

# Sealing and cutting machine for hollow profile sheets

**SIGN**  **1012**  
SEAL & CUT MACHINE

**AGRIPAK**  
Plastic Processing Machinery

## SEALED BOX LIFE-CYCLE DIAGRAM



# SIGNO 1012

SEAL & CUT MACHINE

SIGNO is the new concept of sealing machine that contains in itself multiple devices, resulting from decades of experience in the extrusion and processing of corrugated polypropylene plastic sheets.

As in 1978 Mr. Marco Terragni, founder of AGRIPAK, patented the first die-calibrator system for the extrusion of the first alveolar plastic sheet in the world, so in 2017 his sons patented the first machine for the rapid sealing process, from which the SIGNO came to life.

**SIGNO is able to process any type of hollow profile sheet** : alveolar, laminated bubbles (BubbleGuard) and honey-comb profiles, both in sheet or in reel.

The sealing of the hollow profiles has many advantages in terms of :

- **resistance to compression and torsion** : the air trapped inside the sheet cavities after the sealing, leads up to a 40% increase of the compression and torsion resistance of the sealed sheet itself, with the consequent relevant possibility to drastically reduce the sheet weight per square meter, without compromising its mechanical strength.
- **thermal insulation** : the air trapped in the sealed hollow profile, acts as an insulating barrier to the thermal exchange between the two external faces of the sheet, with a consequent important increase of the insulating properties of the final product.
- **aseptic features** : no bacteria, dust, impurities or other organic products (such as : blood, liquids, insects,etc.) will penetrate into the hollow profile sealed cavities.  
These aseptic conditions are of primary importance in the food and pharmaceutical packaging fields.
- **reusability** : the hollow profile with sealed cavities can be cleaned quickly and easily allowing multiple reuse of the final product. (**circular economy**)
- **recyclability** : no contaminant agents are entering into the sealed hollow profile, allowing the easy cleaning of its external sheet faces and its subsequent quick reintroduction into the cycle of plastics reuse - under flakes form - again in the process of new hollow profile sheets extrusion production. (**circular economy**)
- **eco-sustainability** : the high efficiency of the SIGNO machine sealing process allows also the sealing of extruded sheets with high percentages of recycled plastic (up to 80%), without compromising the sealing speed and quality. (**circular economy**)

The innovative **SIGNO sealing system for hollow profiles** allows to achieve high sealing standards, compliant with the **ISO 62 standard, regarding water absorption by the plastic sheets**. The ISO 62 standard must be respected specially in the production of the interlayer pads in polypropylene alveolar sheets. Today, thanks to SIGNO, this standard can be fully respected and extended also to the production of the hollow profile boxes/packaging for food products (meat, fish, fruit and vegetables) and pharmaceuticals.

SIGNO is one of the first machines in the world expressly designed to meet also the **new EEC legislation that bans the use of disposable, single use plastic in Europe from 2021**: the high standards obtainable by the new SIGNO sealing system (FIG.1 and FIG.3) guarantee a perfect closing of the hollow profile sheet cavities, with a 200% increase of the closing efficiency, if compared to the sealing processes currently in use in the packaging (FIG.2).

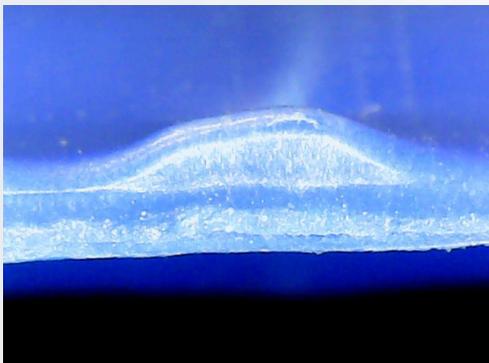


FIG.1 200X magnification of a seal performed with SIGNO.  
Alveolar sheet in PP of 3.45 mm thick and weight of 1,100 gr / m<sup>2</sup>.



FIG.2 200X magnification of a seal performed with traditional hot-die cutting machine.  
Alveolar sheet in PP 3 mm thick e weight of 600 gr / m<sup>2</sup>.



FIG.3 Sealing performed with SIGNO on 3 mm thick polypropylene sheets (alveolar & BubbleGuard) with different weight from 200 gr/m<sup>2</sup> up to 1,500 gr / m<sup>2</sup>.

**SIGNO can be fed either starting from hollow profile sheets stacked on a pallet or from reels.** The lightweight structure of the sealing and cutting presses, as a result of a successful combination of technological innovation and the use of new materials, allows SIGNO to increase its production cycles without compromising the quality of its sealing and cutting of the final product, even at high grammages of the sheet.

Depending on the final product request, **SIGNO can be equipped with various optional accessories for a full automatic production process** starting from the feeding up to the final stacking station, where the sealed product will be properly stacked on a pallet, to be then packed and shipped to the final customer.

SIGNO series optional accessories :

- **AUTOMATIC FEEDING AND STACKING SYSTEM** for a continuous production: no need to stop the machine at each pallet change.
- **AUTOMATIC REEL CHANGE SYSTEM** for a continuous production: no need to stop the machine at each reel change.
- **CUT-OUT SCRAPS CLEANING STATION**: performs sheet cleaning from cutting-scrap waste, as in case of agriculture boxes production (for fruit/vegetables) where drain holes are mostly requested in the lower part of the box.
- **LAMINATING STATION** : performs the lamination of woven / non-woven film, as in case of **AUTOMOTIVE** boxes or when a highly protective packaging is requested.



Cool chain packaging



Automotive applications



Pharmaceutical packaging



Food packaging

The SIGNO series is equipped with the SIEMENS CPU series 1200 & 1500 and the whole production process is supervised through a touch operator panel managed by the software developed by AGRIPAK technicians on a SIEMENS TIA PORTAL platform (FIG.4).

Through the touch panel, the operator can quickly change all the process parameters, in order to quickly find the optimal configuration to process sheets of different hollow-profile, thickness, weight and size.

The SIGNO series is also equipped with an industrial router that provides complete remote access to the machine's process data : allowing our technicians to perform remote assistance and to our machine to interface (by our BI-BOX technology) with the process datas, with the interesting possibility of sharing & integrating the same datas with the most common internal management software.



FIG.4 View of control software of SIGNO.

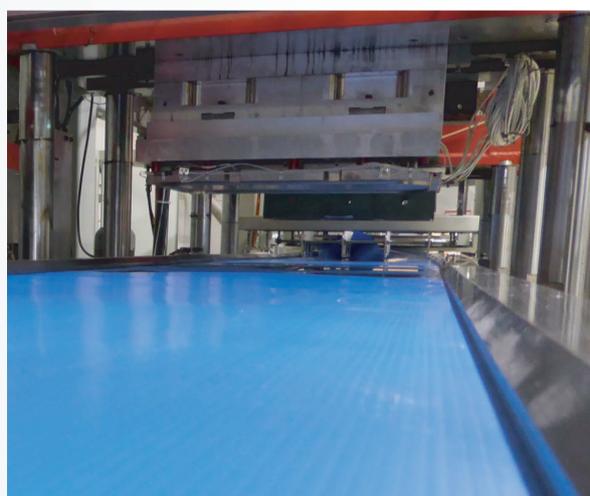


FIG.5 SIGNO sealing station.



FIG.6 SIGNO cutting station.



FIG.7 SIGNO stacking station.

# SIGN 1012

SEAL & CUT MACHINE

## TECHNICAL SPECIFICATION

MATERIALS	PP - PE
HOLLOW PROFILES	Alveolar sheets Honeycomb sheets BubbleGuard sheets
SHEET WIDTH	MIN: 400 mm MAX: 1.030 mm
SHEET LENGTH	MIN: 250 mm MAX: 1.230 mm
SHEET THICKNESS	MIN: 2 mm MAX: 6 mm
SHEET GRAMMAGE	MAX: 2.000 gr/m2
SEALING AREA	MAX: 1.030 x 1.230 mm2
MACHINE DIMENSIONS (mm)	2.400 x 10.000 x 2.500

**SIGN** 



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