

# FLUX

The magazine for bulk ingredients technology

## DIGITALIZATION

### **The new controller**

High performance

### **8h with ...**

the service technicians



**BRUNO DAUTZENBERG**  
CEO  
Brabender Technologie

**DR. GÜNTER KUHLMANN**  
CEO  
Brabender Technologie



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Phone: +49 203 9984-0  
email@brabender-technologie.com  
Editorial Team:  
Brabender Technologie GmbH & Co. KG,  
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> editorial



Dear business partners, dear colleagues,

The past year has shown us that nothing is as it once was. The global economy is in one of the deepest recessions in its history. It is often disruptions and watershed moments that make us pause and allow us an opportunity to question the status quo. It is in this context, that we have used 2020 to continue working hard on making trendsetting changes to our product portfolio.

The pandemic has also made one thing crystal clear: digitalization is not a fad or trendy buzzword but an absolutely essential prerequisite for progress and advancement. You can read all about where Industry 4.0 is currently at, what it can do and how far Brabender Technologie has traveled along this road in this issue's top topic on pages 4 to 9.

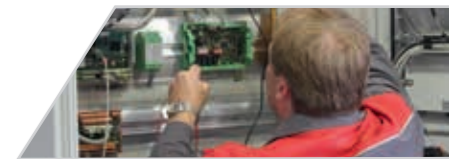
We have laid a high-performance foundation for the smart future of our equipment with our new generation of control technology. The performance of our processors and memories enables issues like the Internet of Things, predictive maintenance and equipment monitoring to be addressed and actioned. We profile the new controller on pages 10 to 13.

Enjoy reading this issue and kind regards

Bruno Dautzenberg and Günter Kuhlmann

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Always one step ahead



# Digitalization

## [dɪdʒɪtəlaɪ'zeɪʃn]

Latin digitus, finger and English digit: The conversion of analog values into digital formats and their processing or storage in a digital technical system.

# INDUSTRY 4.0

A hand in a blue suit sleeve points towards a glowing gear icon with a Wi-Fi signal, symbolizing Industry 4.0. The background is dark blue with scattered light blue particles.

> What value does digitalization add to manufacturing companies?  
We take a look at the prospects for and current challenges posed by Industry 4.0.

# En route into the future

Digital applications are pervasive in all aspects of our daily lives. Although direct personal communication continues to play a very important role, sharing information is now an increasingly digital process. These days, we are connected worldwide via various networks and can access our data from anywhere. Digitalization has long since taken hold in industry and it influences the way in which humans and machines interact. Increasingly flexible and highly dynamic value networks are superseding previously rigid, specifically defined production chains. Machines, humans and products are interlinked and all relevant information is processed in realtime. In the near future, data-driven business models only will determine industrial manufacturing processes.

There is no shortage of objectives: digitalization in industry, so-called Industry 4.0, is intended to make manufacturing more efficient, productive and ultimately more sustainable. BDI The Voice of German Industry describes the term as follows: "Following on from mechanization (Industry 1.0), mass production (Industry 2.0) and automation (Industry 3.0), the advent of the Internet of Things and Services in manufacturing is leading to the fourth industrial

**"Following on from mechanization (Industry 1.0), mass production (Industry 2.0) and automation (Industry 3.0), the advent of the Internet of Things and Services in manufacturing is leading to the fourth industrial revolution: Industry 4.0."**

**BDI – The Voice of German Industry**

revolution: Industry 4.0. It is making production more customized and more efficient. Thanks to new forms of organization [...], experts are forecasting increases in productivity of up to 30 percent by 2025."

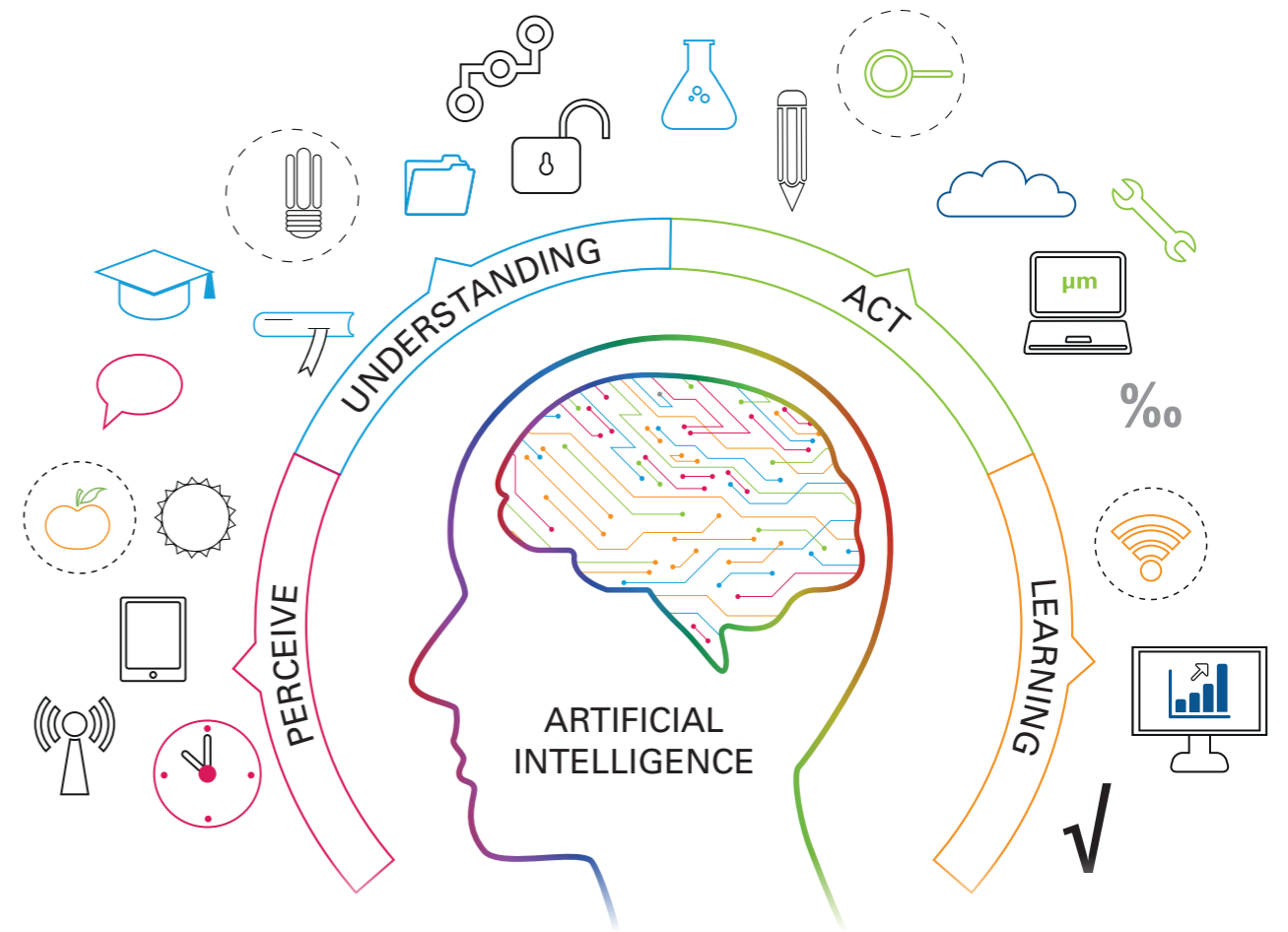
**New technology dimension**

Plant digitalization – promises to activate the 'efficiency turbo-charger'. Production processes are being combined with state-of-the-art information and communication technologies to form the basis of the smart factory, in which smart electronic, software technology and mechatronic systems autonomously communicate and collaborate with each other. Increasing digitalization in industry is being facilitated by ever smaller, more interlinked and more affordable sensors. At the same time, faster processors and larger memories are delivering

ever increasing processing power at increasingly lower costs. Global networks also enable non-location-dependent communication. These technological advances are taking industrial production into a new dimension.

**Autonomous organization in realtime-capable IT systems**

Digital transformation is having an impact at both horizontal and vertical levels in manufacturing businesses: at the vertical level, the way in which production is organized in-house is changing. This is where information technology systems and the industrial production level meet. The ways in which the company communicates with other market players differs at the horizontal level. Smart machines and products, warehousing systems and resources will be organized independently in realtime-capable IT



systems in future. The factory of tomorrow will no longer feature a central management system, as was previously the case. The factory of the future will involve automated processes along the entire value chain and even throughout the entire product lifecycle – from logistics to production and marketing through service and quality management.

**Benefits: cost advantages and predictive maintenance**

Digitalization along the value chain increases productivity, shortens lead times and provides more manageable production, and delivers significant cost advantages. Customers and business partners can also get directly involved in business and value-adding processes via smart products. Machinery and plant will incorporate smart functionalities that

enable automated monitoring of a manufacturer's equipment at their customer's premises using remote maintenance and enable the manufacturer to have that equipment serviced in a timely manner. Predictive maintenance is what this new premium service is called. Smarter monitoring and decision-making processes are set to enable companies and value networks to be managed and enhanced almost in realtime.

**Data, the key to success**

Digitalization enables massive quantities of data to be collected and processed. Data should always be available, transparent and fully accessible, to allow the best decisions to be taken in the interests of optimum production. Digital data is the key to success in smart manufacturing of the future. Production cycle data as

well as customer data play a role. Individual components can also contain data and information and can communicate with machines by barcode, RFDI transponder or smart tag, for example, to indicate for which product the component is intended. These products feature a kind of 'digital' memory and notify the production plant themselves what should happen with them. This enables different versions of a certain product to be manufactured simultaneously in one process. The result is precision management of significantly more customized products as part of a leaner production process - Lean Production.

**Good practice: industry for control systems**

There are already plenty of good examples from manufacturing industry of how the digital >



Bildrechte © Siemens

*At the Siemens electronics plant in Amberg (EWA), Industry 4.0 is a reality in many places – future technologies are already marking the next stage of digital transformation here.*

strategies described above are used to increase efficiency. One of these examples is the Siemens Electronics Works Amberg (EWA). Given 350 production changeovers a day and a portfolio of roughly 1,200 different products, around 50 million items of process and product data have to be analyzed to ensure optimum production of approximately 17 million Simatic components a year. Pioneering technologies such as artificial intelligence (AI), industrial edge computing or a cloud solution are already backing these highly flexible, maximum-efficiency and reliable processes up.

**AI, data comprehension and self-learning**

Artificial intelligence is used to describe the ability of a system to learn by applying data and knowledge-based systems. Based on human intelligence, artificial intelligence focuses on the solutions to actual problems and supports users in their work and decision-making processes. Conventional EDP systems are essentially based on clearly defined, hard-coded sets of rules that operate on the input-process-output (IPO) principle. In contrast, AI systems are able to interpret the input and subsequently adapt the output on their own. This represents a transition from pure data processing to data comprehension. Artificial intelligence extends the IPO principle by adding a new ‘learning’

component. These days, AI systems are able to create texts, language or images on their own. Autonomous vehicles can, for example, not only react in familiar situations but also extrapolate reactions in unfamiliar situations from existing data. What’s important is that AI does not replace conventional information technology but augments it in ways that make sense.

**How can AI be integrated?**

In order for companies to harness artificial intelligence for their own benefit, they must first ensure that sufficient progress has been made in terms of data collection by machines and the interlinking of individual systems to make digital data available. Furthermore, IT structures must enable data to be stored in a structured way and to be easily read. An important consideration is the security of the IT system. Unauthorized access to data and to corporate process management systems must be prevented under any circumstances. That requires application know-how to be provided, internally as well, and proprietary solutions to be regularly audited in terms of plausibility. Data sovereignty and the legal situation need to be clarified, especially when customer data is affected: having data at one’s disposal does not automatically mean having the entitlement to use it.

**Process industry: requirements of suppliers**

There is demand for smaller and smaller production batches, as well as shorter planning, construction and commissioning times in the process industry. Here flexibilization and modular automation are the benchmarks by which Industry 4.0 needs to be judged. “If the digitalization of plant technology in companies is placed in the hands of corporate IT divisions in future as part of the transition to Industry 4.0, that will have implications – for suppliers of plant and equipment too,” states Trend Report #1 by Solids, the trade show for granule, powder and bulk solids technologies. “They would be well advised to gear themselves up for future demands made by their customers in the process industry,” the authors warn.

**En route to digitalization**

Following a two-year product development period, Brabender Technologie’s new generation of controllers will make their debut in spring 2021 and lay the foundations for smart value chains. “In launching our new generation of controllers, we have designed our control technology very much with the future in mind,” Günter Kuhlmann, Managing Director of Brabender Technologie, is delighted to say. “Given their very high degree of connectivity, our controllers can be combined with almost all PLCs and can communicate via standard industry protocols/interfaces.” It will be optionally feasible to fit the equipment with a WiFi connection and to link it via the web server and to

**i WHAT DOES ARTIFICIAL INTELLIGENCE MEAN?**

Artificial intelligence describes information technology applications, the objective of which is to exhibit smart behavior patterns. That requires different percentages of certain core skills: perception, comprehension, action and learning. What’s really new here is learning and comprehension. What today’s ‘genuine’ AI systems all have in common is that they are also trained in the processing component and are therefore able to learn and thus deliver better results than conventional processes, which are only based on rigid, clearly defined, hard-coded sets of rules.

Source: IT SME Report, 2019

the controller. The connection can be ensured via a smartphone, pad or tablet or desktop computer using the same settings as featured on an operator control module. The new control technology will also be able to manage issues like machine learning and predictive maintenance – displayable and visible on the operator control modules, which will be the next to be unveiled this year. Fast clock speeds can enable the algorithm to work at significantly higher frequencies, specifically with regard to the short-term accuracy of the processor. In combination with a superior control algorithm, this delivers even better feeder accuracy.

**Conclusion**

Industry 4.0 involves radical change and major potential. Digitalization in industry is making production more efficient overall and more resource-friendly. Digitalization is boosting the competitiveness of companies that are harnessing it and providing them with new opportunities in global

markets. Brabender Technologie is midway through this transformation process and is on the road – to an exciting, smart future. ■

**@ CONTACT**

**Dr. Günter Kuhlmann**  
Managing Director of  
Brabender Technologie

Phone: +49 203 9984-0  
Email: gkuhlmann@brabender-technologie.com

The new controller

# High performance

**Brabender Technologie's new generation of control modules is preparing the company's feeding and discharging solutions for a smart future.**

There is more to automatic feeding than just precision weighing technology. A smart control system featuring sophisticated software solutions and flexible interfaces is the cornerstone of any feeding facility. It controls the feeding process through the complex interaction of its weighing and control functions, and links gravimetric feeders with other system components, including refill devices and shut-off valves.

Above all, it provides complete documentation – a must in modern production plants, and a fundamental prerequisite for quality management system certification. This smart system enables production lines featuring single or multiple Brabender Technologie feeders to be controlled, as they communicate directly with most host/PLC systems. Controls can be feeder mounted or remotely installed in control cabinets.

### Creating a basis for the future

Its new, recently launched Congrav® CM-E 3.0 and Congrav® CB-E 3.0 controllers are enabling Brabender Technologie to lay a high-performance foundation for the future, in which the Internet of Things (IoT) will play a major role, along with predictive maintenance and equipment monitoring. "Processor performance and the new controller's memory were developed with the future in

mind," Jörg Pawlik, Head of Electronics Development at Brabender Technologie, explains.

The new controller features several sophisticated Advanced RISC processors. They form the basis of an energy-efficient, high-performance platform and provide the necessary computational functions, to enable feeders to function properly; in even the most exacting industrial environments. Two main processors (CPUs) with five cores ensure high-oc-tane and efficient communication, computational and distribution processes. The software has been designed to be easily upgradeable and optimized to take advantage of the powerful, new hardware platform.

### This is what the new Congrav CM-E und CB-E 3.0 controllers can do

The control modules feature six digital inputs and six digital outputs, which is more than any previous generation of controllers. The inputs can be used for stop/start functions or interlocks, while the outputs can be used for operating, refilling (for instance via the slide gate above the feeder) or for alarming purposes.

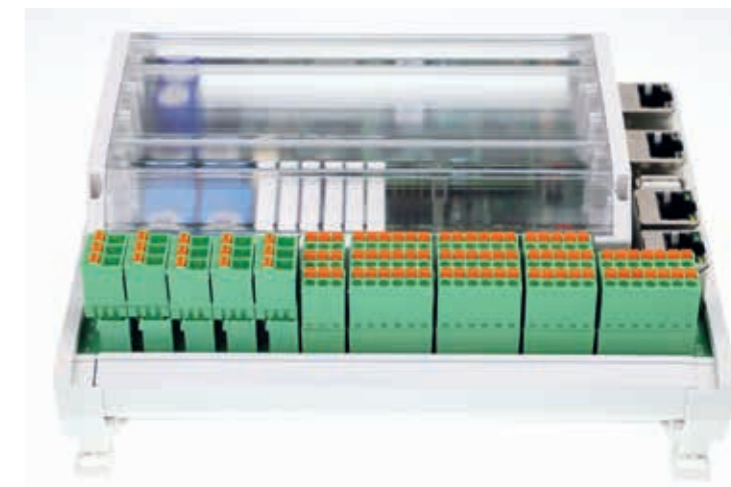
Like its predecessors, the new controller provides various interfaces, but these have been enhanced using state-of-the-art ethernet technology. An ethernet interface, replaces the previous expansion units and eliminates of the need for digital I/O interfaces to expand the system.

### The road to smart devices

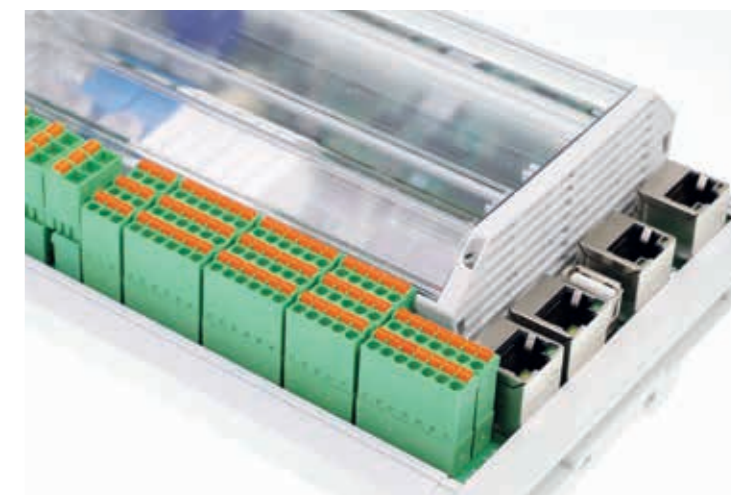
It will be possible to interconnect two network connection terminals using another new interface, the TCP (Transmission Control Protocol) network protocol. The controller can bi-directionally share data with other computers using this link. This provides the foundation for the Internet of Things, where plant and equipment with an electronic intelligence capability are turned into smart devices that communicate with one another.

Ingo Röpling, Head of Software Development, explains: "The new controller comes with a web interface, enabling fast, uncomplicated diagnosis and parameter setting capabilities when using >

*The new controller: high-performance and versatile.*

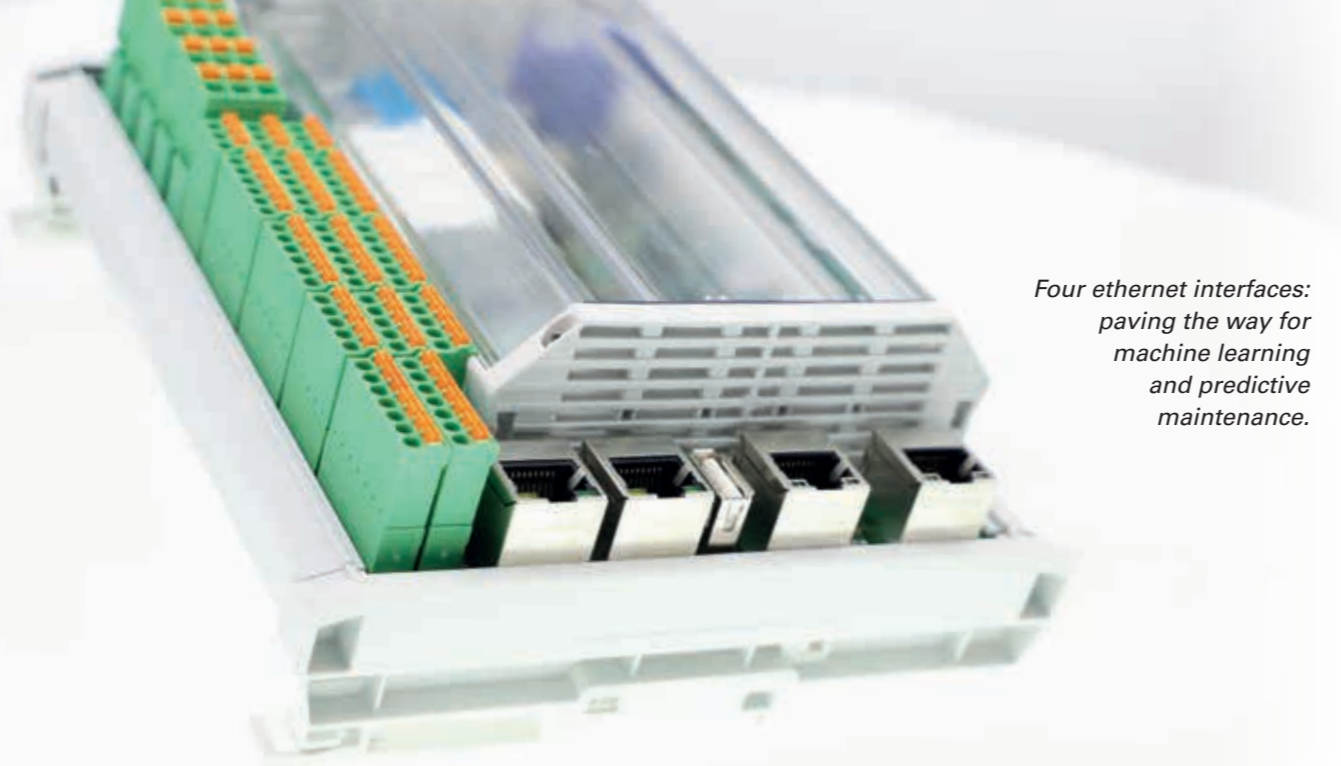


*The interfaces cover all bases.*



*The new Congrav® CM-E 3.0 control and power module is feeder-mounted, while the Congrav® CB-M 3.0 is installed in control cabinets.*





Four ethernet interfaces: paving the way for machine learning and predictive maintenance.

multiple mobile devices. The controller provides a web interface that ensures Internet and cloud connectivity. On customer request and approval, data can be analyzed in realtime via the Internet or a dedicated customer cloud. This enables Brabender Technologie to assist customers quickly when responding to service inquiries. We are laying the groundwork for integration into the Internet of Things and Industry 4.0 and building a bridge into the future.”

**New predictive maintenance opportunities**

Another new feature is the controller’s integrated ‘real time clock’ which even operates when the controller is powered off. For example, it can provide accurate information about when the machine was powered up for the first time after delivery. This is beneficial when warranty issues are involved, or to establish routine preventative maintenance intervals. “The new technological foundation that the Congrav® CB-E controllers represent has provided us with these diagnosis and predictive maintenance opportunities,” Jörg Pawlik states. All four ethernet interfaces provide extra capacity for the hardware – not just for IoT tasks, but also, for host interfaces (incl. Profinet, OPCUA, Ethernet IP), diagnosis, maintenance or enhanced operations of the unit.

**Additional upgrade options**

Previously, it has only been possible to connect three I/O interfaces. With the new control modules, up to 63 modules can now be connected to control

external add-ons. “That increases the options many times over,” Jörg Pawlik emphasizes. A mini-PCI express slot and slots for future add-in cards like WLAN or Bluetooth modules, were also factored in.

**Guaranteed backward compatibility**

The new generation of controllers can be operated using the Congrav® OP1-S (for one feeder), Congrav® OP6-E (for a maximum of six feeders) or Congrav® OP16-E (for a maximum of 16 feeders) operating panels. Ingo Röpling emphasizes: “We ensured that both the new controller hardware and software feature backward compatibility with almost all the old Brabender Technologie controllers and operating panels. It is also possible to connect the new controller using our proprietary fieldbus, if a TCP connection is not practical.”

**Increased consideration of security aspects**

The inclusion of a new, separate security chip demonstrates that attention was paid during development to the increasingly important issue of security, which is vital to the protection of our customer’s data and hardware. A further security aspect is covered by the integrated sensor chip: the 3-axis sensor can record vibrations or motion in three directions. This enables ambient conditions like temperature and humidity to be analyzed extremely accurately. “That is not just a factor in subtropical countries, but can also be useful in Europe,” Jörg Pawlik clarifies.

“In launching our new generation of controllers, we have provided extensive foundations and a wide range of options to ensure our equipment has a smart future.”

**Jörg Pawlik,**  
Head of Electronics Development at Brabender Technologie

**Separate supply voltages and supercaps**

We have installed separate supply zones: 24 volts for the controller with the CPUs and another 4 volts for the I/O inputs and outputs. Furthermore, the voltage range has been extended to 14–36 volts, which results in increased hardware stability. Even more major voltage fluctuations have no impact on the controller’s operational reliability.

The supercaps installed in the controller provide comprehensive protection in the event of power supply fluctuations. Boasting sufficient backup capability, they ensure the power supply when mains voltage drops. Pawlik explains: “You can visualize that in the form of two small batteries that release energy as soon as there is a power cut. That is important, especially in countries where electricity grids are volatile.”

**Self-remedying fuses**

Self-resetting fuses protect the device in the event of overcurrent like any conventional fuse. Electronics expert Jörg Pawlik says: “In contrast to a normal fuse, which is not reusable, this

fuse ‘remedies’ itself. This adds a service aspect to the equation, as the fuse no longer needs to be replaced.”

**Enhanced reverse polarity protection**

To date controllers have featured a reverse polarity protection that prevents the controller from starting if poles are connected incorrectly. The new-generation controller incorporates a rectifier. No matter how you connect the 24 volts – the controller always operates. “It can no longer be plugged in incorrectly,” says Jörg Pawlik with a grin.

The electronics developers have also given consideration to drive technology controls. With the old controller, the drive type always had to be identical if multiple drives were used: either two three-phase current motors or two smart DC motors for screws and agitators or paddles. The new control technology now enables a mix of drive technologies. For example, a smart DC motor can now be used for the screws and a three-phase current motor for the paddle, which helps to achieve greater efficiency.

**Looking ahead**

Following a 2-year product development period, the new controller will be available in 2021. Time to draw some initial conclusions: “In launching our new generation of controllers, we have provided extensive foundations and a wide range of options to ensure our equipment has a smart future. We look forward to traveling down this road together with our customers and will continue to work on making our equipment’s control processes even more efficient.”

**@ CONTACT**

**Jörg Pawlik**  
Head of Electronics Development Brabender Technologie

Phone: +49 203 9984-180  
Email: jpawlik@brabender-technologie.com

**Ingo Röpling**  
Head of Software Development Brabender Technologie

Phone: +49 203 9984-231  
Email: iroeping@brabender-technologie.com

Series: **discharging and refilling:** BAV | **BagDumper** | SiloTray | BagMaster

BagDumper

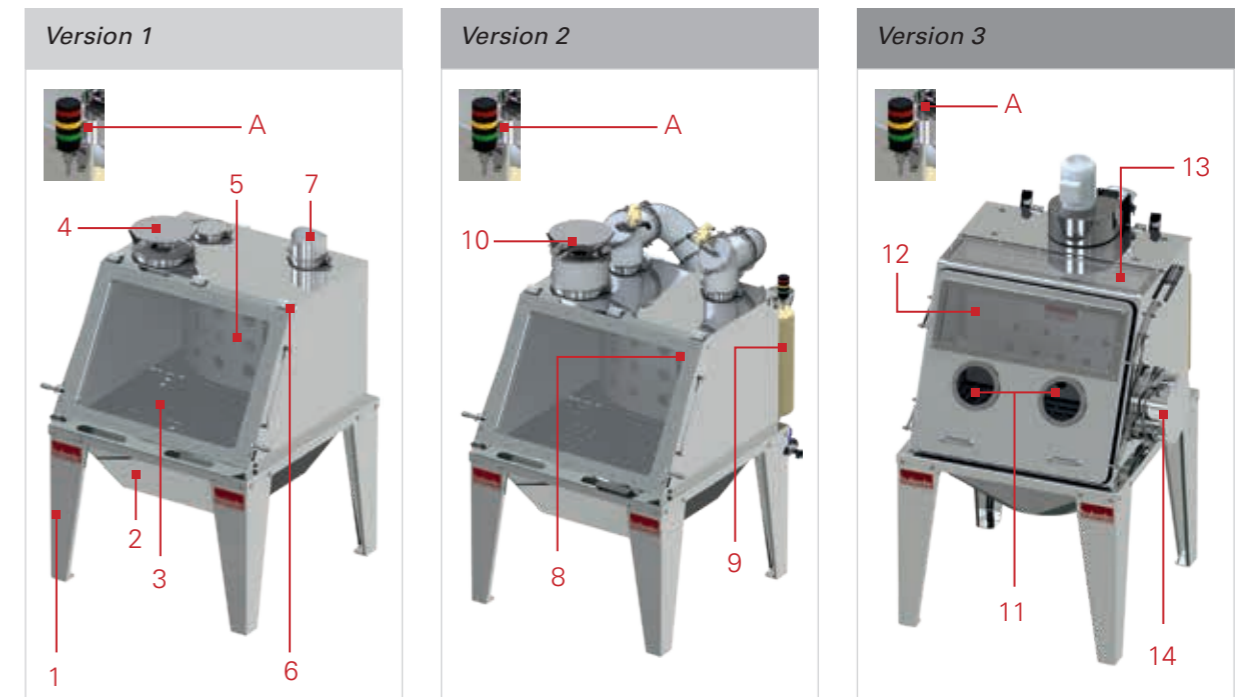
# New innovative standard

For many years the BagDumper has been synonymous with perfectly customized dumping stations for commercially available bagged materials. In 2020, Brabender Technologie re-launched these stations and set a new standard that incorporates innovative solutions.

We started our “Discharge” series of articles, which kicked off in the last issue, by carefully examining the BAV bin discharger. This time, we are highlighting the capabilities of another infeed station: the BagDumper. It is the perfect partner for dumping bagged materials and is suitable for all fluid bulk materials – including food. Even if the product starts featuring dwell times inside the equipment and its flow properties change as a result, a wide range of different options from the product portfolio enable a technical solution to be found.



*The new standard: The BagDumper is an infeed station capable of handling a wide range of different bagged materials and backs weigh feeders up by functioning as a refill station.*



The three modular-design Basic versions, on the right the low-dust version with glove box

No.	Description	Version		
		1	2	3
A	Status light			
1	Legs			
2	Discharge hopper			
3	Grating			
4	Air inlet			
5	Air baffle			
6	Door switch			
7	Vent Port			
8	Filter cartridges			
9	Air reservoir			
10	Fan (Optional for (7))			
11	Gloves			
12	Inspection window			
13	Top window			
14	Empty bag discharge port			

### Three modular design versions

When simple applications are involved, the product bag is placed in the freestanding BagDumper to enable the product to reach the equipment attached to the discharge outlet or to be stockpiled in the machine for subsequent removal. “We have devel-

oped three modular versions of the BagDumper. With Version 1 customers obtain a high-quality stainless-steel machine that reliably places the bags in the system and provides the option of attaching a customer-side extractor.



Versions 2 and 3 also feature an integrated filter system with cleaning capability and a ventilator, which makes a customer-side extractor unnecessary.

**Glove box: guaranteed health protection**

Version 3 is also available with a glove box for use when the product is dusty or contains substances that are hazardous to health. Use of the BagDumper fitted with a glove box is recommended in such cases. Work on the bagged materials is performed in the enclosed product space from the outside using gloves.

The extractor generates a permanent flow of air that prevents product dust from escaping and coming into contact with the machine operator during placement and discharging of the bagged materials. "The glove box thus enables bagged

materials to be discharged inside the enclosed equipment providing more user safety," Klaus-Dieter Kemkes, Head of Project Management at Brabender Technologie, states.

**"Thanks to its flexible design with various modules, the BagDumper is ideally suited for ergonomic work."**

**Klaus-Dieter Kemkes,  
Head of Project Management**

Customers can customize the three versions by adding a wide range of specific features as optional extras to match their actual requirements, for example the Hygienic Design version. "Thanks to its flexible design with various modules, the BagDumper is ideally suited for ergonomic work," explains Klaus-Dieter Kemkes. Furthermore, up-to-date fill levels on all versions can be logged using four optional analog load cells and relayed to a control system. The visual display on the BagDumper can also be actuated using a multicolored indicator lamp.

**BagDumper with integrated feeder**

In applications that require precisely controlled product flow from the infeed station a feeder can be incorporated with the BagDumper's support frame. In this equipment combination, product flow is controlled via the feeder, for example our own FlexWall range. The BagDumper can also be combined with big bag discharging stations.

**Everything from a single source**

Michael Weller, a Brabender Technologie Sales executive, adds: "In addition to the choice of different versions and wide range of options, what customers value about the BagDumper is its premium-quality workmanship and resultant long service life. Many customers single source the BagDumper together with one of our robust, field proven feeders due to their familiarity and positive experiences with our products. The fact that the equipment is easy to dismantle and to clean also plays a major role in their buying decisions."

*Equipment combination with integrated feeder*



**New standard featuring innovative solutions**

Last year the design engineers worked diligently on taking the BagDumper to an even higher technical level. The filter system in particular was enhanced: the option of a policing filter featuring as a third zone alongside the product and cleaning spaces was provided. This means the BagDumper is now designed for and can be used in production facilities featuring potentially explosive environments. "To enable such applications, we have refined the BagDumper for use in ATEX zones," explains Andrzej Watzlawik, Mechanical Engineering at Brabender Technologie.

The project team also focused on enabling the filters to be detached from the inside along with the support and deflector plates. Any product falling from the filter remains inside the BagDumper, which makes cleaning so much easier. The clean gas zone can now be checked from the exterior too, with the aid of the new inspection panels. The extractor has been reengineered and adapted to the new filter version. This makes maintenance work easier to perform. A door catch ensures that the closed door does not open of its own accord or during cleaning of the filters. The milled, round seal also seals the door area better.

**Conclusion**

"A large number of innovative details have been incorporated into the design of this new version. The new BagDumper standard appeals as an integrated solution offering improved cleanability, more safety and optimum user-friendliness," is how Klaus-Dieter Kemkes expresses the feeling of satisfaction that he shares with his colleagues. ■

**i TECHNICAL SPECIFICATION**

Ambient temperature:	0°C to +45°C (32°F to 113°F)
Humidity:	up to 85% without condensation
max. vacuum/pressure:	2 hPa (2 mbar) (0.8 inches of water)
Product temperature:	0°C to +60°C (32°F to 140°F)
Dust class:	M (particle size approx. 0.3µm)
max. bulkdensity:	Depending on combined feeding-system
Steel ingredient contact surfaces:	1.4301 (304) / 1.4571 (316)
Non-contact components:	1.4301 (3004)
Power supply	AC 230/400 V (460/575 V)
Control voltage:	DC 24 V (solenoid valves)
Compressed air supply:	6 bar (100psi) (Instrument air, unlubricated)

QR code to access the new

**FACTORY STANDARDS**



**@ CONTACT**

**Michael Weller**  
Sales Manager  
Brabender Technologie

Phone: +49 203 9984-0  
Email: mwweller@brabender-technologie.com

Feeding solutions for plastics recycling applications

# A virtuous cycle

**Brabender Technologie and its special feeders used for recycling synthetic fibers from plastic waste are contributing to a high-tech circular or recycling economy.**

The circular (or recycling) economy is a new type of economic system aimed at reducing consumption of resources, and is considered a key element in climate protection strategy. In the last several years Brabender Technologie has demonstrated how new processes and products can originate from innovative ideas. Bernhard Hüppmeier, Head of Business Development at Brabender Technologie, reports: "In the last few years, demand for feeding solutions, focused on recycling synthetic fibers, has increased steadily." Equipment for feeding components derived from used tires, fabrics and PET bottles is in demand. "Some materials like rubber pellets are already processed to the extent that they can be fed using a normal feeder. In contrast, others require a feeding concept specifically matched to their material properties," says Bernhard Hüppmeier.

### Used tire recycling

The rubber crumb obtained from recycling used tires can be processed in extruders, kneaders or mixers along with additives and crosslinkers to produce new products like insulation materials, road surfacing, floor coverings,

ers and reinforcement materials like steel and nylon and other chemicals like sulfur.

Used tires are reduced to palm-sized pieces in shredders and then ground down to small pellets in pellet plants. All residual metal is then removed, leaving pure rubber crumb at the end of this process. Used tires also contain woven fibers like polyester and polyamide fibers, which can be vacuumed off during the shredding or grinding phases. In extrusion processes, these fibers then serve as reinforcement or bulking agents for new polymer blends and can be processed into fiber-reinforced polymer compounds by mixing in additives.



rubber mats or new tires. A key consideration is not to dispose of used tires like normal waste, because they are made of India rubber, bulking agents like carbon black, silica and carbon, plasticiz-

### PE/aluminum recycling of used beverage cartons

Beverage cartons also consist of valuable raw materials: a combination of cardboard, plastic and often aluminum. The cellulose

fibers reclaimed during recycling have a significantly longer fiber length and better strength properties than most other types of waste paper. This makes these fibers particularly suitable for producing sturdy corrugated cardboard packaging. In the so-called Palurec, method the remaining PE/aluminum foil remnants and closures are separated using a zigzag sifter, due to their very uneven 'particle' sizes, poor pourability properties and tendencies towards severe bridging. A special Brabender Technologie feeding solution is used when LDPE (low density polyethylene) is being processed. Bernhard Hüppmeier explains: "Our special fiber feeder is particularly suitable for fibers of different lengths, which easily get entangled. For pelletizing purposes, the FiberXpert feeds the reclaimed LDPE into a twin screw extruder. This enables it to be reused for various applications.

### Recycling of carpets made of PA fibers

In the European Union an estimated 1.6 million tonnes of carpet are disposed of annually. According to a very recent study by market research institute Goldstein Market Intelligence, around 95 percent of this carpet ends up at disposal sites or incinerator plants. An alternative to incineration is recycling waste carpets made of high-grade synthetic fibers like polyamide (PA) or polypropylene (PP). Waste carpets or PA carpet remnants, which consist of the texturized carpet continuous filament yarn BCF (bulk continuous filament), can be chemically recycled into polyamide



*The solution for the feeding of carpet scraps: FX225*

or mechanically processed into secondary plastics. To this end, PA carpets are sorted according to their fiber components PA6 or PA 6.6 and then shredded. After separation, they are fed via silos into a depolymerization process.

The FiberXpert FX225 loss-in-weight feeder, which can handle long, uneven fibers, is particularly suited for this task. Bernhard Hüppmeier puts it in concrete terms: "Synchronous conical twin screws in combination with a large feed section, which can be fitted with a stuffing unit, and a high feeding rate of 1000 kilograms per hour ensure that pelletized Polyamide 6 features excellent melting properties and superior quality." The FX225 is also well suited for feeding PA, PET as well as PE fibers obtained from woven textiles, which contain textile fiber borders from the weaving process and silicon-coated or non-silicon

coated textile fabrics, that can be recycled.

### PET is transformed into rPET

In order to optimize the versatility and sustainability of plastic in its various applications and to manage this material within the cycle, plastic waste needs to be utilized even more efficiently - in the form of valuable secondary raw materials. Brabender Technologie provides appropriate feeding technology to process ground PET flakes into recycled rPET. In the subsequent extrusion process, the PET flakes are treated with additives and the molten mass is sent on to the liquid state polycondensation phase. After the molten mass has been cooled, pelletized or foamed up using physical expanding agents, it reaches the downstream film extrusion stage, which produces fully recyclable rPET foam film.

## @ CONTACT

**Bernhard Hüppmeier**  
Head of Business Development  
Brabender Technologie

Phone: +49 203 9984-0  
Email: bhueppmeier@brabender-technologie.com

# 8 h with ... the service technicians

**This time in our '8h with...' series we visited with the service team. Sometimes, they must travel to customer plants to perform on-site service.**

## 7 am, assignment scheduling

A new working day begins for the team of eight service technicians. Every morning the assignment schedule must be reviewed and revised to accommodate urgent cases. Commissioning, maintenance, upgrades and repairs are on the agenda at various customer locations. "The range of tasks performed by a Brabender Technologie service technician is diverse, but that is what makes the job so interesting," explains Dominique Python, a service technician who also mans the 24hr Hotline and therefore knows both sides of the service coin.



## 8 am, meeting

Dominique Python discusses the details of a customer assignment at a major plastics processing facility with a service technician. The call objective is to perform routine maintenance on the feeding equipment at the site. To make that happen, all settings must be checked and updated with the latest software. "We can plan such assignments well and are on our team's everyday agenda," the experienced service professional explains. Maintenance

contracts, which are intended to trigger maintenance work at reasonable, fixed intervals and avoid foreseeable malfunctions, are helpful in this respect. Yet not every customer takes advantage of this service.

### On-site assignments

Other on-site assignments must be organized quickly to minimize downtimes. "If a technical problem at the customer's site can't be solved beforehand via the

Hotline or remote maintenance, then we act as the rapid reaction team, so to speak," says Dominique Python with a grin and adds: "We are also happy to upgrade the feeder to handle other bulk materials and production processes if required. We may then need to provide the customer with advice on potential process engineering problems and issues. Our involvement can extend all the way to providing on-site training."

## Service technicians worldwide

Basically, our operational area is not restricted, and therefore Brabender Technologie service technicians go on assignment all over the world. "Whenever feasible, we try to cover assignments in other countries through our subsidiaries or agents. If necessary, we can help from here in Germany," Dominique Python states. "The number of monthly assignments depends on its duration and on customer needs – sometimes two, sometimes ten."



Brabender Technologie employs its own service technicians at its subsidiaries in China, Canada, India, Russia and Dubai. A high percentage of our agencies worldwide also employ technicians, who can handle such jobs. In general, communication is by phone and email. "Periodically, we conduct training sessions and every three years, all the service technicians from all over the world gather at our Duisburg location for the Service Seminar. The seminar includes practical training in the course of which all service technicians are brought up to speed with what is state-of-the-art at Brabender," Dominique Python explains.

## 11 am, repairs are pending

The service technicians have their own repair space in the plant. Today there are a number of repairs on the agenda. Peter Dümpelmann, who in manning the Hotline and working as a service technician is also familiar with all facets of the work involved, guides us around. "If a component is defective, it can simply

be sent to us for repair. We then return the repaired component as quickly as possible. "Depending on what machine and faults are involved, we can also offer the customer replacement parts without delay".

## 3 pm, commissioning on site

Since technology is always evolving, the team also handles upgrades to keep up with the changes, especially on our control systems. Peter Dümpelmann explains: "Despite long service lives, a customer can benefit from an upgrade depending on the situation. Even a change in production processes can make a modification necessary."

A service technician visits a customer site to commission equipment. The customer has installed their equipment and completed the electrical wiring. The next task that needs to be completed this afternoon: the customer's employees need to be trained on how to handle and operate the equipment professionally.

## 5 pm, time to go off duty

A busy but satisfying day draws to a close. "The great thing about our job is that we are really close to customers," Dominique Python sums up. "As problem solvers we provide valuable assistance and have established close relationships with many customers. That's what makes the work we do so special."

## @ CONTACT

**Service Hotline Germany**  
Brabender Technologie

Phone: +49 203 9984-299

Email: hotline@brabender-technologie.com

An overview of all other service hotlines can be found at:

[www.brabender-technologie.com/en/contact/](http://www.brabender-technologie.com/en/contact/)

Agencies

# Olá brasil

**For almost 25 years the Brazilian agency Technoservice has been a committed and reliable partner for Brabender Technologie in all matters on the entire South American continent.**

It all began in the late 1970s, when the founders of Technoservice, Carlos A. Squinello and Johann Höllerschmid, met during their time together at Volkswagen in Sao Paulo. In 1986 they met again at Schenck do Brasil, Johann now as service manager and Carlos as service technician. When Johann started working for the company Bücher & Bücher as a sales representative in 1994, he had his first contact with Brabender Technologie. In 1996 Carlos convinced Johann to found Technoservice.

**More than three decades of experience**

"We now have 34 years of experience in the field of weighing and dosing technology," explains Carlos Squinello with pride. "Brabender Technologie was the first company we represented in 1997", explains his companion Herbert Ghirardello, who joined the agency about seven years ago when Johann Höllerschmid retired. In addition to the volu-

metric and gravimetric feeders of Brabender Technology, the company also has mixers from Mixaco (Dr. Herfeld), another German company. Both are exclusively for industrial purposes, especially for plastics, food and chemicals. Since 2014 the portfolio is completed by torque rheometers and extruders made by Brabender GmbH and moisture meters for quality control by Brabender Messtechnik.

**Tasks and challenges**

The Brazilian agency's range of services includes not only individual adaptation and commissioning of the system or machine at the

customer's site, but also a spare parts service. "In addition, we check all documents important for customs clearance on behalf of the customer and handle the bureaucratic part for them," explains Herbert Ghirardello. This is an important point, because the Brazilian market is characterized by many customs restrictions, which results in a pronounced administration with considerable costs. Added to this are comparatively high taxes and a complex system of levies. "This makes it very difficult for smaller companies to buy high-quality plant and machinery from Europe," explains Herbert Ghirardello.



**Large catchment area in South America**

With a total of five employees, Technoservice primarily serves Brazil and Argentina, but also other South American countries that have no local representative, such as Uruguay, Chile and Colombia. Its customers include large companies active in masterbatch and plastic compound production, but also in the food and pet food sectors. "Our website helps us to promote the products we represent. We also participate in a trade fair for the Brazilian plastics industry every two years," reports Herbert Ghirardello, who is responsible for sales and marketing at Technoservice.

**Service as a mainstay**

"Our customers also appreciate the on-site service provided by their local representative because he speaks their language. This makes it easier to exchange information when it comes to diagnosing and supporting customers with technical problems on the machines,"



*The entire team of the Brazilian agency Technoservice*

Herbert Ghirardello continues. Technoservice also provides spare parts from Germany and training courses. In order to keep up to date, Carlos Squinello and Herbert Ghirardello visit the company headquarters every two to three years to attend the service seminar and the K trade show, for example, or when other events seem appropriate.

"Although we are in daily contact with Duisburg, regular visits to Germany are very important to us.

From our work with customers, we know how important it is to have a personal conversation on site. At the meetings we meet other representatives from all over the world and experience ourselves as a living member of the global Brabender Technology family. Every time we meet, it's rejuvenating as we take home new energy and lots of inspiration," sums up Carlos Squinello. ■



*Carlos A. Squinello  
Managing Director*



*Herbert Ghirardello  
Managing Director*



**@ CONTACT**

**Technoservice Ltda.**  
Carlos A. Squinello/  
Herbert Ghirardello  
Geschäftsführende  
Gesellschafter

Sao Paulo, Brasilien  
Tel. +55 11 5533 – 1426  
www.technoservice.com.br

herbert@technoservice.com.br

Brabender Technologie

# One name, three companies

When customers mention the name “Brabender”, it is not always clear which company they are referring to. This ambiguity has historical origins, because there are currently three Brabender companies focusing on completely different activities. In 2020, two important changes were made to this structure.

They are like three dissimilar siblings. Each one has their own set of talents but they are aligned. When founding father Carl Wilhelm Brabender established Brabender Elektromaschinen GmbH in 1923, he could not have anticipated that an internationally renowned group of companies would evolve from his start-up business. In 1936 Brabender Elektromaschinen GmbH was renamed Brabender OHG, the predecessor to today’s Brabender GmbH & Co. KG.

### Carl Wilhelm Brabender’s heirs

Today, three companies have been consolidated within Holzhauser Holding: Brabender, Brabender Messtechnik and Brabender Technologie. Each of these entities operate as independent, internationally successful businesses. Their owners, the Holzhauser family, are the legitimate heirs of Carl Wilhelm Brabender.

Bruno Dautzenberg, General Manager of Brabender Technologie, explains: “Feeders made by Brabender Technologie are used primarily in industrial production.

The measuring instruments and systems designed and produced by Brabender, are used for quality assurance purposes. They are also used to develop formulations and methods in industry-related and public-sector research and development institutions. The products manufactured by Brabender Messtechnik, which was established in 1961, lie somewhere in between. The instruments for measuring residual moisture and elasticity in plastics and for measuring viscosity in processes involving liquids and pastes are used both in the laboratory and in manufacturing for quality assurance purposes.”

### Becoming more efficient

This year the structure has been modified, in order to increase Messtechnik’s product development and sales opportunities. Dr. David Szczesny, Managing Director of Brabender: “Brabender Messtechnik’s portfolio will be incorporated into Brabender GmbH & Co. KG. That will enable topics to be consolidated so that, synergies and greater efficiency can be achieved.”

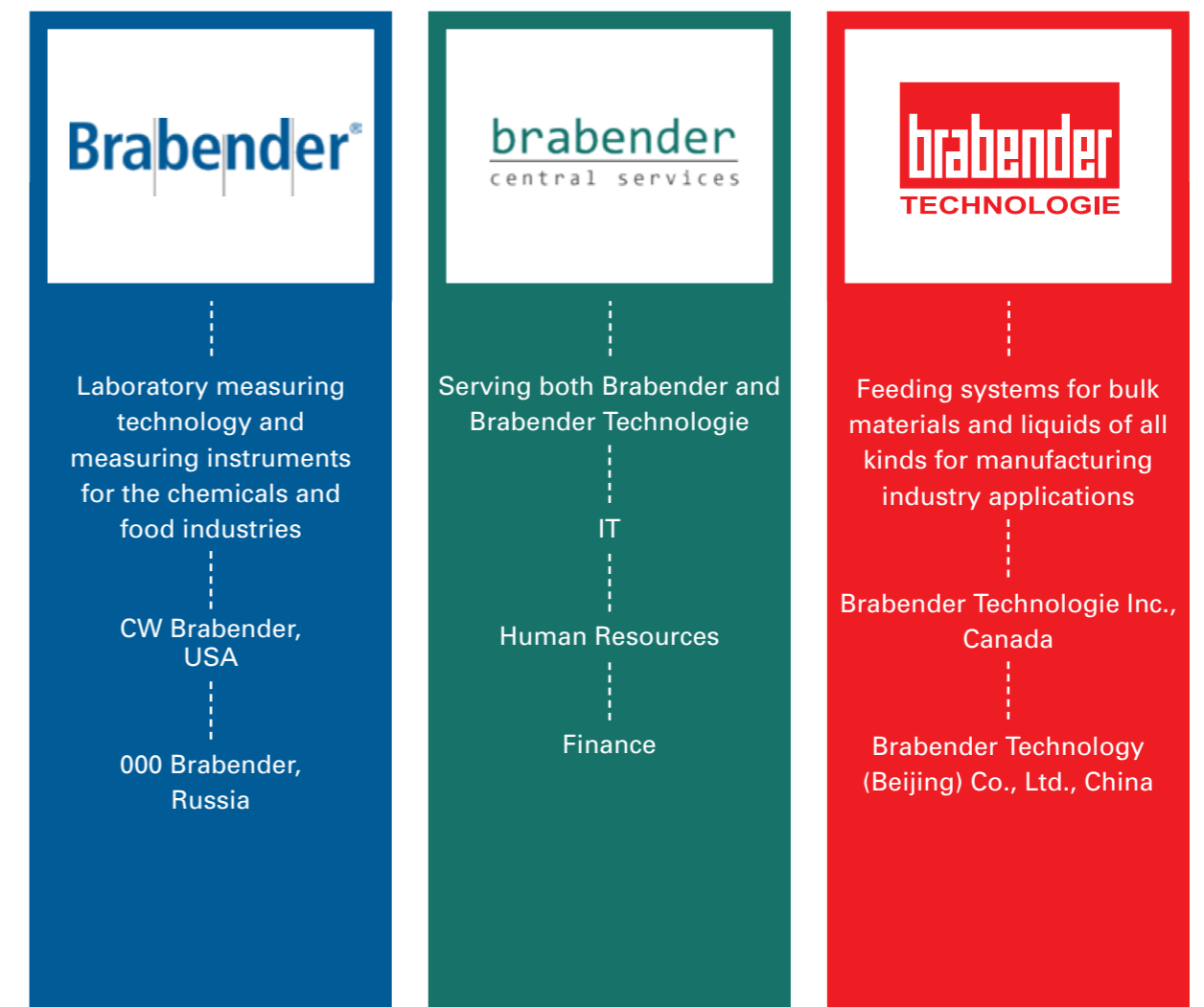
The new organizational structure will provide Brabender group companies with a clear focus, while allowing each entity to continue to act independently. The ‘Reds’, Brabender Technologie, will continue to be a manufacturer of feeding systems for bulk materials of all kinds and a supplier to the manufacturing industries. The ‘Blues’ will enhance their laboratory measuring technology product portfolio by adding the know-how and products of Brabender Messtechnik. Two companies will continue to move Carl Wilhelm Brabender’s legacy forward into the future in equal measure – each with their own core competencies.

### New service company

Services such as ‘IT’, ‘Human Resources’ and ‘Finance’ were consolidated under Brabender Dienstleistungs GmbH, a new common services company, as of September 1, 2020. Pooling these support functions enables the two Brabender operating companies to each focus on their core business. ■

> An overview of Brabender companies

## Holzhauser Holding



# News

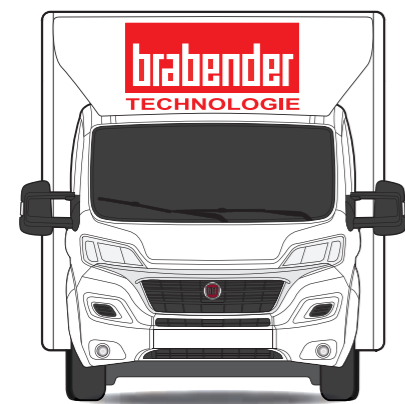
## 2nd Health Day at Brabender Technologie

The second Health Day event focused on 'diet and nutrition' and took place on September 9 and 10, 2020. Presentations illustrated the various aspects and effects of a healthy diet. In the practical "What am I going to eat for lunch today?" workshop employees learned first-hand what is important when it comes to putting a healthy meal together. Employees were able to have their chole-

sterol and long-term blood sugar levels (HbA1C) measured. Anybody that wanted to know their exact 'biological age' could take a test. The event organizers were again very satisfied with the 2nd



Health Day, because employee acceptance was high. The next event to promote workplace health is already being planned and is expected to take place in the early part of 2021.



## Brabender Technologie does a roadshow

At the beginning of March 2021 Brabender Technologie is taking its show(room) on the road through Germany, the Netherlands and Austria. In times when only a handful of trade fairs are taking place, it is important to come up with Corona-compliant projects to maintain face-to-face

contact and personal communication in accordance with our 'Keep the Flow' philosophy. We are bringing our showroom, using our Brabender Technologie truck, to your location: we are flexible with time and content is tailored to your needs. Companies that are interested can contact Bernhard Hüppmeier at [bhueppmeier@brabender-technologie.com](mailto:bhueppmeier@brabender-technologie.com) in advance.

## "Feeding Technology" webinars

'7 steps to optimum feeding' is the name of the series of webinars hosted by SPS Solutions, our agent in the Netherlands and Belgium. With 15 modules in total, users get plenty of information, including answers to the follow-

ing questions: Which is the best feeder for my product? What do I need to factor in when planning a feeding facility and how can I improve the performance of my feeding plant? The webinars are in Dutch.

You can register at <https://www.spsolutions.nl/online-colleges/>



## Technical column

# Always one step ahead

**Brabender Technologie demonstrates its unbridled power of innovation, even when times are tough. This time, Günter Kuhlmann reports on why it is important to think ahead.**

A key feature of feeding in the future is maximum connectivity. We have been very mindful of this when developing our new control technology. The data gathered enables customers to be provided with efficient solutions even remotely if necessary, while providing preventive support. Supplying our equipment with sensor technology will enable us in the future to harness machine learning and predictive maintenance, in order to avoid potential issues within the next few years. This new generation of control systems will allow us to swiftly advance to a future where smart automated equipment will be a normality.

### Titanium dioxide – a plasticizer that's harmful to health

One step ahead, is what we will be when titanium dioxide is classified 'harmful' to human health. France is leading the way and has already issued a ban. This is good news, because plasticizer can be found in a range of applications such as toothpaste, marshmallows or plastics, and ingesting it is not the only issue. Breathing in miniscule nanoparticles during

material feeding processes can also be harmful to health. Abrasive dust that is released into the air when feeders handle paints or lacquers is a good example. The European Chemical Agency ECHA and the EU Commission have already classified the plasticizer as a hazardous substance and 'presumably carcinogenic when inhaled'. Therefore, equipment and solutions that guarantee containment of toxic air-borne substances must be utilized in processes where the use of titanium dioxide cannot be dispensed with. We have these solutions in our portfolio and are continuously working on enhancements, which always provide users with maximum, state-of-the-art protection.

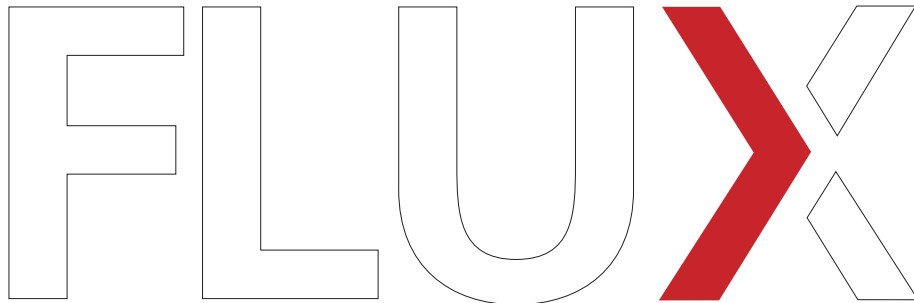
### DDSR40 – modular structure

The modular structure of the DDSR40's gearing mechanism enables a quick and easy replacement with disassembly in just a few steps. This flexibility also allows easy conversion to larger systems. This can save you purchasing a new feeder in some circumstances. As far as dust-proofing is concerned, we have taken the DDSR40 to a new level



*Dr. Günter Kuhlmann, CEO of Brabender Technologie*

with its 4-lip seal around the agitator and its 4-lip seal at the screw along with a duplicate safeguard provided by the compressed air chamber. Jetfilter, compensators made of Liquid Silicone Rubber (LSR) as well as vertical, transparent PETG outlets are used in this equipment line and ensure that substances that are harmful to health can't escape. Besides, all the materials that we use for the DDSR40 housing are Food Standard-compatible. Last but not least, the attachable dustproof vertical outlets are now available in three sizes, and are FDA- and EG 1935-compliant. ■



#### **International**

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

#### **North America**

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

#### **VR 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

# Keep the Flow