



Top to bottom: Siegfried Drost (Sales Director Uhlmann); Peter Claußnitzer (CTO Harro Höfliger); Dr. Hagen Gehringer (CTO Bausch+Ströbel)

# DIGITAL + CONNECTED = FUTURE

The strategic corporate alliance Excellence United presents its new Industry 4.0 concept, which sets new standards

— Pharmaceutical production is becoming more digital and connected. Players who can deliver coherent, logical concepts will be part of the next major Industry 4.0 project. The five members of Excellence United have made great progress with their IoT Hub and have shown what it is already capable of. But this is just the beginning. In the interview, the five managing directors explained why.

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The strategic company alliance Excellence United can now look back on seven years of successful cooperation, with no slowdown in sight at this year's Achema. The five companies—Bausch+Ströbel, Glatt, Fette Compacting, Harro Höfliger and Uhlmann—have really settled in

together now and have completed projects in a wide range of different constellations. The Alliance's installed basis adds up to some 50,000 units/systems worldwide—an impressive number that underlines its solid anchoring in the pharmaceutical industry. But the fact that all the companies are



Top to bottom: Thomas Hofmaier (Excellence United Spokesperson, Division Manager Pharmaceuticals at Glatt); Olaf J. Müller (CEO LMT Group); Thomas Weller (CEO Harro Höfliger)

Source: Excellence United, Janine Kyofsky, Glatt; Uhlmann, Bausch+Ströbel; ©Sashkin - stock.adobe.com [M] Gozeltrom

classic, family-owned SMEs also bonds them together. And since each one sees itself as a technology leader in its particular field, there is no wrangling over competence overlaps between managing directors and owners. “We feel really happy as part of the group,” underlines Thomas Weller, CEO of Harro Höfliger, during the expert discussion on the third day of the trade show. A joint project that has been highly successful from his point of view is the new drug delivery device XStraw: a drinking straw with pre-dosed medication on a pellet basis that makes drug intake particularly easy. The Mikropx technology—a continuous fluidized bed agglomeration method for the production of the micropellets—comes from Glatt, the filling technology from special machine manufacturer Harro Höfliger. Partners of Excellence United are also involved in the filling and packaging of the Respimat inhaler from Boehringer Ingelheim. Harro Höfliger was in charge of the inhaler technology, while Uhlmann took care of packaging and labeling and Bausch+Ströbel looked after process development and production. And an important milestone on the path to continuous production is the Modcos system

for continuous OSD production—from powder weighing to the final tablet.

### “The Cube” Shows Excellence United's Excellence

The atmosphere at the Excellence United Achema trade show booth is bright and optimistic, inspired by the numbers of people streaming to the stand and the success of the joint exhibition. “Discover Digital Excellence” is this year's motto—and many visitors made their way to the exhibition entitled “The Cube”, which formed the centerpoint of the joint trade fair booth. A real eye-catcher in Hall 3, it was simply impossible to miss this exhibit, but inside it concealed an entire smart factory. A team of designers developed the transparent cube, which was designed to resemble a crystal and represents the group's excellence. The team at the Cube counter recorded over 400 visitors a day—a figure that speaks for itself.

The project is designed to document the performance capability of the association and, with all due modesty, revolutionize the future of pharmaceutical production. “With this exhibit we have sent out a clear message to the market,”

explains Olaf J. Müller, CEO of LMT Group and Managing Director of Fette Compacting.

On the subject of Pharmaceutical Production 4.0, the corporate alliance has indeed gone on the offensive and taken great strides forward, delivering an IoT platform as the result of a two-year joint development process. On the basis of this platform, users can network machines from the Excellence United partners and third-party machines with each other; where it makes sense to do so, the interfaces are standardized in accordance with OPC-UA requirements. “From the initial weighing process to the packaging of drugs in blister packs, we cover the entire process chain, both for batch processes and for continuous processes,” explains Excellence United spokesperson Thomas Hofmaier, Division Manager Pharmaceuticals at Glatt. All the partners' technologies can be integrated, so OSD lines and manufacturing lines for the production of liquid drugs can be implemented. In the Cube, visitors can see e.g. a continuous tablet production line, with every element from weighing, mixing, granulation, drying, tableting and dedusting to coating with subsequent packaging in blister packs and

#### PROCESS-Tip

• For more about the projects and activities of Excellence United, please visit [www.excellence-united.de](http://www.excellence-united.de)

folded cardboard boxes. The highlight here: All the lots—from the powder and tablets to the blister packs and outer packaging—are tracked digitally using an approach that is equally well suited to batch production, semi-batch production and fully continuous production. PAT technologies are also implemented in the application. The active ingredient concentration per tablet is accurately monitored in-line. This makes the IoT Hub a central interface via which users can record machine and process parameters and make this data available worldwide—both via the cloud or via internal company networks. Condition monitoring in real-time and predictive maintenance are the next goals.

**Competition Stimulates Business**

Many companies are currently pursuing the idea of digital integration, particularly software providers and pharmaceutical suppliers. After all, the suffix 4.0 stands for a technology advantage and promises profits—if not immediately, certainly in the future. This

means that the competition is not asleep, and there were plenty of interesting new Industry 4.0 approaches on show again at Achema, including from Bosch Packaging and IMA. This makes the question as to what the unique selling points of the EXU IoT Hub are an increasingly pressing one. So where does Excellence United score over its rivals? “Our platform has not been adapted from other industries. Instead, it has been designed from the ground up specifically for pharmaceutical requirements,” emphasizes Müller. Hofmaier offers up four more arguments into the debate, which he believes are essential for success among pharmaceutical companies: Understanding of customers and applications, experience in the integration of pharmaceutical applications, open technical systems and the ability of the players involved to cooperate. The latter is something that the Alliance has demonstrated yet again with the Cube. A total of around 60 employees were involved right up until the end of the project, each one contributing experience from his company environment and its prior

digital background. Dr. Hagen Gehringer, Managing Director Technology at Bausch+Ströbel, explained that two sub-projects had been involved in the process: a classic machine building project for the equipment engineering and an IT project that focused on mapping the IoT Hub in the software. Both aspects are closely meshed, since modern high-tech machinery is no longer conceivable without software and sensor systems. In just under nine months, the project team also built a further digital infrastructure from the ground up. Something that you cannot see from the outside of the Cube is that the entire trade fair booth is networked inside it. Each individual stand has Industry 4.0 applications, so the topic is a thread that runs through and ties together all the exhibits. Siegfried Drost, Sales Director at Uhlmann, explained that the different development teams were constantly pushing each other, comparing them to speedboats whose wakes constantly overlapped.

**But What Does Industry Think About Industry 4.0?**

It remains to be seen whether pharmaceutical production is ready for the digital change that the Alliance is hoping to set in motion with its new approach. To use the cloud or not? How to handle sensitive data? How do the authorities will act? At the moment, there are any numbers of open questions. “We are currently all on a journey,” says Peter Claußnitzer, CTO of Harro Höfliger. This is a path that machine builders and drug companies need to take together. “We can only offer customers digital solutions if we have corresponding digitalized value creation chains,” emphasizes Claußnitzer. On the other hand, the services currently being planned via the Hub can only be implemented if customers open themselves up and make the necessary data available. One thing is clear—the CEOs are unanimous that the industry is changing. Increasingly, pharmaceutical companies are looking to purchase complete technology solutions rather than indi-

Background to the IoT Hub

**FOUR QUESTIONS – AND FOUR ANSWERS**

**1. What is the system integration based on?**

The IoT Hub jointly developed by the corporate alliance Excellence United is an open and modular platform for software development and system integration. On the basis of the IoT Hub, users can network both machines from Excellence United partners and third-party machines with each other. The IoT Hub is designed as a non-hierarchical middle layer and uses standardized interfaces including OPC UA, which is seen as the standard protocol for data communication in the industry.

**2. What does this mean in practice?**

In practice, this means: Sensors, machines, I/O devices and programs can be connected directly to the platform, independently of the system level. Instead of having to develop an interface to a higher-level system for every individual machine (e.g. MES, ERP),

one interface in the IoT Hub is enough to network the systems and connect them to business processes.

**3. How does the data transfer work?**

The data transfer between the machines and the end user takes place via secure connections, either on-site at the customer or via the infrastructure of Excellence United. Machine networks that cannot be made completely secure are uncoupled from the applications. This means that the machine interfaces cannot be used to access overall data.

**4. Is the system scalable?**

Thanks to its open architecture and modular layout, the IoT Hub is scalable. Pharmaceutical users can use it cost-effectively both for individual machines or for larger systems and expand it with new interfaces and apps that can be developed individually or together with customers.

vidual machines. This means additional tasks and increased responsibility for suppliers. According to Hofmaier, projects are becoming more dynamic and agile, and the specification process is increasingly being left to the machine builder in the production line creation process. And this is exactly where the CEOs see a further strength of the partner companies: Project expertise and trust-based customer relationships create the basis from which joint orders are generated.

Although the pharmaceutical industry is not at the forefront of introducing new technologies, initial indicators show that digitalization is on its way, and the Excellence United partners have taken great strides. "When the first company comes with an idea for a 4.0 factory of the future, we will be ready to offer a solution," emphasizes Hofmaier.



Source: Tanja Bullinger

Left to right: Peter Claußnitzer (CTO Harro Höfliger), Thomas Hofmaier (Head Process Engineering at Glatt), Dr. Hagen Gehring (Technical Director at Bausch+Ströbel), Thomas Weller (CEO Harro Höfliger), Siegfried Drost (Sales Director Uhlmann), Olaf J. Müller (CEO Fette), Anke Geipel-Kern (Senior Editor at PROCESS)

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