ProTec Polymer Processing

SOMOS® PERFOAMER –
The innovative manufacturing solution for physical foaming

SOMOS®
PERFOAMER

SOMOS® PERFOAMER – the simple, multipurpose solution

SOMOS® PERFOAMER is the system for producing physically foamed plastics parts using the „PLASTINUM® Foam Injection Molding“ method jointly developed with ProTec's partners Linde and Kunststoff-Institut Lüdenscheid (KIMW).

Cost-efficient

SOMOS® PERFOAMER is an auxiliary unit for new or existing injection molding machines from any manufacturer. No costly retrofits to the machines are required, just the addition of a shut-off nozzle. A screw position controller and a gas-tight design of the mold are also advisable.

Multipurpose

SOMOS® PERFOAMER may be used for physically foaming any polymers which can be impregnated with gaseous CO_2.

Stable

SOMOS® PERFOAMER maintains uniform quality of the gas-polymer mixture it produces during processing, so enabling series production of consistent quality plastics parts.

Flexible

Built-in flexibility — if need be a number of injection molding machines can be connected to a single SOMOS® PERFOAMER unit.

Consultancy

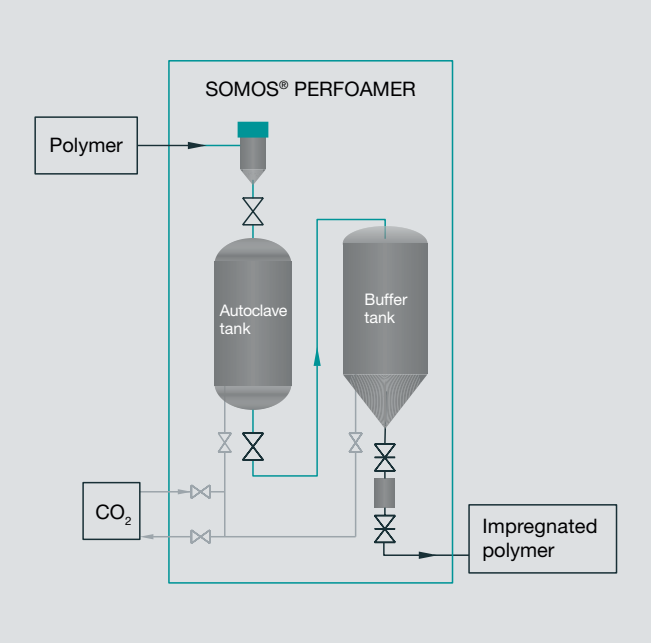
If required, our partner KIMW can offer consultancy about the physical foaming process.

The SOMOS® PERFOAMER system

SOMOS® PERFOAMER essentially consists of

- an autoclave tank
- a buffer tank with dispensing unit
- internal pipework and fittings
- a touchscreen system controller allowing PERFOAMER to be incorporated into higher-level control systems.

SOMOS® PERFOAMER has a standard interface for connection of the necessary gas supply, the ideal supply for any requirement being available.



SOMOS® PERFOAMER's mode of operation

Phase I (gas impregnation)

SOMOS® PERFOAMER applies pressure to the polymer with gaseous CO_2 under defined conditions. As a result, the polymer's CO_2 content increases depending on its absorption capacity. Once this defined time has elapsed, the polymer has reached its maximum gas impregnation level.

Phase II (equilibration)

After transfer into the buffer tank, the gas-polymer mixture loses some of its absorbed gaseous CO_2. A back-pressure applied in the buffer tank prevents any further reduction in the polymer's gas content and an equilibrium is established.

Phase III (processing)

The pressurized buffer tank ensures that this equilibrium is held constant for the required further processing time. As a result, consistent quality of the gas-impregnated polymer is ensured over the desired processing period. Depending on the material, a dispensing unit sets fixed, continuous output volumes of up to some 60 kg/h (see table).

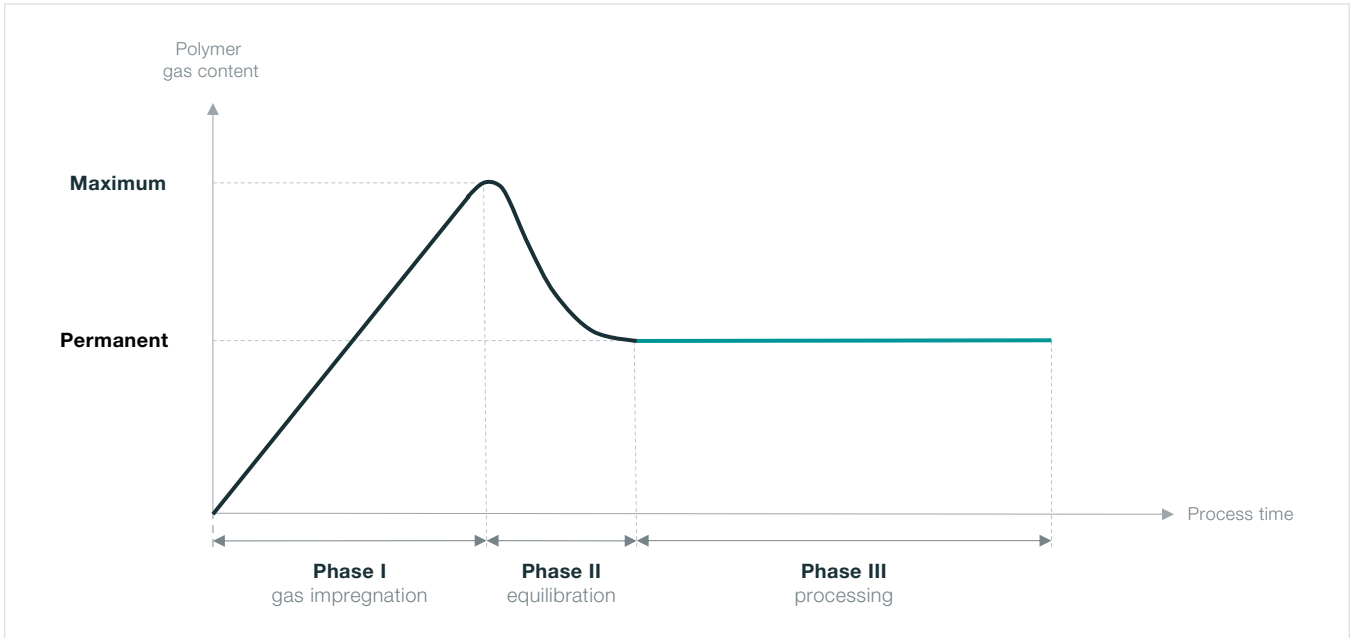
Output volumes of various polymers

Polymer	Bulk density [kg/l]	Process time [h]	Output volume [kg/h]
PC	0.74	2.5	59
PA6	0.70	2.5	56
PP	0.56	2.5	45
ABS	0.70	2.5	52
PLA (cryst.)	0.80	2.5	54
TPE	0.72	2.5	58

The stated process time includes the times required for filling with polymer and gaseous CO_2.

Source: ProTec Polymer Processing

Polymer gas content (generalized representation)



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Technical data

Effective volume of autoclave tank	l	200
Volume of buffer tank	l	300
Dimensions incl. conveyor W × H × D	mm	1,650 x 3,245 x 927
Coating	RAL	5018 and 7016
Weight (without contents)	kg	approx. 850
Connected load	kW	approx. 1
Gas consumption per batch	kg CO_2	approx. 10
Service life of 12 gas cylinders (cylinder bundle)	days	5
Continuous material output volume	kg/h	≤ 60

Advantages at a glance
SOMOS® PERFOAMER

- **Stable processing technology**
  for series production of foamed plastics parts.
- **Multipurpose**
  for any polymers that can be impregnated with CO_2.
- **Cost-efficient auxiliary unit**
  for conventional commercial injection molding machines with no costly retrofits. Easy to combine with existing machinery.
- **Flexible production**
  by connection to a number of processing machines.

Partner profiles

ProTec Polymer Processing GmbH
An international systems supplier to the plastics industry with a focus on injection molding, extrusion and blow molding. Its range of services covers components, solutions and turn-key systems for efficient materials handling, treatment and recycling of plastics and for manufacturing long fiber reinforced thermoplastics using LFT pultrusion lines.

Linde
One of the world's largest suppliers of industrial gases, Linde provides a wide range of processes, systems and services for gas-based processes in the plastics industry under its PLASTINUM® brand. Industrial gases have numerous applications encompassing internal gas pressure technology, cooling, foaming or cleaning. Linde can offer mature technical solutions and know-how for any kind of processing.

Kunststoff-Institut Lüdenscheid (KIMW)
KIMW has been assisting its customers for over 30 years with selecting, developing, optimizing and implementing products, tools and process sequences right across the plastics industry. With a testing laboratory accredited to DIN EN ISO/IEC 17025, the Institute's business groups provide technology services, research and development.

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