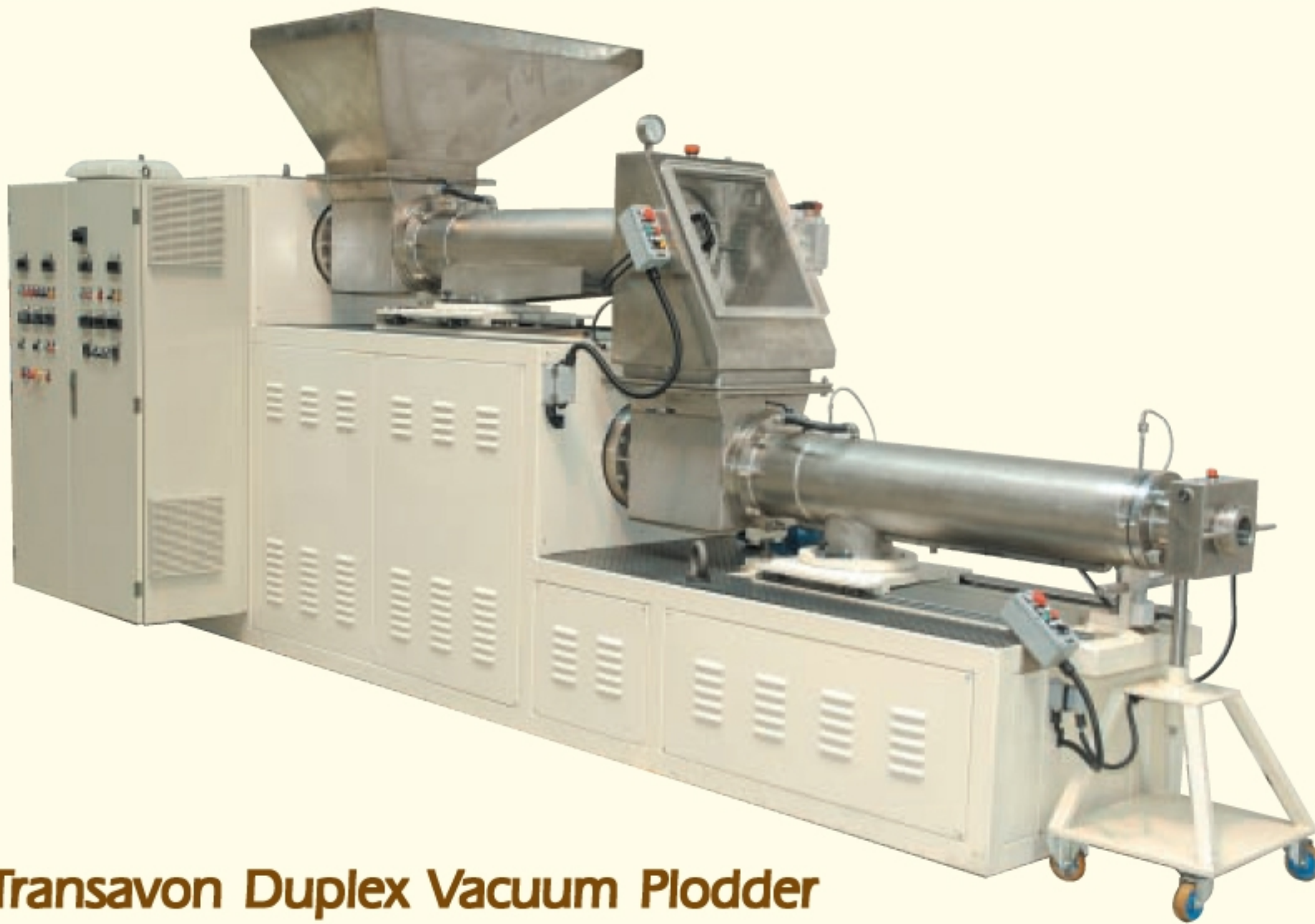


TRANSAVON PLODDERS

SOAP REFINING □ A NEW APPROACH



Transavon Duplex Vacuum Plodder



TRANSAVON PLODDERS

The first "mission" of the Transavon project has been to provide an equipment suitable to efficiently control the critical "process" of the translucent soap finishing.

The possible applications were:

1. Conversion of opaque soap noodles (pellets) into translucent soap.
2. Production of translucent extruded and stamped soap bars (tablets) using translucent noodles.

After successful operation of Transavon Plodders for translucent noodles and bars and extensive testing of various products the Transavon Plodders proved to be applicable for regular toilet soaps, soap/synthetic and synthetic products.

Plodders perform refining/homogenizing and compaction/extrusion functions to the soap. The refining capability of a plodder depends on the L/D ratio (length of the barrel L to screw diameter D), the processing pressure and the mesh size of the refining screens. Transavon Plodders have excellent refining capability compared with conventional refiner plodders.

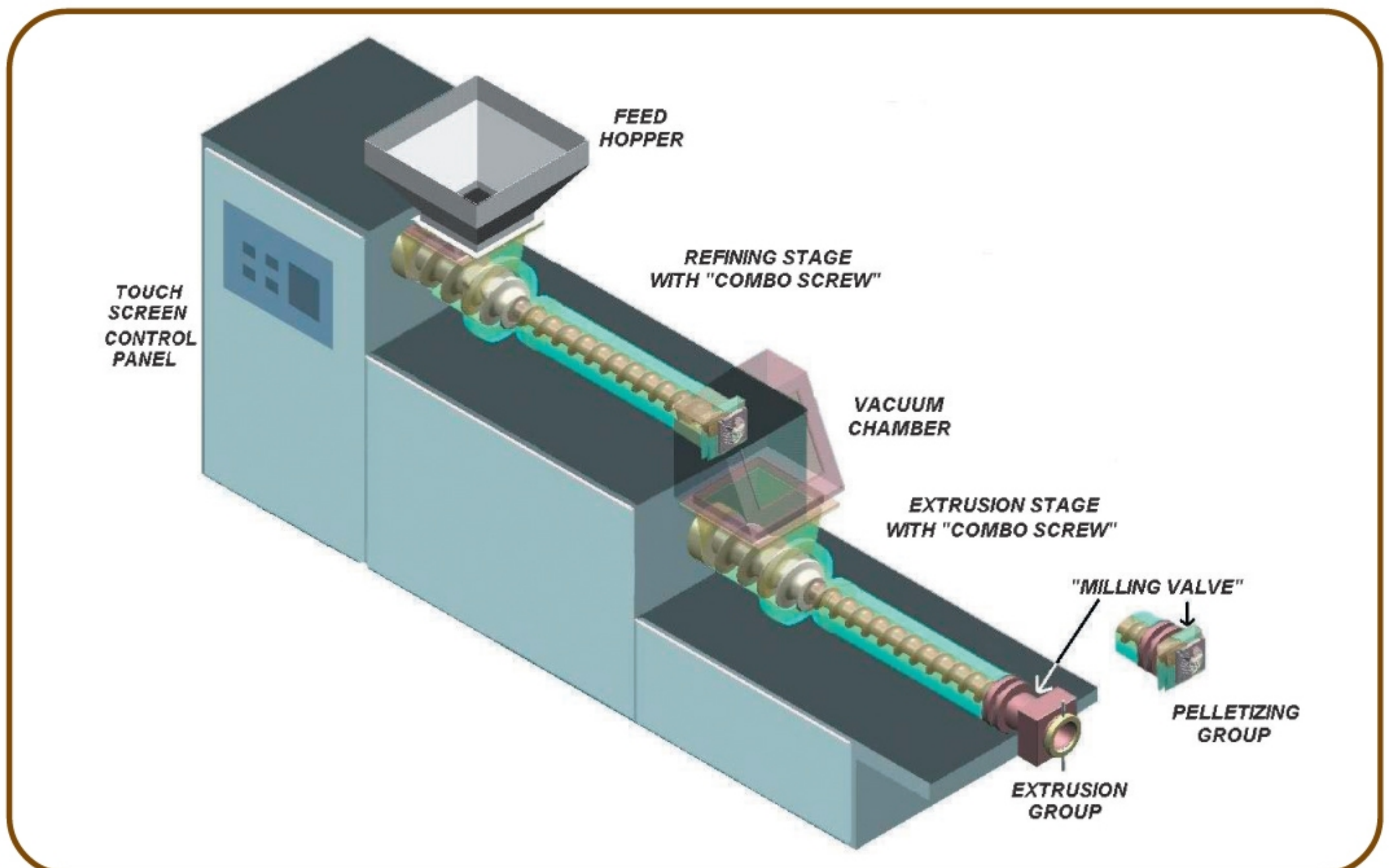
Each Transavon refining stage is equivalent to 1.5 of a conventional modern refiner.

Transavon plodders are offered in the same 3 main types as regular plodders, namely: *Simplex Refiner*, *Duplex Refiner*, *Duplex Vacuum Plodder*.

The Duplex versions are available with two Transavon stages or combinations of a conventional plodder stage and a Transavon stage.

A PC-based logic process software control optimizes the variables in real-time. All Transavon Plodders are equipped with Variable Frequency Drives for wide screw rpm variation, Soap Pressure and Temperature Gauges; Automatic Cooling Water Controllers (Turboflow) units are seldom used.

Two novel features make the Transavon a unique plodder: the "COMBO-SCREW" and the "MILLING VALVE".



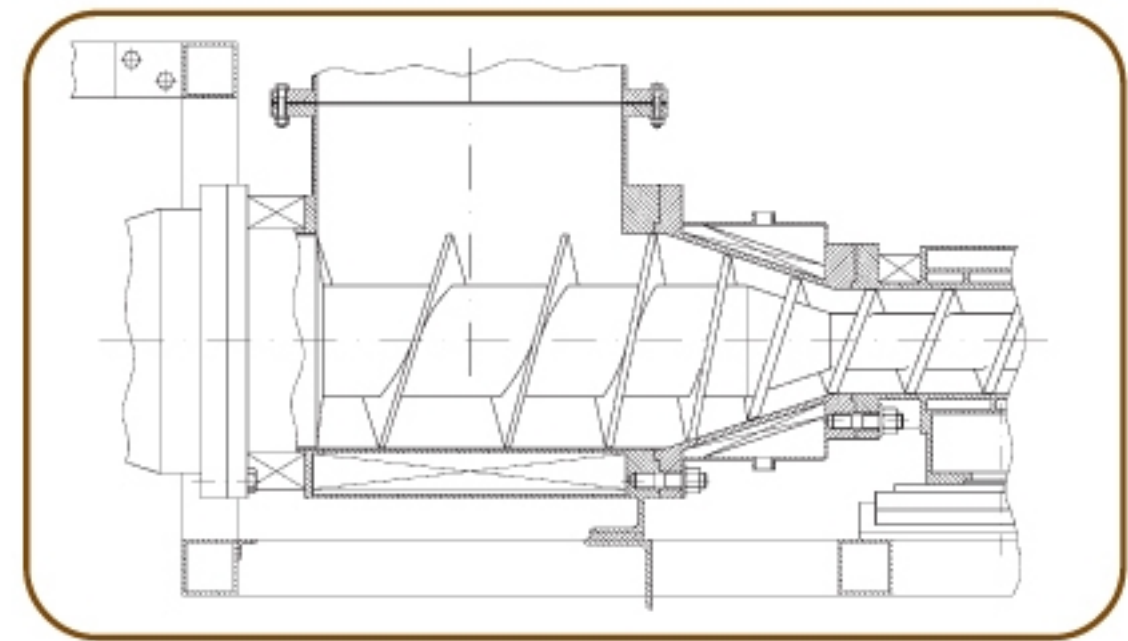
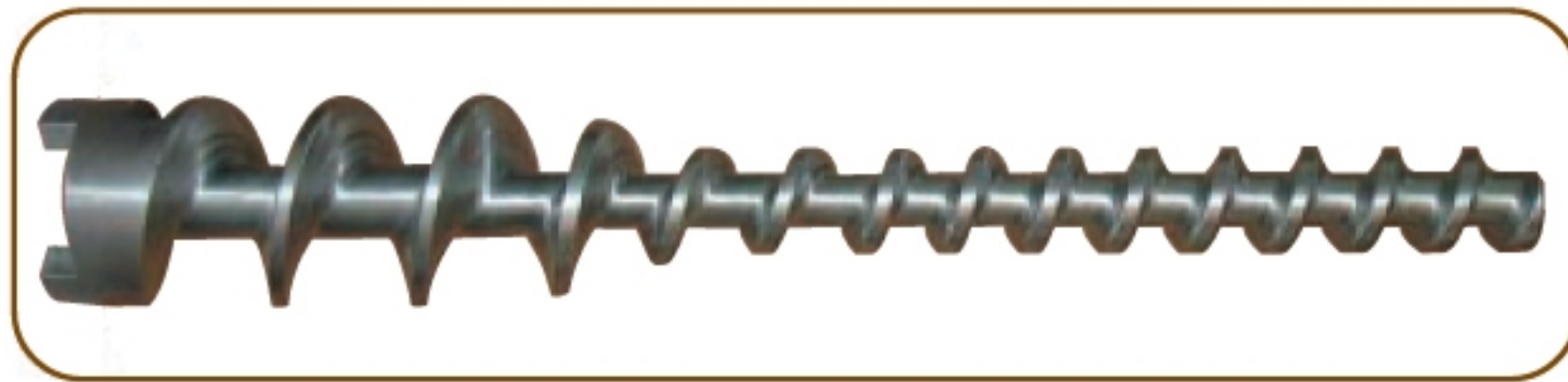
COMBO-SCREW

The *Combo-Screw* innovative design with two different diameters and an intermediate conical section optimizes the two main functions of plodder screws (worms):

1. Optimal soap infeed in the open section – This is obtained with a larger diameter short screw.
2. Maximum homogenization and compression in the closed section – This is achieved with a small diameter and a 9:1 L/D screw. This allows a constant and gradual increase of the soap pressure up to *100 bars* when required.

Other benefits of the *Combo-Screw* are:

- The soap quantity processed is rather small due to the relatively small screw diameter allowing quick reaction to the change of process parameters.
- The heat exchange between soap and cooling water is optimized and for some products the soap temperature during passage in the plodder barrel can even be decreased, a feature that is usually only obtained with the use of roll-mills.
- The high screw revolutions per minute (up to 50 rpm) gives to the soap a continuous shear effect and helps chemical and physical homogenization.
- Soap back-flow is drastically minimized.
- Screw cleaning is a simple operation thanks to the special “back extraction” system.



MILLING VALVE □ SOAP PRESSURE CONTROL DURING PRODUCTION

The *Milling Valve* is a unique feature of the Transavon Plodders. The device consists of two sliding slotted plates positioned downstream the screw. Adjustment to control the soap output can be made even during production. By controlling the soap passage, it is possible to adjust the soap processing pressure, thus the energy transferred to the soap by shear effect and the degree of refining.

Due to the special design of *Milling Valve*, when it is adjusted for a tight soap passage, the gap can be reduced down to 0.1 mm. The soap exits in very thin flakes. This milling effect eliminates or greatly reduces the dry specks (roughness, grit) present in some soaps.

The milled soap is then immediately re-compacted and it is ready to be pelletized or extruded depending by the downstream device: a drilled refining/pelletizing group or an extrusion cone.



NO MILLING
(Wide passage)



MILLING
(Tight passage)



TRANSAVON SOAP FINISHING LINES

Soap finishing is the transformation of soap noodles (pellets) into formulated stamped soap bars (tablets). The goal is to refine/homogenize and compact the product with optimum physical and chemical features.

Soap finishing consists of several working stages: pre-refining, mixing, refining and extrusion, stamping and packaging.

A line with less refining stages (i.e. one Simplex Refiner and one Duplex Vacuum Plodder) is indicated to produce a limited variety of soaps (i.e. lightly coloured toilet soaps).

Lines with more refining stages (additional Three Roll-Mill) can produce soaps with large amount of additives and, in certain controlled conditions, synthetic products and translucent soaps.

The Transavon family of plodders make it possible to use them in four types of combinations with minimum space requirement, minimum power and utility consumption.

Four Types of Transavon Finishing Lines

SPECIAL - Multi-Product Line with Pre-Refining
Standard Simplex Refiner + Mixer + Transavon Duplex Vacuum Plodder

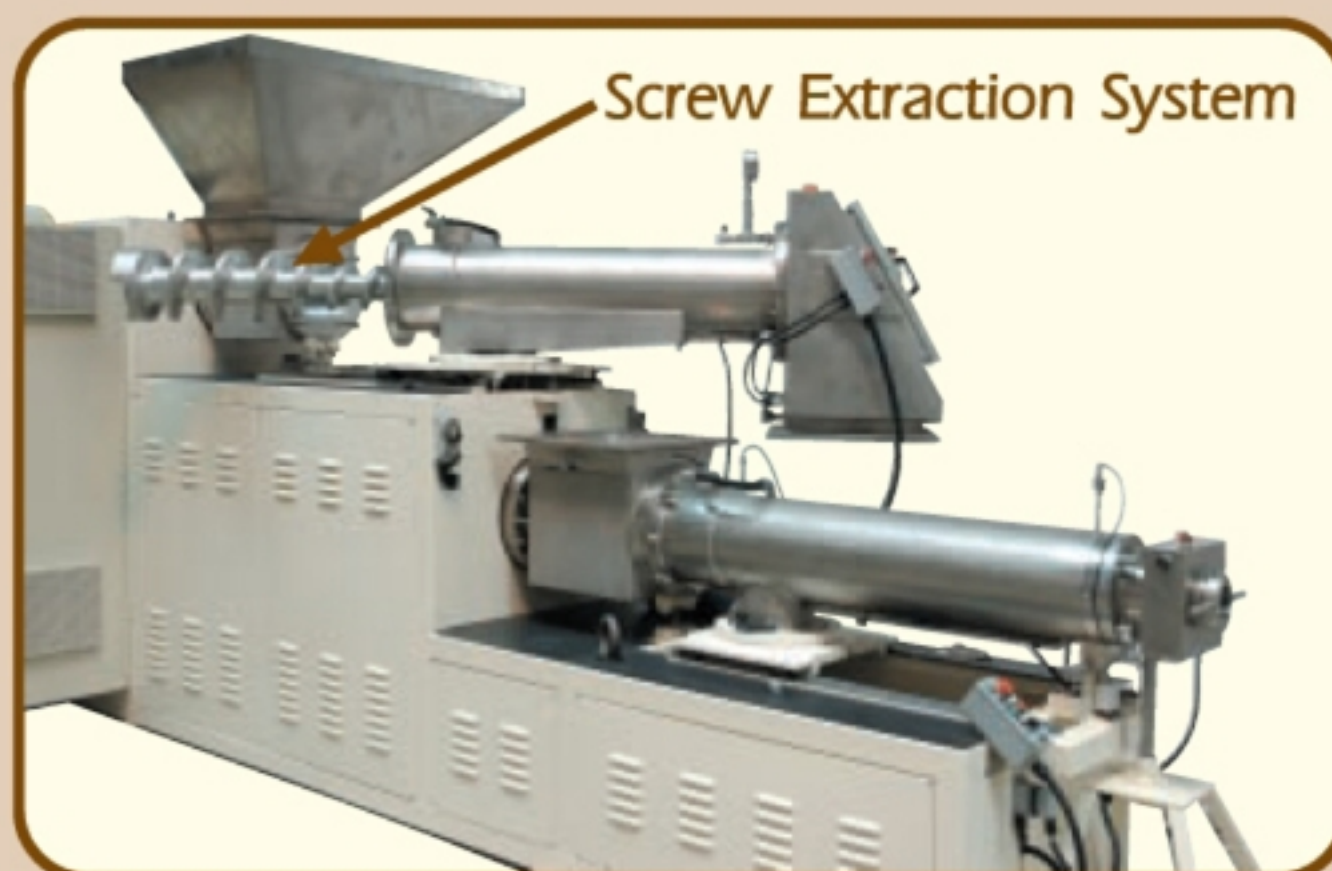
TOTAL - Multi-Product Line without Pre-Refining
Mixer + Simplex Refiner + Transavon Duplex Vacuum Plodder

STANDARD – Standard Transavon Line
Mixer + Transavon Duplex Vacuum Plodder

ECO - Economical Transavon Line
Mixer + Simplex Refiner + Transavon Simplex Plodder



Transavon Simplex Refiner



Screw Extraction System



Standard Transavon Line

COMBO SCREW DIAMETER (mm)	L/D RATIO	OPAQUE SOAP PRODUCTION CAPACITY (Kg/h)	INSTALLED POWER PER STAGE (kW)
160 > 100	9:1	300	7,5
200 > 130	9:1	800	11 to 15
250 > 150	9:1	1500	22 to 30
300 > 180	9:1	2200	37
350 > 220	9:1	3000	45 to 55