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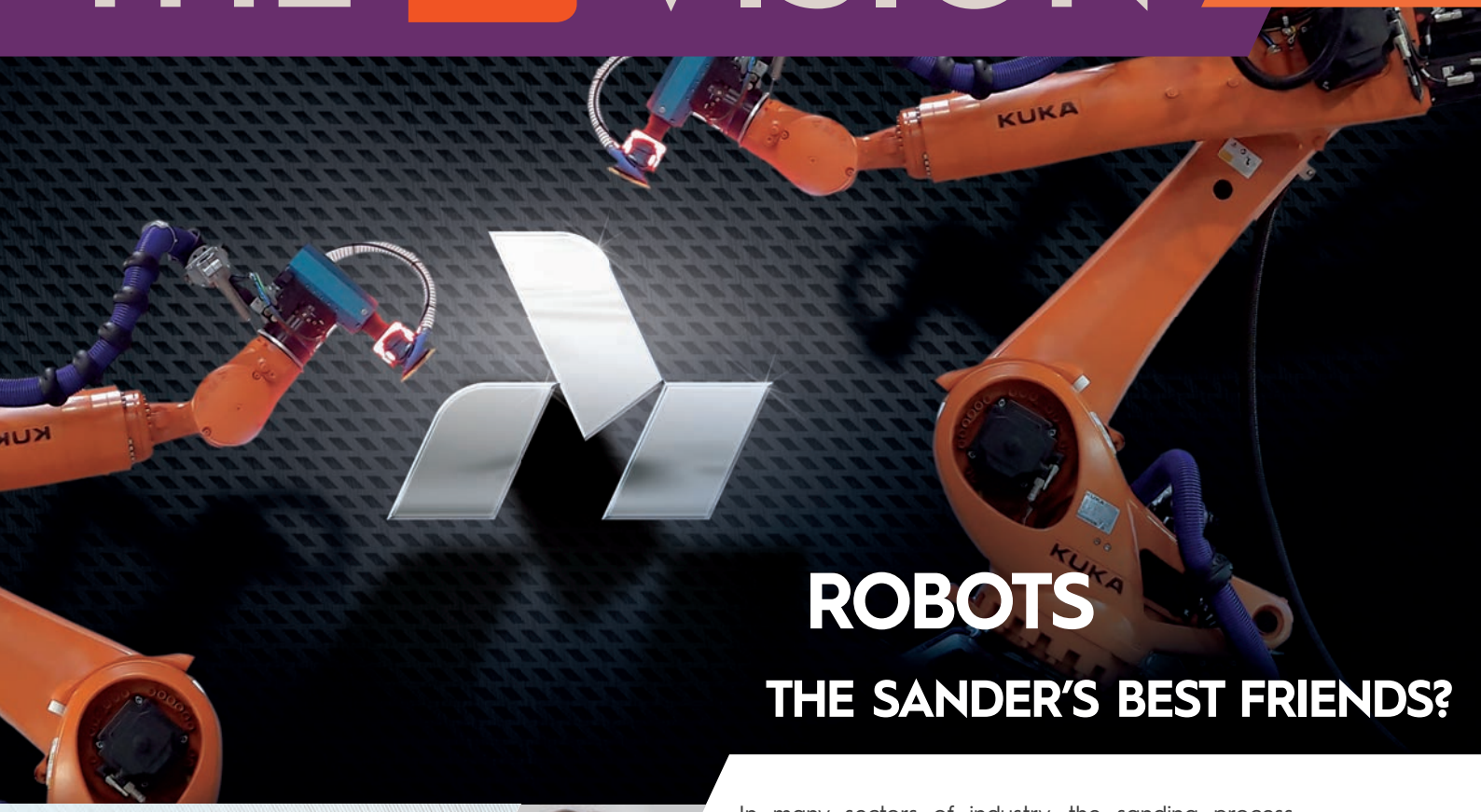


ROBOTS
THE SANDER'S BEST FRIENDS?

In many sectors of industry, the sanding process is being robotised. The machines used are able to adapt perfectly to the performance of this demanding, repetitive and dusty job, reproducing gestures and sensitivity of the human hand. At the forefront of the latest developments, collaborative robots (known as cobots) rely on operators' know-how and dexterity, whilst bringing them working comfort, precision and safety. In keeping with its position as a pioneer in market innovations, Ahlstrom-Munksjö has decided to put these ultra-connected solutions for the future under the spotlight. To help us to do so, we called in two experts, one specialising in the manufacturing of robot cells, the other in their integration into industrial processes. A fascinating world that we invite you to discover in our special feature!

This newsletter will also reveal how our Arches factory is working to achieve greater sustainability of the entire abrasives supply chain, as well as presenting a new energy-saving paper for wet sanding.

And if you were not among the first abrasives manufacturers to take part in our Coffee Break Sessions, rest assured: there is still time to discover these webinars that we have set up to share our expertise on some key themes of interest to you in your daily work. Ahlstrom-Munksjö is constantly re-inventing itself to bring you more added value and stay in close touch with you!

Tony Lesire
Sales and Marketing Director

SUMMARY

SANDING ROBOTS : HIGH TECH SOLUTIONS FOR THE FUTURE

Robotisation is opening up new and innovative possibilities for industrial sanding. The A Vision has met with two leading players on the market to get their perspectives on the subject: Emmanuel Bergerot, Sales Manager responsible for General Industry at KUKA, and Patrick Gascher, Sales Manager at Gebe2.

Our two interlocutors can confirm it: industry is facing a shortage of labour in sanding. It is physically demanding work : workers, as well as being exposed to dust, frequently suffer from MSDs (musculoskeletal disorders) caused by strain, awkward posture, vibration, etc. Robots, designed for repetitive, dirty and/or hazardous jobs, now offer some serious advantages for **improving sanders' working conditions**. Officiating at KUKA, a company that builds and sells robots, Emmanuel Bergerot is quite really definite: '*Automation of certain tasks* ***eliminates arduous work and guarantees greater safety as well as consistent quality*** *by limiting the scope for human error. Operators' job therefore acquires more value and their know-how is preserved.*'

Machines able to adapt to every need

- The possibility of using robots for sanding is still relatively little known. '*History has shown that industry has not always been easily convinced by the idea that machines can provide real added value in finishing operations,*' explains Patrick Gascher. '*And yet it is an obvious fact. And sanding was the first process we started to develop more than seven years ago.*' Specialising in the integration of robot cells, Gebe2 proposes two types of solutions: '***100% autonomous robots****, which currently account for the majority of the market, are best suited to* ***large parts*** *and high speed production lines. The other technology is* ***cobots****. These collaborative robots allow for* ***a very high degree of freedom in the geometry of parts that can be sanded*** *as well as a wide range of applications. They are ideal for slower, smaller scale production processes.*' Their other advantage lies in the **total control enjoyed by the operator,** who can generate his or her own programming. '*Cobots allow the strength, precision, endurance, repeatability and reliability of the robot to be combined with the flexibility, sensitivity, agility and creativity of the human. The perfect combination,*' sums up Patrick Gascher. .

The trend is towards interactivity

- Emmanuel Bergerot notes '*strong demand for hyper-connectivity, both simple and intuitive, between robots and users.*' The latter can **access the machine in real time via a mobile app** '*to see its operating status, identify any faults, etc.*' This technology is also an asset for global companies who do not always have a dedicated expert on every site: '***Factories in different countries can exchange information on the process*** *or technical problems and take the necessary measures quickly and efficiently.*'

DID YOU KNOW?

KUKA

- **A precursor for Industry 4.0, German company KUKA offers complete automation systems**. Emmanuel Bergerot's unit sells a complete range of 'off-the-shelf' robots that can be customised with numerous technical options. Each robot is then optimally adapted to the particular process with the assistance of an integrator.

www.kuka.com

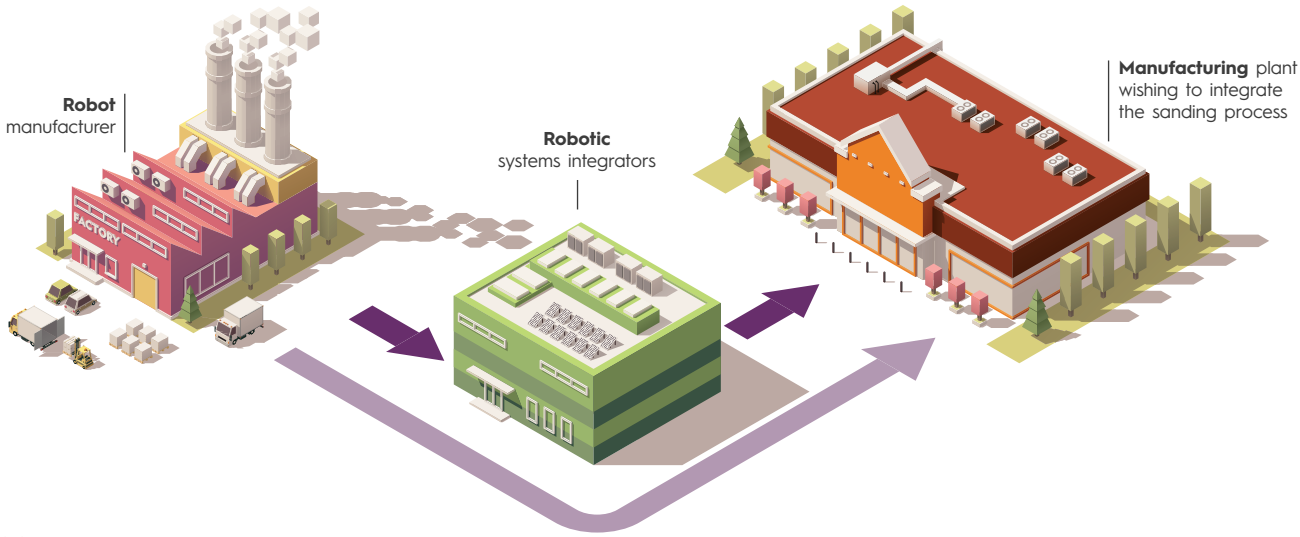
EUROPE TECHNOLOGIES GEBE2

- **An integrator of robot cells, Gebe2 focuses mainly on sanding and finishing robots.** The company is a subsidiary of international group Europe Technologies, which is dedicated to providing industry with innovative products, processes and services.

www.gebe2-et.com

INTRODUCING ROBOTS

- Two types of providers will be involved in equipping a company with an automated sanding system: **the manufacturer**, which has the knowledge of the robot and its impact on the process, and the **integrator**, which will focus on adapting the robot to the core process. These two interlocutors with their complementary skills generally work as partners, which enables both of them to advance their level of expertise and well as optimising the entire robotisation ecosystem.



Main sectors concerned

aircraft industry · shipbuilding · railway construction · energy industry

A wide choice of equipment and applications

- The automation of the sanding process can be applied just as well to **surface preparation** ready for bonding or painting as to **cosmetic finishing with matt, brushed or polished effects**. *'Surfaces ranging **from 1 mm² to 80 m²** can be treated. The only limitation is the size of the robot compared to the space available on the site,'* explains Patrick Gascher. *'The robot arm can be equipped with an **electric rotary or roto-orbital sander** – the most common solution – or a belt sander. In this case, the robot can hold either the sander or the piece to be sanded. It is also possible to fit on a **diamond disc grinder**.'*

Expertise in some unusual areas

- Robotisation allows for a very wide spectrum of applications, as one of Gebe2's specialities illustrates: *'We have acquired an undeniable body of expertise in industry, particularly in **sanding very large parts such as airplane engine pods**. As the surfaces to be treated are extensive, the robot cell is equipped with three sanders to limit the time the operation takes. We have also created a different device for a more complex and more subtle operation: the sanding of air intake lip skins. To achieve perfect homogeneity, the robot has to take account of the initial deformation of the lip skins and the anodising done after completion of the sanding process.'* The integrator has also developed **the first adaptive sanding robot cell**. Designed to prepare the surface, it is equipped with sensors that *'indicate the corrections to be made to achieve, for example, uniform deformation in the sheet or a specific paint thickness across all of a surface.'*

a robot cell equipped with three sanders / © Europe Technologies

ROBOTISATION & ABRASIVES : CONSTRAINTS AND REQUIREMENTS

From parameters guaranteeing optimum integration to the choice of consumables, here is a round-up of some of the key factors contributing to successful automation of the sanding process.

Robotisation is a process in its own right that demands a sophisticated level of know-how. Hence the specialisation of certain integrators in fields like sanding or machining. As Emmanuel Bergerot explains, *'many different parameters have to be taken into account to adapt to the **metal or composite material to be sanded, to the geometry and environment of the site** where the robot is to be installed, the **production rate required**, etc.'* One of the most important criteria? *'Compliance, which refers to mechanical flexibility. A robot is precise, but not necessarily to within a micron. The objective being to remove the right quantity of material, the **compliance of the device associated with the sander is adjusted to arrive at the desired surface finish**.'* To achieve this, the engineering offices carry out preliminary tests in the workshop.

Consumables: prioritising durability...

- What abrasives are recommended for robotic sanding? Gebe2's preference goes to **perforated discs**: *'We have developed our own electric sander, which offers very good dust extraction at source as long as perforated plate and disc are used,'* says Patrick Gascher. There is another criterion that deserves particular attention: **wear**. *'Every disc change means a cost and downtime. We test different makes of discs for different applications in order to select those that offer the longest life. Once the initial tests have been done, the robot knows the wear time and can **automatically change the disc**, including for a disc with a different grain size'*.

...with Ahlstrom-Munksjö's tailored solutions

Ahlstrom-Munksjö offers backings specially designed **to avoid early delamination and tearing of the sanding discs used on electric hand-held disc** sanders.

- This is the case in particular of **reinforced heavyweight papers** (basis weight > 180 g/m²) containing synthetic fibres (RDS). The **TEX-STYLE™** composite is also an obvious choice due to its incomparable tear strength and internal bond.
- Among the **lightweight backings** (grammage <180 g/m²), the **latex papers** in the Blue Line range offer an internal bond better than that of impregnated papers. These backings can be reinforced with synthetic fibres that increase their tear strength even further. For instance **Strong**, is a premium paper solution in this respect for dry sanding.

Through Imagine Fiber, Ahlstrom-Munksjö also works with industrial customers to develop solutions that meet the precise requirements of their process. A form of collaboration that has opened the door to new ways to improve performance!