

# BISCUIT MAKING AND BAKING

## Dough Mixer

**Application:** The dough mixer is used for mixing various ingredients such as flour, sugar, fat, water, and other chemicals for making hard, soft or fermented dough for making biscuits.

**Design:** A base plate over which two side frames are fitted for taking the load of mixing chamber of bread dough mixer which is fitted on side frames. In the mixing chamber of bread dough mixer two Z/sigma type-mixing blades are fitted which rotate at different speeds in opposite direction to mix various types of soft/hard dough for achieving required gluten of dough. An electrically operated tilting device is also fitted to tilt mixing chamber to unload mixed dough. The machine is covered from all sides to avoid dust and accidents etc.



**Capacity:** 100 Kg. Flour, 200 Kg. Flour, 300 Kg. Flour per batch.

**Contact:** Parts: In standard model all contact parts are made in mild steel/ cast iron but the top lid in S.S.-304. However all contact parts can be supplied in S.S.-304.

**Leakage protection:** The mixing bowl is protected by double oil seals with gland rope in all four shafts of blades to avoid leakage of liquids from the mixing chamber.

**Power load:** 10HP & 1 HP, 20HP & 2HP, 30 HP & 3 HP respectively.

## Rotary Moulder

Rotary moulder is used for soft dough and soft variety of biscuits. The dough to be moulded is fed into the hopper and a forcing roller forces the dough into the cavities of the moulding roller made out of gun metal, uniformly engraved and coated with food grade Teflon. Excess dough is cleared with a knife, which is held by a holder made from tool steel, to ensure uniform filling.

An adjustable rubber roller conveying the discharge cotton web, presses it uniformly against the moulding roller for perfect transfer of molded pieces from the moulding roller on to the web. The purpose of three drives is, speed of the forcing roller influences the density of dough forced in to the moulding cavity. The speed of the die roller influences the production speed. The discharge web speed influences the shape of the biscuits produced along the web or across the web.



## Rotary Cutter

**Application:** The single head rotary cutter prints fine design on a continuously fed dough sheet and also cuts out the individual dough piece. It is used for pre baking forming for marie, thin arrowroot, krackjack, petit-beure, monaco, and all types of salty biscuits.

**Operation:** The unit powered by 1.5KW helical geared motor and speed controlled by AC frequency controller. Drive is given to cutting roller only to accommodate different sizes of dies in this machine. Rubber lined anvil roller is adjustable in height so that pressure can be controlled at both sides in parallel or independently. The anvil roll is being driven by friction of the cutting web, which is independently powered by its own separate drive. For safety reasons the cutting roll is provided with guard, removal of which stops the motor.



## Biscuit Baking Oven

**Construction:** The biscuit baking oven body consists of steel steam tight tunnel with equally divided zones of the radiators. Stainless steel expansion joints are provided between these zones in order to eliminate the expansion of the oven section. The inspection doors are provided for inspection of the baking goods during the process.

**Firing Chambers:** The complete chamber of biscuit making oven will be insulated with miner woll filled from outside to conserve heat and increase efficiency. The fully automatic imported burner shall be fitted to the chamber and the temperature shall be controlled by automatic temperature controller on the control panel.

**Insulation:** The complete biscuit making oven will be covered with 10" thick mineral wool insulation from top, bottom and the sides. The bottom portion of the oven at the sides will be covered with CRC sheets for the conveyor protection and to avoid heat loss.

**Baking System:** The baking in the heating chamber of biscuit baking oven takes place by radiators located under and above the wire mesh band which distribute heat for uniform baking. The recirculation heating gases of these radiators can be controlled for each zone separately. The closed recirculation system is having slight vacuum so that combustion gases cannot enter into the baking chamber. The ventilating fan is for circulation of the heating gases through the recirculation system and thermostatically controlled burners provide the set temperature of the heating gases.

**Fans:** All the circulating fans are fabricated from M.S. & S.S. and will be well balanced to avoid vibration and will give noise free operation in high speeds.



courtesy of Ad. Joff

## Laminator (Vertical Cut & Lay)

**Application:** Laminators are biscuit making machines, generally used for all kinds of hard biscuit making, crackers making and cocktail snacks making. With laminator it is possible to create a puffy pastry-like structure, which is of decisive importance for the quality level and consequently for the sales success. Laminating of Dough band improves the weight/volume ratio considerably i.e., quantity increase at same weight.

**Operation:** In this superior functioning biscuit making machine the dough band received from sheeter of 838mm width is passed through two shuttles. The dough sheet is cut into pieces by a knife for a length of 1000mm (39") and these pieces are laid on bottom shuttle by top shuttle. This bottom shuttle layers the pieces on first conveyor unit of 1000mm (39") wide production line very carefully. The first conveyor unit feeds to the first gauge roll unit. Number of layers can be controlled by the speed of first conveyor unit or increasing the speed of sheeting unit and laminator by AC variable frequency drive.



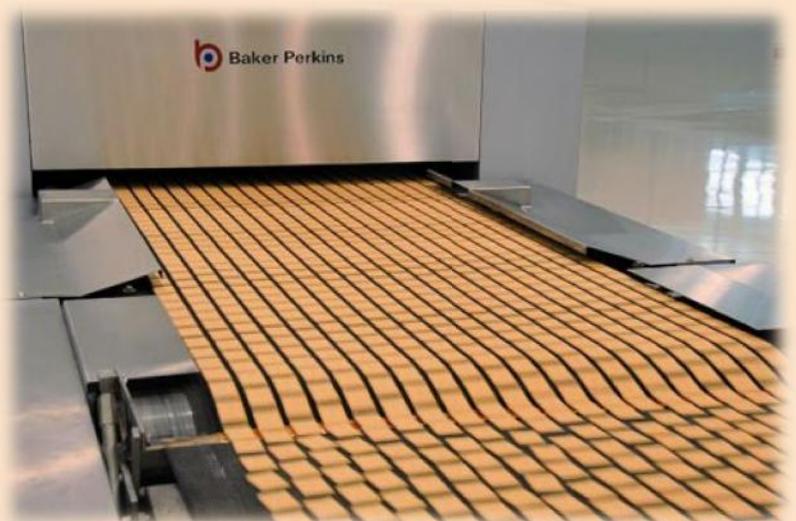
courtesy of Aid. InP

## Cooling Conveyor and Stacker Machine

**Construction:** Cooling conveyor is made in a modular construction of 2.5 Mtrs. long and connected together to form the required length. The supporting side channels are fabricated from 3mm thick M.S. sheet.

Idle rollers are spaced at 750mm apart on conveying direction and 1700mm on the return direction. All the idle rollers are of 48mm dia, mounted on 6004 ZZ deep groove ball bearings with grinding finish and hard chrome plated for hygienic conditions.

As you know very well practically about the



droppings of oil from the cloth due to rubbing of cloth against tie angles when producing high fat biscuits. To minimize this we replaced the tie angles also with idle rollers. This might costs little extra, but you can maintain hygienic conditions at working area.

Drive drums are two no's. of 220mm dia and projections are made on the surface of drums to minimize slip or covered with friction grip rubber tape. Manual tensioning and tracking are provided.

You can rely only on feeder table to stack the oil sprayed biscuits which does not require more travel after oil spraying.

The biscuit coming from stripping conveyor is directed on to the cooling conveyor to transfer the heat in the biscuit to atmospheric air as it is passing on it. The recommended total travel of the cooling conveyor is 1.5 times the oven length. As per your specifications you need the travel of 150 ft. for effecting cooling.

### Oil Sprayer

The Oil Spray Machine is used to spray fine most of edible oil on the top and bottom of hot biscuits coming out of oven before being transferred to cooling conveyor.

SCADA DEVELOPED

### ITC BISCUITS R & D PLANT PEENYA

#### OVEN MIMIC PAGE

FROM PRE BAKING SECTION

**Zone-1**      **Zone-2**      **Zone-3**

PT-1      PT-2      PT-3

TO COOLING/OIL SPRAY SECTION

Auto Start  Auto Stop

BAKING TIME MIN: 4 SEC: 10

PRESS HERE FOR ENTER

RUNNING BAKING TIME MIN: 4 SEC: 10

SET TEMPERATURE		
250.00	300.00	245.00
TOP TEMPERATURE		
0.00	0.00	0.00
BOTTOM TEMPERATURE		
0.0	0.00	0.00

WIREBEND ACT RPM: 0

WIREBEND Ampere: 0.00

HOOTER RESET

SLEEP MODE OFF

C-FAN SET RPM	1400	C-FAN SET RPM	1400	C-FAN SET RPM	1350
C-FAN ACT RPM	0	C-FAN ACT RPM	0	C-FAN ACT RPM	0
C-FAN Ampere	0.00	C-FAN Ampere	0.00	C-FAN Ampere	0.00
T-FAN SET RPM	1350	T-FAN SET RPM	1400	T-FAN SET RPM	1400
T-FAN ACT RPM	0	T-FAN ACT RPM	0	T-FAN ACT RPM	0
T-FAN Ampere	0.00	T-FAN Ampere	0.00	T-FAN Ampere	0.00

SHUT DOWN

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#### COOLING SECTION MIMIC PAGE

CASCADING OFF

FROM OVEN SECTION

COOLING SYSTEM

Auto Start  Auto Stop

OIL SPRAY SYSTEM

Auto Start  Auto Stop

POWER TURN MOTOR-1

INCLINED CONVEYOR

POWER TURN MOTOR-2

TABLE CONVEYOR MOTOR

HOOTER RESET

SET RPM	1100	SET RPM	1000	SET RPM	1250
ACT RPM	0	ACT RPM	0	ACT RPM	0
Ampere	0.00	Ampere	0.00	Ampere	0.00
SET RPM	750	SET RPM	1200	SET RPM	900
ACT RPM	0	ACT RPM	0	ACT RPM	0
Ampere	0.00	Ampere	0.00	Ampere	0.00
SET RPM	1300	SET RPM	900	SET RPM	800
ACT RPM	0	ACT RPM	0	ACT RPM	0
Ampere	0.00	Ampere	0.00	Ampere	0.00

SHUT DOWN