plus refiner sized on target pulp content
4 ï¿½ Clarification / deaeration	Centrifuge or filtration, vacuum deaeration to protect colour and vitamin C
5 ï¿½ Thermal treatment	Tubular pasteurizer or steriliser with hold cell, flash cooling
6 ï¿½ Filling	Aseptic bag-in-box and drums, or hot filling in glass, PET and cartons
7 ï¿½ Utilities & CIP	Steam, cooling and chilled water, compressed air, CIP skid

UTILITIES AND CONSUMPTION

Installed power	450ï¿½750 kW at 10 t/h fruit intake
Steam	2ï¿½3.5 t/h at 8ï¿½10 bar
Cooling water	200ï¿½400 mï¿½/h circulating, plus chilled water for flash cooling
Process water	15ï¿½30 mï¿½/h treated, with washing water recovery
Compressed air	350ï¿½600 Nmï¿½/h at 7 bar
Manning	9ï¿½14 operators per shift including sorting and QC

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

What throughput does MCF supply for fruit juice lines?

From 2000 L/h for craft producers up to 50 000 L/h for industrial juice plants, sized on the packaging speed and campaign length.

Is the line suitable for cloudy and clear juices?

Yes. Cloudy juices need a homogenizer (150ï¿½200 bar) plus finisher / decanter; clear juices need enzymatic treatment, ultrafiltration and polishing filtration ï¿½ MCF integrates both.

Can I bottle in PET, glass and brik on the same line?

The processing section is shared; the filling section is modular. MCF typically supplies one dedicated aseptic filling machine per packaging format, all sharing the same aseptic tank.

What pasteurization profile is used?

For pH < 4.5 juices, 92ï¿½95 ï¿½C for 15ï¿½30 s is standard, followed by aseptic cooling and filling. HTST profiles are validated with the customer's microbiological targets.

Does the plant include evaporation to concentrate?

Optional. Falling-film double or triple effect up to 65ï¿½70ï¿½ Brix, with aroma recovery when the fruit species justifies it (e.g. apple, pear, orange).

NEXT STEPS

- Full technical page: https://mcftechnology.group/en/fruit-juice-processing-line
- 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

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