



Fruit processing



Food & Beverage





PIGNAT

50 years of innovation and experience for your satisfaction

Since 1963, PIGNAT has built and developed pilot plants in Process Engineering.

In 1983, this expertise has been dedicated to teaching technologies and pilot units have been created to represent the main unit operations.

Today, PIGNAT has extended its range to all activities of Process Engineering :

- Food & Beverage Engineering
- Chemical Engineering
- Environment
- Fluid Mechanics
- Automation & Control
- Thermodynamics

The pilot units presented here are the result of our experience. They will become essential to your teachings.

Services

A complete line of products dedicated to
Food & Beverage Engineering

Coaching in the definition of your project :

- Proposal to implement in your room
- Definition of plans for a new hall
- 3D design
- Definition of utilities: water, steam, compressed air, vacuum, electricity

Teaching tools :

- Theoretical lessons
- Instructions for use
- Practical exercises
- Results

Continuous improvement approach
CE manufacturing
ISO9001 certification





SUMMARY



Pasteurized products
Fruit juices

page 4



Jams

page 6



Appertized products
Compotes / Sauces / Canned fruits

page 8



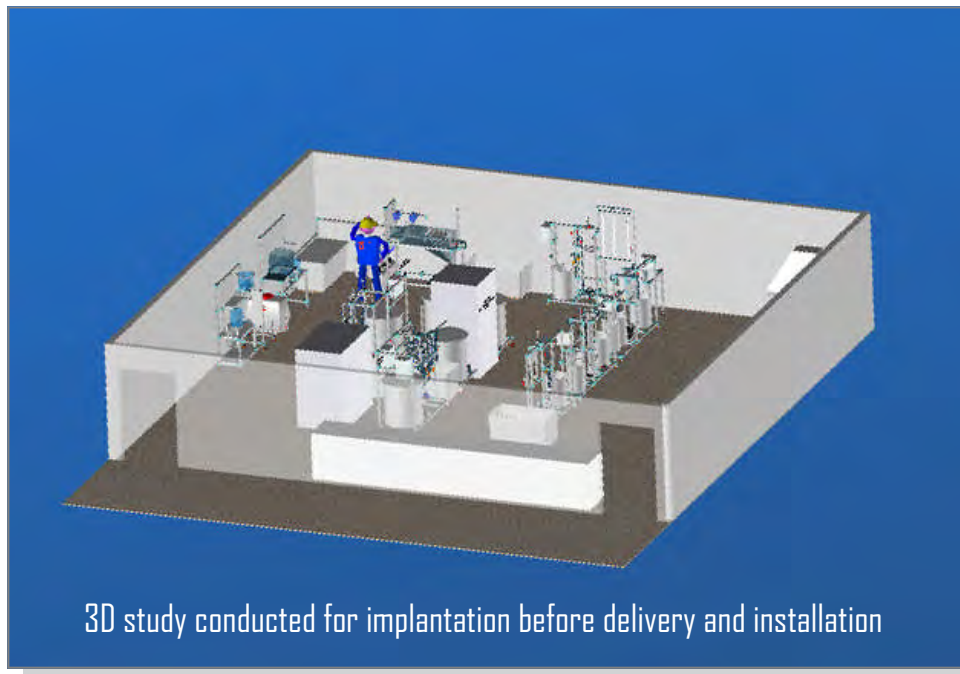
Industrial Engineering

page 10



Contacts

page 12





BREAKING



BRO/2000

CUTTING MILL
600 kg/h

PRESSING



PHY/2000

WATER PRESS
40 L-100 kg/h

ENZYMING



CVT/1000

ENZYMING TANK
50 L-85°C-6kW

REFINING-STONING



DRP/2000

AUTOMATIC SIEVE
120 kg/h

FILTRATION



FIA/2000

PLATE FILTER
600 L/h-0,8 m

Fruit juice is the unfermented liquid extracted from the edible part of sound, ripe, fresh fruits or preserved in sound conditions. The juice should have the colour, aroma and flavour of the fruit from which it is extracted. The addition of sugar, syrup, water, acid ... is subject to Codex Alimentarius regulations.

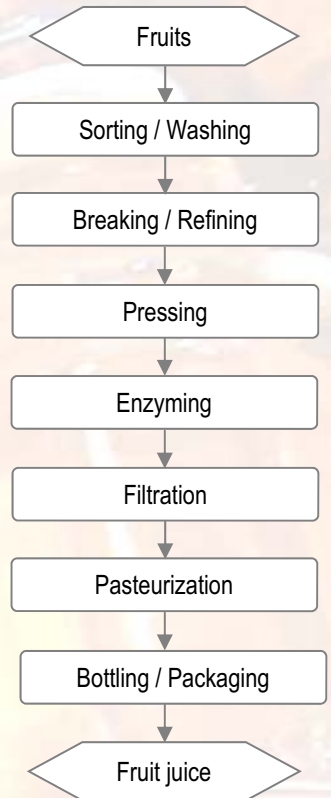
The fruits are washed and sorted prior crushed and pressed to extract the juice. To clarify the juice, a pectinolytic enzyme addition is made to dissolve some of these pectins, which causes a decrease in viscosity and sedimentation of particles which can then be removed from the juice.

Filtration on media (such as kieselguhr or plates) can remove the last particles (pectin, pulp) in suspension before pasteurization and hot filling.

The pasteurized juice should be stored at 4-5 ° C and be drunk quickly, within a few weeks.



FRUIT JUICES



PASTEURIZATION

UPA/2000

PLATE PASTEURIZER
50 L/h—85°C—6 kW



BOTTLING

UEM/2000
CCO/2000

4 SPOUTS FILLER—BOTTLE CAPPER
400 L/h



BLANCHING



CVT/2000

BLANCHING TANK
50 L—100°C—6kW

REFINING-STONING



DRP/2000

AUTOMATIC SIEVE
120 kg/h

BREAKING



BRO/2000

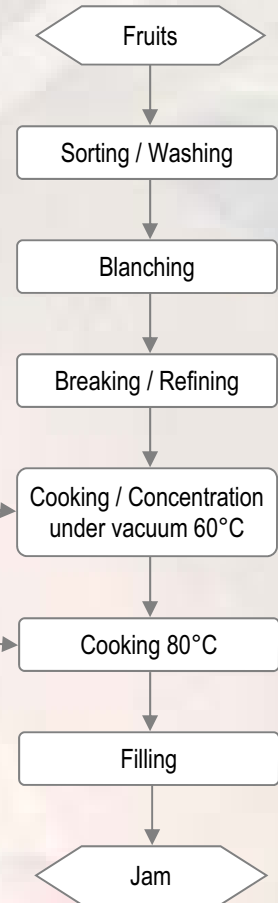
CUTTING MILL
600 kg/h

The jam is made from whole fruit or chunks or flesh and / or concentrated puree, mixed with sweeteners giving it a sweet taste. The respective proportions of fruit and sugar are subject to regulation. Generally, the fruit content shall not be less than 45% of the finished product.

Pre-sorted, washed or peeled fruits can be softened by blanching before being crushed or refined. The pulp is introduced in a concentration sphere with sugar. The mixture is cooked and concentrated at 60°C under reduced pressure until the desired content of sugar is obtained. Pectin can then be added to give suitable texture to the jam before baking at 80°C. The jam is then packaged in jars pre-sterilized at 85°C and sealed. After evaporation, the jam has a rate of sugar of 63 to 65% which gives it its texture, taste and ensures its conservation over a year.



Jams



COOKING—CONCENTRATION



UCC/3000

CONCENTRATION SPHERE
20 L—6 kW



FILLING



UPO/1000

PNEUMATIC PROPORTIONING PUMP
50 to 500 ml



COMPOTES, SAUCES, ...

BREAKING



BRO/2000

CUTTING MILL
600 kg/h



REFINING-STONING



DRP/2000

AUTOMATIC SIEVE
120 kg/h

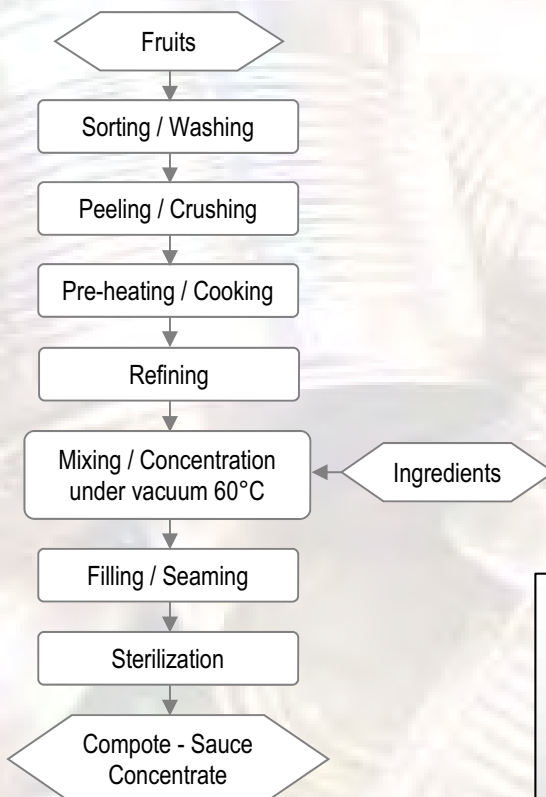


COOKING—CONCENTRATION



UCC/3000

CONCENTRATION SPHERE
20 L—6 kW



The sauces and purees are prepared using pulp from fruits, reduced more or less finely, mixed with other ingredients (salt, sugar, water, spices, lemon juice, ...) and are packaged in airtight containers then sterilized. A sugar-free apple puree presents a minimum of 9% solids and 16.5% with sugar. A tomato paste contains 7-24% solids, while a concentrated paste will have a concentration greater than 24%.

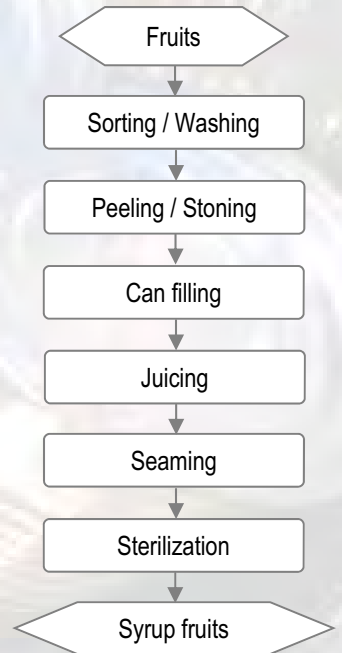
The fruits are washed and sorted prior coarsely crushed before being heated a few minutes at 85°C to soften the tissues. They will then be refined to separate the puree of the skins, pips and stalks. To this flesh will be mixed ingredients before concentration under reduced pressure if necessary. The product will then be placed in cans or jars that will be seamed and sterilized. The packaging in sealed containers and heat processed will preserve the product during 2 to 5 years.



CANNED FRUITS

Fruits may be packed, in cans, whole, sliced, chopped, alone or mixed with others. The fruit must be sound, ripe and can be peeled and stoned. They will be presented with a packing medium such as water, juice of the fruit, a dry sweetener or a sugar syrup. The product should have the flavor, color and texture of fresh product.

The fruits can be sorted and washed, peeled, seeded, chopped (depending on the product) before canning. The fruits are then covered with a suitable coverage medium. The boxes will be seamed and then sterilized. The packaging in sealed containers and heat processed will preserve the product for 2-5 years.



FILLING



UPO/1000

PNEUMATIC PROPORTIONING PUMP
50 to 500 ml

SEAMING



SER/2000

SEAMER
55 to 100 mm

STERILIZATION



ATV/3000

AUTOCLAVE
50 L—steel or stainless steel



Related disciplines, called Industrial Engineering, are also essential to understand the overall operation of equipments used in food industry and to be able to ensure control and maintenance.

- Pumping : a study of different types of pumps, their operation and their use.
- Heat exchanges : a study of different types of exchangers and their use.
- Control / Sensors : process control study.
- The principles of evaporation and crystallization.

INDUSTRIAL ENGINEERING



PUMPING

- Pump features
- Series / Parallel connection
- Measuring motor torque
- Visualization of cavitations
- Breakdown simulation



HEAT EXCHANGES

- Exchangers features
- Study at co-and counter-current
- Transfer characterization
- Influence of flow regimes
- Study of the control

CONTROL & SENSORS

Control units (pressure, temperature, ...):

Study of sensors and actuators

Study of control loops

Sensors study units:

Study of different technologies

Setting sensors

FLOW SENSORS



BCD/1000

PRESSURE SENSORS



BCD/1000

PRESSURE CONTROL



BRP/1000

TEMPERATURE CONTROL



BRT/1000

EVAPORATION—CRYSTALLIZATION

Processes of evaporation and concentration

Cooling crystallization



Evv/1000



CRV/2000



YOUR PROJECT


Line	Unit operations	Range	Price (from)
Pre-treatment	Breaking, Refining, Stoning	BRD, DRP	
	Pressing	PAP, PHY	
	Filtration	FIA	
Heat Treatment	Enzyming, Blanching	CVT	
	Pasteurization	UPA	
	Cooking Concentration	UCC	
	Sterilization	ATV	
Packaging	Bottling, Filling	UEM, UPO	
	Seaming, Capping	SER, CCD, CPP	
Industrial Engineering	Pump study	BEP, BSP	
	Control	BRP, BRT, ...	
	Sensors	BCD, BCP, ...	
	Heat exchanges	BME, BRET	
	Evaporation, Crystallization	EVV, GRV	

PRODUCTION LINES

Production Line for Fruit Juice	LJF/2000
Production Line for Appertized Products	LPA/2000

CONTACT

Our plant



PIGNAT SAS
 6, rue Calmette
 BP 11
 69741 Genas Cedex
 France

Tel (33) 04 78 90 50 03
 Fax (33) 04 78 90 63 88
 E-mail : pignat@pignat.com



AYVA Educational Solutions
 18-1400 Cornwall Road,
 Oakville, ON L6J 7W5
 Sales and Service: 1-877-967-2726
 Fax: 1-877-807-2726
www.ayva.ca/