

1/2019

# FLUX

the magazine for feeding technology

## PLASTICS



**Technical center China**  
„Can you feed this?“

**New feeder**  
Keep it simple: the new pellet specialist

**BRUNO DAUTZENBERG**

General Manager  
Brabender Technologie

**DR. GÜNTER KUHLMANN**

General Manager  
Brabender Technologie



Dear business partners and colleagues,

We have big plans this year. For example, trade fairs are on our agenda – with Powtech, Chinaplas and of course “K”, we have three major events at which we will hopefully get to meet with you. There is already a report on Powtech in this issue – have we made plenty of new, exciting contacts, which we hope will turn into long-term relationships.

“K” is up next in the fall, it is the plastics industry’s biggest trade fair and an absolute highlight. We therefore have plenty of innovations in the pipeline, the first of which we have already showcased successfully – the new DS feeder, developed especially for handling pellets. In this issue you can read about the ideas our product developers came up with. This feeder drew the attention of many Powtech visitors!

Speaking of innovations: our customer magazine FLUX is now in its fifth year. With the experience gained over the first seven issues, we have reviewed the look and the conceptual design of the magazine and undertaken several changes. We want to be even more informative, reader-friendly and link the magazine with a greater extent of multimedia content. Do you like the new design? We look forward to receiving your opinions, suggestions and topic requests!

Kind regards  
Bruno Dautzenberg and Günter Kuhlmann

**IMPRINT**

FLUX is the customer magazine of  
Brabender Technologie GmbH &  
Co. KG

Publisher:  
Brabender Technologie GmbH &  
Co. KG  
Kulturstrasse 49  
47055 Duisburg, Germany  
Phone: +49 203 9984-0  
email@brabender-technologie.com

Editorial team:  
Brabender Technologie GmbH &  
Co. KG  
C&G: Strategische Kommunikation  
GmbH  
www.wir-verstehen-technik.de

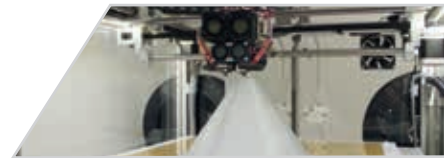
Copyright and rights of use of texts  
and photos:  
Brabender Technologie GmbH &  
Co. KG

www.brabender-technologie.com

Edition 8  
Release date: August 2019

# FLUX

- 04  
> profund  
Plastics  
Quo vadis, plastic?
- 10  
> machina  
Powtech 2019  
Rendezvous at the Red Arrow
- 14  
> machina  
New feeder  
Keep it simple: The new DS pellet feeder
- 16  
> usus  
Technical center China  
„Can you feed this?“
- 18  
> lux  
Representations  
Italy: The human approach  
Canada: „We support the industry“
- 22  
> lux  
Mechanical Product Development  
Innovative and solutions-focused
- 24  
> lux  
Prototype construction  
Hot off the 3D press
- 26  
> lux  
News  
Information from around the world
- 27  
> lux  
Technology column  
Smart factories need smart feeders





Quo vadis, plastic?



**> No other material involves such controversial debate and environmental concerns as plastics. However, no other material is as versatile and indispensable. That's why environmental issues are a top priority for plastics production and finishing.**

Trends in this industry reflect major global issues in microcosm. According to the 2019 World Economic Forum, the world's top three risks are environmental – extreme weather, lack of climate policy progress and natural disasters. 1,000 economic, political and civil society experts agree on this point. The top three are followed in fourth and fifth place respectively by data theft and cyber attacks. When applied to the plastics industry, the priorities are very similar – recycling, closed-loop materials management and environmental issues are right at the top of the agenda, followed by energy efficiency and Industry 4.0. Furthermore, the industry has recognized that it has an image problem. Littering of the seas, microplastics in food and other negative headlines have discredited a material that, if used and disposed of properly, provides a large number of benefits and is often irreplaceable.

What can and should be done? Industry only has limited scope of action as far as the disposal of packaging is concerned. In contrast, it can have a direct impact on plastics production and processing. In this respect, suitable measures include:

- Substitution of fossil through renewable resources
- Reduction in plastics quantities through efficient production processes
- Return of reject and waste materials into the production process
- Use of recycled materials
- Proactive design of recycling processes
- Provision of information to the public through studies and association activities

**Problem recognized, action taken?**

Renewable raw materials and biotechnology processes are gaining importance in the industry. In fact, the bioplastics family is huge – it is split into those that are made of renewable raw materials and those that are biodegradable, and includes the group of materials that provide both benefits. Some bioplastics are capable of replacing conventional ones, while others feature new properties and therefore increase choice.

**Bioplastics – an overview:**

- Bio-based (partly), non-biodegradable plastics: polyethylene (PE), polypropylene (PP), polyethylene terephthalate (PET), high-performance technical polymers, such as polyamide (PA), polytrimethylene terephthalate (PTT) or (partly) bio-based polyurethane (PUR)
- Bio-based, biodegradable plastics: polylactic acid (PLA), polyhydroxyalkanoates (PHA), polybutylene succinate (PBS) and starch blends
- Fossil-based, biodegradable plastics: polybutylene adipate terephthalate (PBAT)

*Starch PLA is 100 percent bio-based and degradable.*



For the most part, bioplastics are not dependent on fossil resources and are capable of reducing the carbon footprint considerably particularly in combination with recycling and closed-loop materials management, says industry association, European Bioplastics. Many bio-based polymers are

equivalent substitutes for conventional plastics. For example, these include polylactide (PLA), which is derived from fermented starches and sugar, as well as bio-based polyethylene terephthalate (Bio-PET) and polyethylene (Bio-PE). The raw materials for these polymers include sugar cane and bioethanol (source: Wuppertal Institute). Initial innovations, like compostable PLA, PHA and PBS, are even exhibiting new, enhanced properties. Brand new materials such as polyethylene furanoate (PEF) exhibit better barrier properties than established polymers and, more importantly, can be easily recycled. A detailed table is available at the end of this article.

As far as production is concerned, new materials entail the development of new processes. The flow properties of these alternative bioplastics exhibit different characteristics from conventional pellets. Feeder manufacturers like Brabender Technologie can assist

**THESE INDUSTRIES PROCESS PLASTICS**

Packaging	30,5%
Construction	24,5%
Vehicles	11,2%
Electricals/Electronics	6,3%
Household goods	3,4%
Furniture	3,2%
Agriculture	4,0%
Medical sector	1,8%
Others	15,1%

Source: *Conversio Market & Strategy – Stoffstrombild Kunststoffe in Deutschland 2017 (09/2018)*

producers here. Newly developed products can be tested at its in-house Technical Center where the appropriate feeder can be selected then configured accordingly. In some cases these new materials also require design innovation – Brabender Technologie is always geared up to undertake technical enhancements. You can read more about this in our article on our product development department starting on page 24.

### Recycling within a production environment

Even bioplastics do not eliminate the need for recycling. They too must be included in a reusable material cycle as they are not necessarily biodegradable. The logistical challenge of recycling both conventional and alternative plastics is significantly less to an industrial business than it is when consumer waste is involved. Manufacturing experts usually know exactly what production waste consists of, and it is to some extent even homogenous or mono-material. Reject components, from injection molding for example, can be returned easily into the production process. First

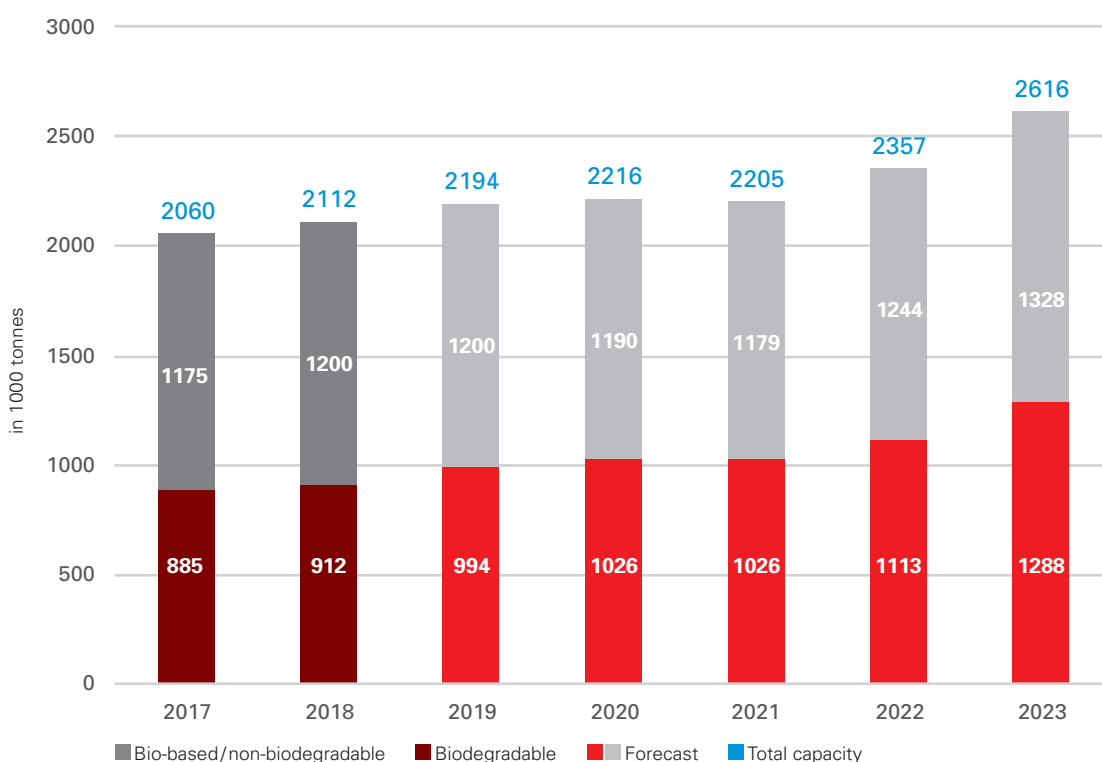
of all, they are shredded then milled. The ground material is then homogenized in an extruder and processed into strand-shaped pellets. The resultant recycled pellets can however exhibit differing properties to the source material.

Another example is processing film edge trimmings. When films are manufactured, their edges are straightened at the end of the process, meaning some waste is unavoidable. This material is difficult to handle and must often be processed into pellets before it can be added back into the production process. In collaboration with its partners, Brabender Technologie has developed technologies like the FiberXpert feeder, which feeds these film edge trimmings directly after shredding and conducts them to the extruder.

### Keeping an eye on energy-saving potential

In the energy transformation age cost-saving measures are on the agenda of practically every company in an industry where 30 to 40 percent of process costs are accounted for by energy in-

## GLOBAL PRODUCTION CAPACITY OF BIOPLASTIC BY TYPE OF MATERIAL



Source: European Bioplastics, nova-Institute 2018

puts, depending on production priorities. Here the focus is on those processes – the improvement of generating energy-saving potential. An example of this is when waste material is refeed directly back into the production process without involving an intermediary treatment process.

Another example are carbon fibers, which can be obtained from carbon fiber-reinforced plastics by means of pyrolysis and reused. These fibers tend to clump together, are contiguous and also have a very low bulk density. The FiberXpert, which feeds these challenging materials perfectly, was developed specifically for these kinds of materials. The idea behind this product innovation is to save the additional process and energy costs involved in the treatment process as well as transport and management costs.

However, the priority in control systems is being able to synchronize processes better in order to avoid scrap materials. One example of this is filling a weigh feeder to a level where as little unwanted material as possible remains at the end of a batch or maintenance intervals are identified as early as possible (predictive maintenance).

Such integrated processes are challenging and can make major demands of control systems. Brabender Technologie is in the process of meeting these requirements and is set to unveil an OPC-UA interface at K 2019, the purpose of which is to analyze process and feed data at the customer’s facilities. “Industries will be able to keep much better track of their equipment in the future and coordinate processes and maintenance accurately, especially given the new 5G cellular network standard,” states Bernhard Hüppmeier, Business Development executive at Brabender Technologie. ■



### PREMIERE ON THE "K"

Brabender Technologie presents on the K2019 an OPC UA interface with many new possibilities.

### BIOPLASTICS GLOBAL CAPACITIES IN 2018 BY REGION



Total: 2.11 million tons

- Asia
- North America
- Australia/Oceania
- South America
- Europe

Source: European Bioplastics, nova-Institute 2018



## FEATURES OF SPECIFIC BIOPLASTICS

<b>MATERIALS</b>	<b>SOURCE / DEGRADABILITY</b>	<b>DERIVATION</b>	<b>PROPERTIES</b>	<b>APPLICATIONS</b>
Sustainable (BioPET, BioPE, BioPA etc.)	20 to almost 100% bio-based, non-biodegradable and non-compostable	Sugar cane, molasses, vegetable oils	Comparable with conventional polymers, recyclable, non-biodegradable, easy to process	All types of packaging, technical components ...
PLA	Up to 100% bio-based and 100% biodegradable and compostable	Starch (corn), sugar cane, sugar beet, tapioca etc.	Transparent, rigid, low heat resistance, minor barrier effect	Food packaging (trays, films, cups/tubs...), cosmetics, molded components, biocomposites ...
PHA	Up to 100% bio-based and up to 100% biodegradable and compostable	Starch (corn), sugar (cane, beet), biomass	Opaque to translucent, rigid to elastomer-like, good heat resistance and barrier properties	Biocomposites, molded components, packaging films ...
Biopolyester	Partly bio-based and 100% biodegradable and compostable	Sugar cane, starch etc.	Opaque to translucent, rigid to flexible, good heat resistance	Bags/pouches, mulch films, vials/small bottles, molded components ...
Cellulose derivatives	Predominantly bio-based, can be biodegradable and compostable	Wood pulp	Transparent, rigid, good thermal, mechanical and barrier properties	Food packaging (films), molded components ...
Bioelastomers	Partly bio-based and/or 100% biodegradable and compostable	Various bio-based polyols (vegetable oils, sugar etc.)	Very flexible, good mechanical properties, easy to process	Mainly technical and molded components
Starch-based compounds	Partly bio-based, can be biodegradable and compostable	Starch (corn, potato etc.), flours	Flexible, moisture-sensitive, controlled organic cultivation	Bags/pouches, mulch films, horticulture ...
Biocompounds	Partly bio-based, can be biodegradable and compostable	Wood fibers, hemp, flax, bamboo and bioplastic or conventional matrix	Rigid, good mechanical strength and heat resistance, easy to process	Mainly technical and molded components

**brabender**  
TECHNOLOGIE

**brabender**  
TECHNOLOGIE

**QUICK PRODUCT CHANGE**  
**EASY, FAST CLEANING**

**brabender**



NEBO the Flow  
**brabender**  
TECHNOLOGIE

HEICO



# Rendezvous at the Red Arrow



**When the European bulk material industry tradeshow is held in Nuremberg, Brabender Technologie is playing at home. This year the Powtech was a real opportunity to connect with new and old customers.**

“Let’s meet at the Red Arrow in Hall Four!” Brabender Technologie’s bright red arrow is an easily identifiable place for customers to meet. “This year we are once again very satisfied with Powtech,” says Head of Sales Antonio Seising in summary. “Many people approached us, and we had excellent conversations. Our new pellet feeder featuring quick product changeovers and simple cleaning is attracting a lot of interest.”

Large screens showing videos were new to Brabender’s booth, but the transparent FlexWall® with its moving paddles remained on display. “It is a popular starting point. The paddles arouse interest and are ideal for beginning conversations about agitation of bulk materials and feeding.” Videos and a touchscreen enable new topics and an increased depth of information to be provided.

**More new customers, specific inquiries**

Booth staff were very positive about seeing many new faces among the visitors. “Of course, we are

delighted to welcome old acquaintances too, but a trade fair like this one is particularly successful if it generates plenty of new contacts,” Antonio Seising remarks. “Then if we have lots of specific inquiries as we did in Nuremberg this year, that is the icing on the cake.”

The broad spectrum of exhibits went particularly well with the “new faces”. The new DS feeder for pellets, the FDDW for liquids, the DSR and the DDSR for powders, the FiberXpert for fibers and the Hygienic Design FlexWall – featuring new blue polyurethane components for the first time – provided a good overview of Brabender Technologie’s complete product portfolio. “I would regard our new DS feeder, which attracted a great deal of attention, as the highlight of our booth. We frequently demonstrated how quick it is to disassemble,” says Antonio Seising. “As far as processes were concerned, we received plenty of batch inquiries, which will be followed up in greater detail after the trade fair.”

*The transparent FlexWall shows its massage paddles.*



*Videos and images on a big screen informed visitors in detail.*







*At the center of the booth and the center of attention: the new DS feeder.*

### Positive résumé from the trade fair organizers

Overall, Powtech once again attracted numerous visitors to Nuremberg. “Our objective was to appeal to visitors by putting on a high-quality show featuring new approaches and a varied, technically ambitious program of presentations with an advanced training nature. And we have managed to achieve just that, according to all the feedback we have received,” Beate Fischer, Head of Powtech, sums up. Some 14,200 professionals visited the trade fair, of which 40 percent were from abroad. This reinforces the fact that at an international level, Powtech is the undisputed industry leading event for the powder and bulk materials community. Leading exhibitors came from Germany, as well as Austria, Italy, Switzerland and the Netherlands.

The Spanish members of Brabender Technologie’s booth team, who were in Nuremberg for the entire show, were much in demand. Visitors were surveyed during the trade fair and they indicated a high degree of satisfaction. 87 percent stated that they expected to do post-trade fair business as a result of contacts made and leads generated at Powtech. That certainly applies for Brabender Technologie. ■



# Keep it simple: The new DS pellet feeder

**> The new DS feeder line for pellets is ideal for compounders who feed one product continuously or more in alternation. Brabender Technologie offers optimized versions in four different sizes for both operations. The feeders are equipped with a single screw and steep funnel hoppers – perfect for granules.**

## Functional and innovative

Brabender Technologie is offering two versions of the DS60 and DS80 feeders. “These feeder types are different in terms of motor and screw handling,” Jürgen Knez, DS design engineer at Brabender Technologie, explains. While the motor and screw on the standard version (S) remain attached together and can only be removed in one piece from the rear, the motor and screw on the extended version (E) are independent. Therefore, the standard version is more suited to continuous operations involving one product,

while the extended version is better suited to frequent product changeovers and cleaning.

“In the extended version, the motor is stationary during a product changeover or cleaning, and is merely shifted to one side to enable the screw’s removal from the rear,” is how Jürgen Knez explains the way DS technology works. Brabender Technologie has developed a motor sliding plate for this purpose. “This design is unusual, but makes handling considerably easier,” Knez emphasizes. The DS-E also features a slide gate

and outlet connection for complete material discharge from the hopper.

**The smallest model is special**

The smallest version of the new feeder line is the DS28 which features a different design. In this case the motor is permanently fixed to the feeder. The entire hopper, including the screw, can be removed from the front of the feeder as one unit using quick release clamps without any material spilling. This means this version can be cleaned easily without having to empty the hopper.

“When designing this line, our focus was simplicity”, says Jürgen Knez. A modern design with simple structure, simple handling and a neat layout. Simply Brabender Technologie! ■



**VIDEO**

In "The DS Line for Granules" we show you the quick disassembly.



*The "small" DS28 is different from the other devices.*



*In the extended version, the motor remains on the unit and is only moved for disassembly, so that the screw can be pulled from the rear.*

MODEL	HOPPER SIZE	FEED RATE
DS28	10 dm <sup>3</sup>	5 to 150 l/h
DS60 S/DS60 E	50 dm <sup>3</sup>	15 to 750 l/h
DS80 S/DS80 E	100 dm <sup>3</sup>	50 to 1,500 l/h
DS80 S/DS80 E	200 dm <sup>3</sup>	100 to 3,000 l/h

# "Can you feed this?"

**Brabender Technologie has a dedicated technical center available for the Chinese market to help local customers find their ideal feeding solutions.**

Brabender Technologie has been operating in China for almost 40 years and established Brabender Technology (Beijing) in 2005, followed by service centers in Guangzhou and Shanghai. In Beijing, a dedicated technical center is available to Chinese customers and it is very popular. This is where feeding solutions are analyzed, and their accuracy is assessed. Typical inquiries involve powders of a bridging or sticky nature that are therefore difficult to handle. Local engineers test these powders to identify the ideal screws, agitators and hopper geometries for the job.

Technical Director Mu Dongyi coordinates these tests, which he conducts with the help of qualified service staff. One of them is permanently on site, while others are drafted in as required. German colleagues, like Head of Asia-Pacific Sales Dominik Becker, regularly visit China to give presentations on new devices and to train staff. FLUX spoke with him about the Technical Center in Beijing.

*The standard devices are always available.*







*It is important that enough material is available for the experiments.*

**What basic facilities does the Technical Center include and what can be provided at the customer's request?**

The devices from our standard range are available. We can also install options that enhance material feed rates as well as test special designs of agitator or screw coatings.

**Who generally makes use of the Technical Center?**

All kinds of customers, ranging from local compounders to global players make use of our Technical Center. This is where initial experience is gained, especially when new products like fibers or additives are involved.

**What are your most common inquiries?**

We often hear a basic "Can you feed that?". We are also often asked about achievable accuracy.

**How lead time do you require prior to an inquiry?**

As a rule, we can comply with test requests on really short notice. What's important in this respect is that the customer provides us with sufficient materials to enable us to model production reality as accurately as possible. The properties of some materials change once they have been fed.

**How long do the tests generally take?**

It depends on the customer's specific requirements. Simple feasibility can be determined in one day. As far as accuracy requirements are concerned, we sometimes need two to three days.

**Is information about tests conducted in Duisburg, China and Canada shared?**

There is a common platform called "Feeder Control", on which the reports are archived.

**Could you give us some examples of unusual inquiries that you have completed?**

A global customer of ours wanted to feed carbon fibers, using well coated fibers chopped into really short pieces as well as almost rectangularly chopped ones. We had already conducted a test using the short carbon fibers in Germany. In China, we added an additional test using the other grade of fiber and we were therefore able to offer the customer a device that's able to feed both products with maximum flexibility.

**What information do you require before a test and who is the contact?**

We need information about what the customer wants to achieve as well as a short description of the product, in order to pre-select devices. Photos or videos of the material to be tested also help.

**Are there plans to expand the Technical Center or launch new services?**

We always strive to improve our service delivery to customers and we learn from our tests. We are happy to share this experience with our customers. ■



# The human approach

**> Brabender Technologie collaborates with partner companies in many countries where it does not have its own branch or subsidiary. FLUX will profile some of these partners in upcoming issues, starting today with Italy.**

If you want to buy a Brabender Technologie feeder in Italy, you will find what you are looking for in Milan. Established family business, De Amici, has represented Brabender since 1990. “We partnered with another company in the continuous feeding sector for many decades,” Board member Alberto de Amici recalls. “But they were bought out by a competitor and we decided to look for an alternative brand – with a global reputation but not yet represented in Italy. Brabender Technologie fitted the bill exactly and was interested in opening up the Italian market.”

## **30-year partnership**

Both companies embarked on a successful journey and the partnership has grown and prospered for nearly 30 years now. As a representative of Brabender Technologie, De Amici operates mainly in the plastics and rubber industry and has some additional market share in the food, pharmaceuticals and chemicals sectors.

“We always try to track new technologies as they evolve and therefore we always tackle new and interesting projects,” says General Manager Elena de Amici. “That’s why we were



*F.l.t.r. Gianluigi Cassera, Eugenio Ambrogio, Claudio Scapin, Roberto Atesini, Antonella Fioravanti, below Elena De Amici*


the first company in Italy to provide feeding equipment for the bio-plastics industry in the 1990s.”

Currently, low-cost and low-quality competitors dominate the Italian market along with some international brands. “They can only be overcome by offering premium-quality machinery while providing excellent project management and superb after-sales service.” Elena de Amici regards customer focus as the key to success: “Our philosophy is to listen and propose coherent solutions that factor in the type of company involved, its size and organization.”

**Communication and trust**

The Italian market still features a traditional structure with many small private companies offering great future potential. They appreciate a close working relationship and regular contact. Elena de Amici: “We look after clients in each of our sales territories every day, so in addition to keeping prearranged appointments, we also pop in and say hello to other customers in the area. We believe that the human approach is still the right one to take and above all that listening is a more effective strategy than dictating to others.”

Open communication and trust are also the basis for the excellent working relationship with Brabender Technologie in Duisburg. “The Brabender Board is always receptive to requests from its agents and understands the challenges posed by differing mentalities in various European countries. They offer us tailor-made solutions.” Elena de Amici has identified similarities between the two companies: “We have a common philosophy – you don’t need to be the biggest to be the best. The important thing is to work well, honestly and harmoniously with colleagues. Brabender Technologie considers us to be a member of its own family. That is very valuable and very special.” ■

 **CONTACT**

De Amici  
Via Pietro Calvi, 19  
20129 Milano MI

+39 02 70006042  
info@deamici.com

[deamici.com/contatti](http://deamici.com/contatti)

*Alberto De Amici and Klaus Plien*



*Roberto Atesini*







# “Serving Industries in Western Canada”



**We are not alone: There are many representatives who market Brabender Technologie systems from all around the world. In Canada, Way-Tech Process Solutions is one of our successful partners.**



Brabender Technologie has an established presence in Canada – but it’s quite a distance from Way-Tech Process Solutions. “Travelling from Toronto to Vancouver by car takes about 43 hours. You will have to cross eight American states to cover a distance of 4,353 kilometers – after all, Canada is the second largest country in the world. We are lucky to have partners on the west coast”, Guy Catton explains.

His predecessor Terry Fahlenbock approached Garry Waylett, the previous owner of Way-Tech in 2004, to represent Brabender Technologie. Since then Way-Tech represents the company in Western Canada including Alberta, British Columbia, Saskatchewan and Manitoba. Way-Tech Process Solutions is a technical sales agency that caters to industrial process equipment manufacturers. “In most cases their customers purchase directly from the manufacturers they represent which is a very cost-effective way of doing business”, Paul Robinson, president of Way-Tech explains their business model.

**Wide range of industries**

Way-Tech Process Solution has been in business since September 1987 and has four office locations: Vancouver, Calgary, Winnipeg, and Portland. The company serves a diverse market from agriculture, mining, wood, pulp and paper, and many more. Therefore, it is not dependent on

a single sector and not affected by a significant downturn in one industry. They specialize in providing process solutions for powders and bulk solids.

Typical customers are engineering companies, wood plants, feed or food manufactures, nutraceuticals, cement manufacturers and maintenance personnel. “A typical request includes quotes for systems or parts”, Paul Robinson relates. “But sometimes we have exceptional requests to design a system that includes equipment we typically don’t deal with.” In both cases the motto stays the same: “Serving Industries in Western Canada Since 1987.” They can always count on the technical expertise of their colleagues from Brabender Technologie. Paul Robinson appreciates that: “The personnel at Brabender Technologie is great to deal with, with very prompt responses and quotes in a timely manner.” ■

*Vancouver skyline at night*



**INFORMATION**

**Way-Tech Process Solutions Inc.**  
**Locations:** Vancouver, Calgary, Winnipeg, and Portland

[www.way-tech.com](http://www.way-tech.com)  
[info@way-tech.com](mailto:info@way-tech.com)

# Innovative and solutions-focused

**This is where innovations are created: the members of the Mechanical Product Development team invent new machines, enhance the standard range and create custom solutions.**

One of the biggest departments at Brabender Technologie Duisburg headquarters is the Mechanical Design Engineering department. It is the company's creative core. Twelve employees form the Design Engineering team who deal with customer needs and requirements and develop custom products based on standard feeders.

These feeder design enhancements are spearheaded by four Product Development colleagues who create Brabender Technologie's innovative products: "Our concepts form the basis for all custom products, which is why they must be as perfect as possible. Flaws in basic models would then be transferred in customer-specific solutions which must not be

allowed to happen", says team leader Jürgen Knez.

## Priorities drive ingenuity

Ideas and requirements for new machinery usually originate from the market. Direct customer requests or experience gained by the Sales and Service teams are then collected by the Product Development department and a specification with requirements and certain priorities are drafted. "If, for example, Sales requests a standard machine for a simple pellet feeding application based on a customer inquiry, we then see to it's design a reliable feeder using simple materials and few components. When the lowest possible feed rates for expensive powders are required, functionality

has priority over everything else", says the design engineer.

Metering of minimal quantities is especially tricky: load cells must be extremely accurate in this respect. "To achieve this, we have to build a very lightweight device in order to achieve maximum possible accuracy. In combination with several special design details, for which we have filed patent applications, we achieve a feed rate of 50 grams per hour", Jürgen Knez explains. The outcome of these deliberations is a highly specialized feeder that is set to be exhibited at the K show in October – following months of product development teamwork.

## Product development requires communication

The seven-member product development group meets once a week. Each one of them has their own focus: one has in-depth know-

*This device for testing seals was designed by Brabender Technologie and mainly made with a 3D-printer.*





*View of the CAD-workstations at the construction office.*



*Henning Reger and Jürgen Knez at work.*

ledge about ATEX devices, one is an expert in Hygienic Design while another is well versed in a certain type of machines. Upcoming projects and current developments are discussed in this forum. The Head of Product Development highly regards this joint brain-storming process. "These collective suggestions have already generated plenty of viable solutions." The 3D printer has now become an invaluable aid to testing these solutions – it produces components overnight, allowing an idea to be physically assessed more effectively (you can also read more about this in the following article about the use of 3D print technology at Brabender Technologie).

In addition to developing new devices, the product developers also handle improvements to existing models. Communication with colleagues out in the field is particularly vital in this respect, as Sales and Service teams can provide valuable feedback about the kind of modification needs that are emerging. "Our seals for feeders with agitators are a practical example of this", says the expert quoting from experience. "In the past we used packing rings. These have to be retightened so that they remain sealed. But we discovered that some customers are not keen on this regular maintenance. That is

why we have switched to another sealing technology."

### **Customized solutions**

The FlexWall® is one of Brabender Technologie devices that are usually bought "off the shelf". However, many other devices are customized by the Design Engineering team such as the Fiber Feeder or the Bag Master that are "tailor-made". This is where the twelve colleagues from the Design Engineering team come in.

"The BagMaster is a good example because its dimensions are heavily dependent on the environment in which it is to be installed. Statics, feeder connection, bag size, platform structure and crane integration are all parameters that can cause its dimensions to differ radically in each case", Dennis Jaquemot explains. The customer then often wants the entire platform structure from a single source. "To comply with the customer's requests, we work together with our steel constructors and fitters, who know how to handle our sensitive equipment with care. As a result of many projects and joint commissions, they have developed a good understanding of the technology involved and structural design accuracy we require."

Feeding systems must fit exactly to the millimeter to ensure that shunt forces are avoided and that

the design does not disrupt load cell readings. Jürgen Knez himself worked for many years in plant engineering, before he switched to product development. He has now been with Brabender Technologie for almost 20 years and can contribute a wealth of experience to finding solutions.

### **International communication**

There is also regular communication with colleagues in Canada. The local design engineering team specializes more in customized modifications and adaptations for the North American market. Motor technology and certain standards are different on the North American continent, meaning the Canadian subsidiary effectively does a lot of its own manufacturing. In order to keep on top of product development issues, it's President, Guy Catton regularly flies over to Duisburg. This allows him to gather information and evaluate innovations from the perspective of the North American market. "The same thing applies here too – product development is teamwork and only functions if communication is good. Plenty of ideas emerge from conversations – with customers or with colleagues." ■

# Hot off the 3D press

**The FLUX editorial team wanted to know how Brabender Technologie uses its 3D printer.**

“Our colleague here also works nights,” is how Jürgen Knez, Head of Mechanical Development, introduced us to Brabender Technologie’s 3D printer. It is actually located in the printer room, although it has nothing to do with paper. Using a small extruder, it fuses strands of PETG – a food-safe material – to form resilient workpieces. “We have opted for a premium quality industrial printer to ensure that 3D printed components are strong and fit for use.” In terms of quality and size, the device is one of the best on the market.

**Certainty for design engineers**  
Indeed, 3D printed items are now used almost everywhere for product

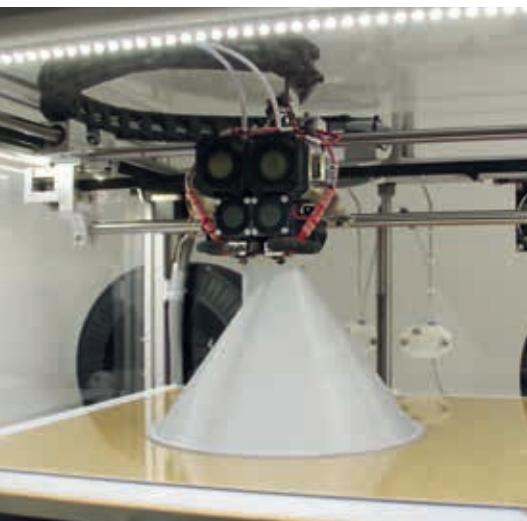
development. “It is so practical in terms of rapid prototyping – we can obtain a suitable component overnight without having to involve the Purchasing team or a supplier.” The prototypes that you can touch and try out is critical for design engineers. Henning Reger, a member of the Mechanical Development team, shows us an example. He developed triple and quadruple-flighted screws, which are designed to make low rate feeding of ingredients as pulsation-free as possible. “Material is discharged with each rotation in every screw flight. A low rotation speed means a uniformed rhythm. Multi-flighted screws deliver powder at low pulsation rates,” is how the design engineer explains the thinking behind his design.

However, designing multi-flighted twin screws is a challenge because they must fit perfectly together. “So,

we ‘printed’ the screws with their connections and mounted them. This enabled us to verify the fit and to let them rotate together, which worked perfectly.” The models are internally honeycombed because it’s a quicker process and consumes less material. Nevertheless, strength is excellent. “If required, the components can also be machined at a later stage.”

**Anything is possible**  
Screws, hoppers, gears, connectors, motor connectors and sliding plates are just some of the wide range of components that Brabender Technologie’s design engineers have now produced on the printer. “There is a seal test rig in our laboratory, which with the exception of the power unit, we constructed entirely from 3D printed components,” Jürgen Knez tells us. It now enables our team to determine the lifespan of seals and

*Printing of a hopper*



*Hopper 3D-printed*



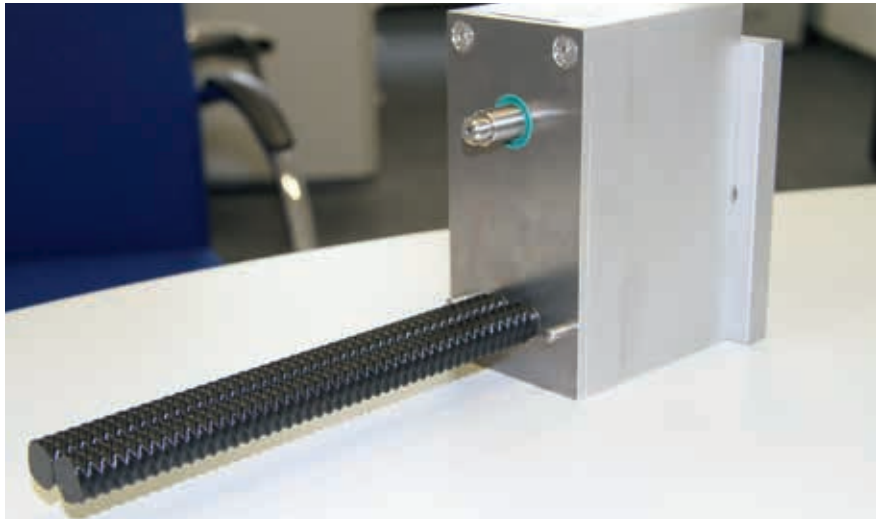
*Sliding plate for DS feeders*





assess the materials these seals are made of. Results have already led to changes.

However, there is a lot of work to do before anything can be additively manufactured. "A 3D printer of this kind has a wide range of parameters that can be adjusted to match the specific component," the expert explains. "Issues involved include pressure, nozzle and heat bed temperature, honeycomb structures, possible support contours, layer thicknesses and many others." It took a while before team members were comfortable with this wide range of settings options. As a rule, the models now match the design engineer's ideas at the first attempt. "3D printing is more than just a CAD drawing. We first had to acquire this additional knowledge. But it has been worth it!" ■



*The test confirms that the screws run completely parallel.*



*New quadruple-flight screws were designed on customer's demand.*



**VIDEO**

3D Printer at work! Have a look at the creation of printed components.



# News



## Our Representative Office in India

Kolkata – Our representative office in India has been located in the AMP Vaisaakhi Building in Kolkata since the end of 2018. General Manager Bruno Dautzenberg and Gudrun Breuer-Federwisch attended the traditional opening ceremony

as guests. The centerpiece of the ceremony involved lighting a candle, which embodies light as a symbol of knowledge. As a hospitality gift from Duisburg, Bruno Dautzenberg presented a thematically related Davy lamp, which in turn symbolizes the link between Duisburg and Kolkata.



## In Hygienic Blue

Nuremberg – The Hygienic Design FlexWall® feeder was showcased at Powtech for the first time. It features a blue polyurethane hopper which is the new standard for food devices. The reason for this is simple: there is no food staple that is naturally blue. If hopper fragments accidentally find their way into food products in the event of damage, it can be spotted quickly. Moreover, blue plastics are synonymous with Hygienic Design and are therefore frequently used in the food industry. Operators can now better evaluate the cleanliness of components, such as, spores, mold and food. Cleaning agent residues can also be identified quicker than on other colored plastic hoppers.



## Trade Fairs

International – Brabender Technologie often exhibits at trade fairs around the world. Come visit us!

PPMA Total 2019 Birmingham, GB	01.–03.10.2019
K 2019 Düsseldorf, D	16.–23.10.2019
Cibus Tec Parma, IT	22.–25.10.2019
Interplastica 2020 Moskau, RUS	28.–31.01.2020
Solids Zürich, CH	12.–13.02.2020
SNAXPO Charlotte, NC USA	22.–24.03.2020
ANTEC San Antonio, TX USA	30.03.– 02.04.2020
Solids Dortmund Dortmund, D	01.–02.04.2020
iPBS Powder Show Rosemont, IL USA	28.–30.04.2020

## Health Day

Duisburg – The first ever Health Day at Brabender Technologie kicked off on June 5th, 2019 with the theme of back to health and exercise. A team of employees organized the event. Highlights included a back strength check

as well as spinal column screening, where the shape of the spinal column, its flexibility and ability to maintain balance were measured. Employees in small groups learned new exercises in between work activities. There was plenty of interest!

The new technology column with Dr. Günter Kuhlmann

# Smart factories need smart feeders

**FLUX's new technology column – in it Dr. Günter Kuhlmann reports on technological developments, ideas and visions.**

Sensors are conquering the world. Application versatility means that they are now extremely inexpensive to procure and are put to wide-ranging use in smartphones and cars. With the right algorithm a smartphone knows whether its user is walking, running, cycling, sitting in a car or on a train at any given time. Why is that of interest to Brabender Technologie? Because on the road to digitalization we are set to redefine all aspects of the subject of data.

## Specific measures in 2019

We are taking a first step with a new OPC UA interface, which we will be showcasing at the “K” Show in Düsseldorf in the fall of 2019. Manufacturer-independent data sharing is an important factor in establishing smart factories. OPC UA means enhanced industrial communication – this interface conveys process and control data within a service-focused architecture. This provides our customers with new opportunities.

At “K” we will also be demonstrating our new user interface – it is browser-based and can therefore be incorporated very easily in any network or Intranet. This enables our customers to retrieve the status data on the status of their feeders

easily and therefore adjust parameter settings conveniently via a computer, laptop, iPad or cellphone.

## The future is digital

Both these innovations are just the first steps on our road to digitalization. The above-mentioned sensors will help us to collect data about feeding processes and understand these processes better, develop analysis algorithms and ultimately improve these processes. Our system will initially be in an 'observational' mode, much like an aircraft's flight recorder, but in the future will be self-learning system in which feeders can self-enhance.

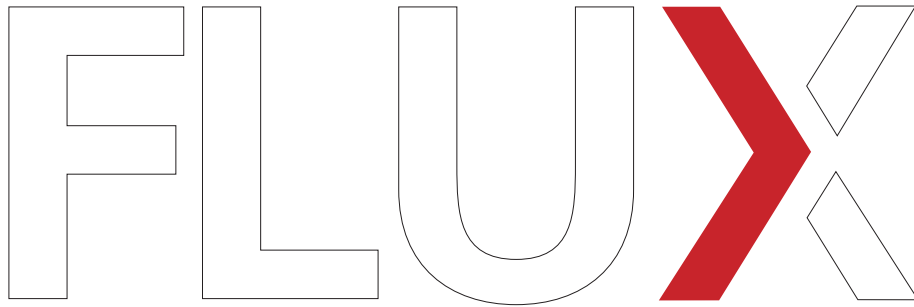
It's a long road and getting there is going to be exciting. Since artificial intelligence lives off experience – trends must be identified first to enable a decision matrix to be created from them. To start, we will conduct field testing involving pilot customers, in order to collect genuine production data and equip our control systems for these new tasks.

In the next few issues of FLUX we will tell you more about our visions and the milestones we plan to reach towards that digital future, because we are embarking on this journey for



*Günter Kuhlmann reports on technological developments.*

you and with you. Why not join us as we travel to this digital world! ■



### **International**

Brabender Technologie GmbH & Co. KG  
Kulturstrasse 49  
47055 Duisburg, Germany

### **North America**

Brabender Technologie Inc.  
6500 Kestrel Road, Mississauga  
Ontario L5T 1Z6, Canada

### **PR China**

Brabender Technology (Beijing) Co., Ltd.  
3rd F, B Section, No. 3 Workshop, 2nd Project  
of Guanglian Industrial Park, No. 2 Kechuang  
East 5th Rd., Opto-Mechatronics Industrial Park  
Tongzhou, Beijing 101111, China

### **Russia**

ООО „Service Vostok“  
1-st Tshipkovsky per. H20  
Office 16  
115093 Moscow, Russia

### **India**

Brabender Technologie GmbH & Co. KG  
(Indian Branch Office)  
“AMP Vaisaakkhi”, AG 112, Sector-II,  
Salt Lake City, Kolkata – 700064, India

### **United Arab Emirates**

Brabender Technologie Middle East  
P.O. Box 18139  
Dubai, United Arab Emirates