

FusionCooker

One of the keys to perfect cooking of mozzarella cheese is to effectively mix the cheese curd as heat is added. The second key is to distribute the heat energy evenly into the product to avoid the overheating of some of the curd particles. This is the reason traditional cooking involves heating and massaging the cheese curd while submerged in hot water. The *New FusionCooker* combines these two traditional principles in a way that maintains cheese quality while improving yield.



The Evolution of Processing Mozzarella Cheese

INTERMESHING AGITATORS (PATENT PENDING)

The heart of the FusionCooker is the twin, intermeshing agitation system. The massaging fingers of the two agitators overlap to fold the cheese together as it is pumped through the mixing column. This unique continuous mixing and stretching system is combined with poppet valve steam injection to provide even heating while stretching the cheese between the overlapping fingers of the intermeshing agitators.



DIRECT STEAM FUSION

As stiff mozzarella cheese curd is pumped through the mixing column, direct steam is 'fused' into the curd through spring-closed, flathead injectors that distribute the steam gently in a 360 degree circle around each injector. This heating and blending system gently brings the fragile mozzarella curd up to molding temperature. At the same time the machine is folding and stretching the cheese curd even more efficiently than the traditional hot water massaging and stretching systems.

IMPROVES YIELD

The traditional heating of mozzarella cheese in hot water causes a reduction in yield due to the loss of milk solids into the water. The mixing and stretching of the FusionCooker's *patent pending* intermeshing agitators causes all of the milk solids to be retained in the cheese thus, increasing yield. In addition, since the cheese is heated with direct steam, approximately six percent steam condensate is added to the cheese curd to heat it to the 140 degrees F (60 degrees C) molding temperature. The overlapping agitator fingers stretch the cheese which causes most, if not all, of the added moisture to be absorbed into the cheese, increasing yield even more.



PRECISE TEMPERATURE CONTROL

Maximizing the absorption of the steam condensate into the mozzarella cheese curd requires perfect distribution of the steam heat and precise temperature control. Effective distribution of the steam heat is possible with the FusionCooker system through the *patent pending* combination of the 360 degree steam distribution through the steam injectors and the intermeshing agitation system.

Uniform cheese temperature with decimal degree precision is the result.



TOUCH SCREEN PLC

A large color touch screen HMI provides simple process data entry. The user friendly PLC software includes multiple recipe driven, automatic process controls. The PLC not only controls agitator rotation up to 600 RPMs but also controls the opening of the 24 steam injectors along with the modulating steam valve. The FusionCooker's PLC control system adds the final touch to this precision mozzarella processing machine.

The FusionCooker is loaded with innovation:

- *Patent Pending* twin intermeshing agitation system
- Space-age non-stick coating of the agitators, heating column and end transition heads
- Twenty-four spring closed, modulating, flat head, direct steam injectors
- Precision temperature control system separately controls twelve injector zones
- Vacuum release valves in the steam line to each injector to eliminate product suck-back
- Spring actuated, mechanical shaft seals at both ends of the agitators
- Allen Bradley Compact Logix PLC control system with manual and automatic modes
- 10-inch (254 mm) color touch screen HMI
- Differential steam pressure product temperature control
- PLC controlled, air cylinder actuated, retractable temperature probe technology
- CIP cleaning and rinsing with the cooking column in the cooking position without moving the column
- Production rates up to 10,000 lbs per hour (4,500 kgs. per hour)



The above are examples of mozzarella and provolone cheese that can be efficiently processed in the FusionCooker.

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