* **ProTec develops integrated peripheral system as industrial solution for novel physical foaming process**
* **High foaming pressure without upgrading the injection molding machine**
* **Partnership with Kunststoff-Institut Lüdenscheid and Linde AG**

*Bensheim, 10 October 2017.* ProTec Polymer Processing GmbH is currently developing a peripheral system which enables straightforward integration of a novel physical polymer foaming process into existing injection molding lines. The innovative process, recently presented by Kunststoff-Institut Lüdenscheid and Linde AG, involves loading dried pellets with CO2 in a pressure vessel and then feeding them to the injection molding machine.

The novel process thus combines the easy of handling of chemical foaming processes with the high foaming pressure of physical foaming. Good foaming results and thus considerable material savings can be achieved even with thin-walled moldings. External CO2 loading has already been tested on various types of plastics which remain reproducibly foamable over a number of hours. ProTec's integrated peripheral solution will soon make this innovation industrially viable for a wide range of users.

Processors will in future be able to integrate the new system quickly into their manufacturing lines, since existing injection molding machines, depending on the particular model, will require little or no modification. The pellets are prepared and fed completely automatically thanks to an integrated peripheral solution from ProTec consisting of dryer, autoclave and conveying unit. Since the peripheral can supply a number of machines simultaneously, manufacture of both small and large batches is economically viable. The integrated unit is operated via a network-compatible PLC controller which is already fitted to all dryers and dosing units from ProTec's SOMOS product lines.

**Weight savings for the automotive industry and many other sectors**

The novel foaming solution is particularly suitable for manufacturers in the automotive industry wishing to produce lightweight components in order to cut consumption of resources and emissions or to increase the range of electric vehicles. In addition to weight savings, other benefits of the process include improved thermal and acoustic insulation due to the cellular structure of the moldings.

The new process is also of interest to other sectors where there is a desire to reduce materials usage, for example for the electrical, electronics and furniture industries or manufacturers of domestic appliances and leisure articles. Previous testing suggests that weight savings of up to 60 per cent can be made.

**Potential machine and tool savings**

Physical foaming also has further advantages: the viscosity of the polymer is lower, resulting in improved flow characteristics. This means lower mold filling pressures can be used. Under certain circumstances, the same process can be carried out using an injection molding machine with a lower closing force or a less rigid tool. At the same time, for many plastics better dimensional stability is achieved than in conventional injection molding because the foaming reduces anisotropic shrinkage. If high surface quality is required, a gas counterpressure process may for example be used.

**As straightforward as chemical foaming**

The process developed by Kunststoff-Institut Lüdenscheid and Linde combines the strengths of physical and chemical foaming, the latter being considered relatively uncomplicated since a blowing agent is merely added to the polymer prior to injection molding and no changes to the injection molding machine are required.

Physical foaming, on the other hand, permits high foaming pressures and avoids deposits caused by residues arising during chemical reactions. In the past, the blowing agent has conventionally been directly injected into the plastics melt, which has normally required machine modifications such as new screws, a different injection unit and back pressure control. But not with the new process: its only requirement is for the machine to have a needle valve nozzle.

**Sneak preview at Fakuma**

Visitors to this year's Fakuma in Friedrichshafen will be able to have a sneak preview of the industrial implementation, which will probably be publicly premiered at Fakuma 2018. Kunststoff-Institut Lüdenscheid is showing the process itself at booth 5312 in hall A5, while at booth 3119 in hall B3, the peripheral developer ProTec is showing a central module of the future hardware solution: the RDM series mobile resin dryer with integrated dry air conveying that will be combined with an autoclave which is under development to form a single peripheral.

**About ProTec:**

ProTec Polymer Processing GmbH is an international one-stop shop 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 handing, treatment and recycling of plastics and for manufacturing long fiber reinforced thermoplastics using LFT pultrusion lines. Managed by Peter Theobald and Dirk Egemann, the company has some 120 staff at is base in Bensheim, near Darmstadt, Germany.

**Photos:**



Photo 1:  
CO2-loaded pellets are prepared and fed completely automatically by an integrated peripheral solution from ProTec consisting of dryer, autoclave and conveying unit (photo: ProTec Polymer Processing).



Photo 2:

At booth 3119 in hall B3, peripheral developer ProTec is showing a central module of the future hardware solution: the RDM series mobile resin dryer with integrated dry air conveying that will be combined with an autoclave which is under development to form a single peripheral (photo: ProTec polymer Processing).



Photo 3:

PC component foamed using the new physical process with an approx. 16% weight saving (photo: Kunststoff-Institut Lüdenscheid).

**The text of this press release as a Word document and print-ready images can also be downloaded from**

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