

Advantages

- Complete frying system, ready to install and operate;
- Fully automatic fryer;
- Fully pre-assembled system including piping, easy to install;
- Minimal oil volume in system/ low turn-over time;
- Hygienic design in stainless steel execution with automatic CIP system;
- Suitable for round the clock production;
- Excellent process control due to new Zonal-flow design fryer;
- Great flexibility for different French fry qualities;
- High level of equipment quality and excellent service support

Introduction

BMA/Florigo offer fryers for the French fries industry for every capacity. The standard line offers fryers from 1 t/h to 25 t/h of finished product. Since all major French fries producers have their own company standards the BMA/Florigo fryers have been designed in a way that they can be optimally tailored to the specific requirements of the customer.

BMA offer also complete French fries production lines, starting from the washing, destoning and peeling of the incoming potatoes through to the frozen French fries.

The BMA/Florigo fryers were designed with a view to the main requirements of the French fries industry of today:

- Hygienic design
- Excellent product quality
- Optimal process control
- Reduced costs of ownership

Basic-Line models operate according to the Multi-Flow-principle, *High Line* models use the Zonal-Flow-principle



Description of the Basic-Line Multi-Flow French Fries Fryer

- Capacity range: 1 to 6 t/h of finished product.
- Heating method: steam or thermal oil
- Product transport belt return: internal

The frying oil is circulated through the heat exchanger, which has been designed to provide a gentle exchange of energy. The hot oil is injected into the fryer at two to five different positions, depending on the capacity of the machine. The oil is taken out at two points.

Variations in potato quality and changes in end product specifications require a flexible adjustment of the fryer. Among others, the following parameters are important for the flexibility of the fryer:

- Adjustment of the hot oil volume at every infeed-point
- Monitoring the temperature of the oil taken out
- Adjustment of the speed of the product transport belt

Advantages of the Florigo Multi-Flow French Fries Fryer

- Optimal control of oil velocity for much better and more consistent product quality
- Less dependant on the quality of the potatoes
- Optimal oil/ product velocity ratio in the fryer, resulting in better retention time control.
- Due to optimal oil injection, oil turbulence at the surface is less, which also reduces oxidation with oxygen from the surrounding atmosphere.
- Flexible adjustment of the temperature profile over the complete length of the fryer:
- Lower final temperature to reduce discoloration of the final product for fries with relatively high sugar content.
- Lower final temperature to reduce acrylamide.
- Higher temperature to keep the fat content of the final product at a minimum without a high-infeed temperature, which is detrimental to the FFA content.

Standard scope of supply

- Feed Shaker
- Multi Flow Fryer
- Frying oil circulation system with circulation pump, auxiliary pump for the emptying of the system and pre-fabricated piping
- Full flow frying oil belt filter
- Thermal oil / steam frying oil heat exchanger, shell and tube type
- Oil day tank
- Defatter, vibratory type

Optional extras

- Top belt for floating products or pommes parisiennes
- Energy recuperation system (ERS)
- Partial fines filtration by paper filter
- Programmable product menus; for easy reproduction of process settings
- Fire fighting system



Multi Flow standard model	Moisture Content Input—Output	BAFS 1000	BAFS 2000	BAFS 3000	BAFS 4000	BAFS 5000	BAFS 6000
Standard French Fries (Snit 10 x 10 mm)	76,5% - 68%	1.000 kg/h	2.000 kg/h	3.000 kg/h	4.000 kg/h	5.000 kg/h	6.000 kg/h
Fast Food (Snit 7,5 x 7,5 mm)	75% - 64%	750 kg/h	1.500 kg/h	2.250 kg/h	3.000 kg/h	3.750 kg/h	4.500 kg/h
Heating capacity		235 kW	470 kW	705 kW	940 kW	1.175 kW	1.410 kW
Multi Flow Fast Food model	Moisture Content Input—Output	BAFF 1000	BAFF 2000	BAFF 3000	BAFF 4000	BAFF 5000	BAFF 6000
Fast Food (Snit 7,5 x 7,5 mm)	75% - 64%	1.000 kg/h	2.000 kg/h	3.000 kg/h	4.000 kg/h	5.000 kg/h	6.000 kg/h
Heating capacity		310 kW	620 kW	930 kW	1.240 kW	1.550 kW	1.860 kW

Based on 20% dry matter in potatoes

Description of the High-Line Zonal Fryers

- Capacity range: 8 to 25 t/h of finished product.
- Heating method: steam or thermal oil
- Product belt return: internal (standard) or external (optional)

The zonal flow principle means that there are different zones equally divided over the length of the frying kettle. Each zone has controlled oil inlets and outlets for optimum oil flow distribution over the length and width of the frying kettle. At the end of each zone an oil outlet drains the relatively cold oil and taking fines with it. Right behind the oil outlet freshly filtered and heated oil is injected. The shape of the oil inlets eliminates the so-called hot-spots and reduces the formation of acrylamide.

The speed of the oil remains constant over the whole length of the fryer. This makes the zonal-flow fryers also well suited for fast-food and coated French fries.

The number of zones varies with the capacity of the fryer. State-of-the-art flow simulation programs were used to improve the oil flow in the frying kettle in order to reach a very uniform heat transfer to the product over the whole width of the frying kettle.

Advantages of High-Line Zonal Flow Fryer

- Superior, very stable product quality
- Temperature profile adjustable to product quality
- Optimal oil velocity control for excellent retention time control
- Reduction of acrylamide formation
- Flexible infeed and outfeed arrangement to ensure easy integration in existing lines

Besides the High-Line Zonal-Flow Fryer with internal belt return a model with external belt return is optionally available. In this case a steam-heated oil-collection tray is provided under the frying kettle.

Standard Scope of Supply

- Feed Shaker / feed Belt
- Zonal Flow Fryer
- Frying oil circulation system with circulation pump, auxiliary pump for the emptying of the system and pre-fabricated piping
- Full flow frying oil belt filter
- Thermal oil/ Steam frying oil heat exchanger, shell and tube type
- Oil day tank
- Defatter, vibratory type

Optional extras

- Energy recuperation system (ERS)
- Full flow fines filtration by cyclone
- Programmable product menu's; for easy reproduction of process settings
- Special execution for coated French fries with product belt return outside the frying kettle
- Fire fighting system:



Zonal Flow standard model	Moisture Content Input—Output	BAFS 8000	BAFS 10000	BAFS 12000	BAFS 15000	BAFS 20000	BAFS 25000
Standard French Fries (Snit 10 x 10 mm)	76,5% - 68%	8.000 kg/h	10.000 kg/h	12.000 kg/h	15.000 kg/h	20.000 kg/h	25.000 kg/h
Fast Food (Snit 7,5 x 7,5 mm)	75% - 64%	6.000 kg/h	7.500 kg/h	9.000 kg/h	11.000 kg/h	15.000 kg/h	19.000 kg/h
Heating capacity		1.880 kW	2.350 kW	2.820 kW	3.525 kW	4.700 kW	5.875 kW
Zonal Flow Fast Food model	Moisture Content Input—Output	BAFF 8000	BAFF 10000	BAFF 12000	BAFF 15000	BAFF 20000	BAFF 25000
Fast Food (Snit 7,5 x 7,5 mm)	75% - 64%	8.000 kg/h	10.000 kg/h	12.000 kg/h	15.000 kg/h	20.000 kg/h	25.000 kg/h
Heating capacity		2.480 kW	3.100 kW	3.720 kW	4.650 kW	6.200 kW	7.750 kW

Based on 20% dry matter in potatoes



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