



CRACKER AND HARD BISCUIT LINES



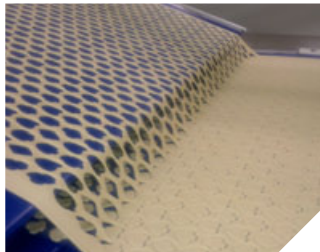


CRACKER AND HARD BISCUIT LINES



Lines suitable to produce sheet formed hard sweet biscuits and savoury crackers or laminated crackers adding a cut-sheet laminator.

recipe of flour, fat and salt are in effect bread substituted and are usually eaten with butter, cheese, and similar as a convenient snack.



The main hard sweet biscuits, like Marie, Rich Tea and Morning Coffe, are basically consumed at breakfast or at tea time.

The Soda crackers, of American origin, fermented for a very long period, are oil sprayed, salt dusted and produced scrap less.



The main crackers, Soda crackers, Cream crackers and Snack crackers have a simple unsweetened basic

The Cream crackers, of British origin; have incorporated in the sheet a mixture flour/fat called “dust”.



Sheeting units

Mixing of biscuits are made normally on Horizontal high speed mixers while crackers are normally mixed in Vertical spindle mixers.

The dough is then fed by an automatic Dough feeder in different configurations onto the hopper of a Four-Roll Sheeter. This unit allows constant dough feeding and scrap integration to form a consolidated dough sheet of even volume prior to the first gauge roll section of down stream forming equipment.

Cut-sheet laminators of crackers

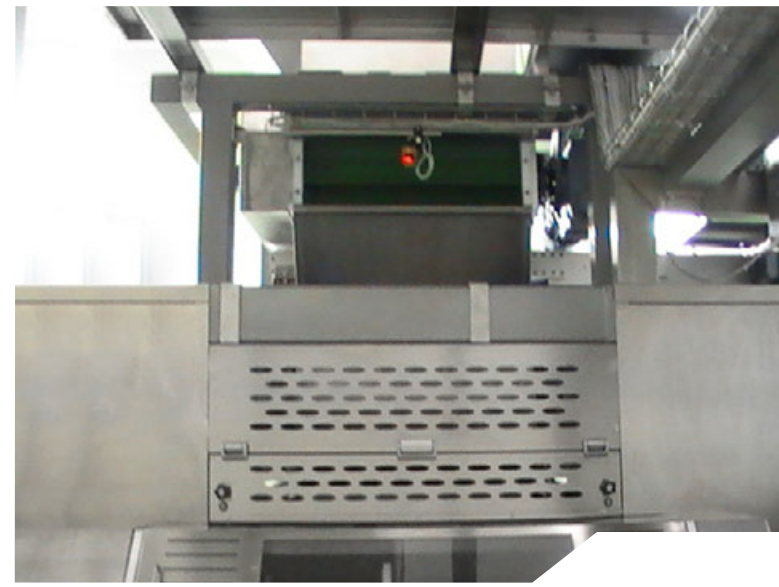
After its thickness reduction by one or two gauge roll, in cracker production, the dough sheet is conveyed to the Cut-sheet laminator, servo driven and operating at high production rates, where the dough sheets is precisely cut into sheets and layered before passing on to the forming and cutting equipment. Possibility of adding the fat and flour duster to suit cream cracker production.

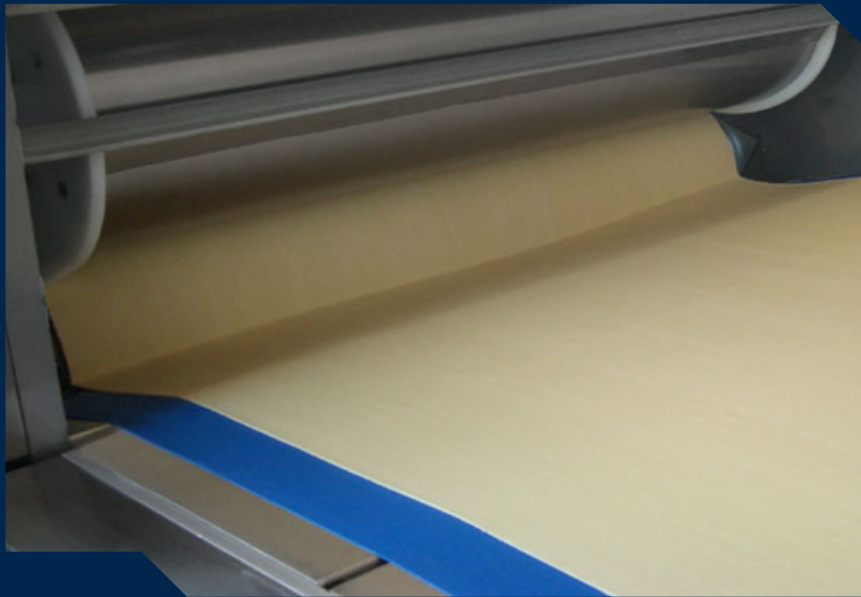
Gauge rolls

The Gauge rolls reduce the thickness of the continuous dough sheet, after sheeting or laminating. Last Gauge roll, as calibration unit, has larger diameter rolls. They can be completed by height scan unit and skinning air ventilators, while all conveyors are provided with automating belt tensioning and tracking and are operating in full speed cascade.

Dough relaxation

To reduce the stresses built up in the dough, prior to cutting the dough sheet is conveyed to a dough relaxation conveyor where forming a wave the dough rests before cutting.





Rotary cutting

The continuous dough sheet passes through the Rotary cutter where, using a single combined embossing/cutting roller or separate embossing and cutting rollers, the biscuit or cracker shape is cut into the dough sheet. To

press the continuous dough sheet into the embossing and cutting rollers, anvil rollers are mounted in a pneumatically operated carriage, automatically raising or lowering to get a perfect cutting running of products.

Scrap pickup and return system

After cutting, the combined scrap pickup and return system collects the scrap lattice from the cutting unit by separating the cut biscuit and cracker shape and scrap lattice by means of two separate conveyors. The scrap pickup conveyor

transfers the scrap lattice onto a cross conveyor before transferring it onto an inclined side scrap return conveyor, before going back into the hopper of the sheeter.



Swivel panner conveyor

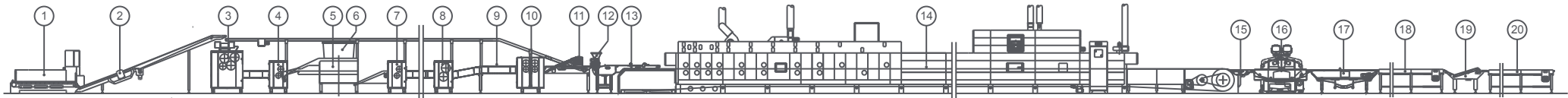
To transfer the product from the cutting machine accurately and centrally onto the wire-mesh of the baking oven, a pivoting conveyor is foreseen, controlled by edge sensors.

When a salt sprinkler is supplied, the conveyor is divided in two sections, one of which of stainless steel construction, to prevent any corrosion.

Sugar sprinkler

Special unit with salt screw feeding and particular adjustable distribution device for an even sprinkling on top of the product. Possible automatic recovery

system by vacuum that collects excess sprinkled salt not received by the product and recovered for future reuse.



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| 1 DOUGH FEEDER | 5 CUT-SHEET LAMINATOR | 9 RELAXING CONVEYOR | 13 SWIVEL PANNER | 17 OIL DRAINING CONVEYOR |
| 2 METAL DETECTOR | 6 DUST DISPENSER | 10 ROTARY CUTTER | 14 OVEN | 18 COOLING CONVEYOR |
| 3 FOUR ROLL SHEETER | 7 GAUGE ROLL | 11 SCRAP RETURN CONVEYOR | 15 TAKE-OFF CONVEYOR | 19 STACKER |
| 4 GAUGE ROLL | 8 FINAL GAUGE ROLL | 12 SALT / SUGAR SPRINKLER | 16 OIL SPRAYING MACHINE | 20 PACKAGING CONVEYOR |

Baking ovens

Soda crackers and some crackers and hard biscuits are basically baked in DGF (direct gas fired) ovens with heating by ribbon burners placed directly on top and bottom of baking chamber and electronically controlled. On these ovens high temperatures, extremely short bake time and flexible management of temperature profile are achieved.

The other products are generally baked in Hybrid ovens, combination of DGF and indirect convection sections or of indirect Cyclothermic and indirect convection sections, that couple to the great heating of the first section (DGF or cyclothermic) the uniform baking process with low energy consumption of the convection sections that enable a good moisture and colour control of the products.

Control system

Clear, simple "Touch screen" Operator Panel connected to a PLC to allow the operators to keep under full control the machine running, with recipe-driven set-up and full alarm messages to reduce changeover time, downtime and waste.

Full recipe handling and management, total process visualization, performance

historic trends, alarm monitoring and handling, machine parameters and variable control, easy diagnosis for trouble shooting are the main features that make the machine operation fully controlled.

Up-to-date links for Teleservice, as remote control, provided via Internet, to get immediate access and assistance

