

Editorial

By: Ralf Völlinger, Vice President, General Manager, Robot Business Division, FANUC Europe Corporation



This past year has posed particular challenges for manufacturing industries around the world. Covid-19 put tried-and-tested production methods and supply chains to the test, where fluctuations in demand made it necessary to adjust production volumes quickly. Moreover, the need to protect employees from infection required new shift models, while the adoption of minimum working distances in factories created numerous challenges for the manufacturing environment.

To cope with these demands, many manufacturers decided to implement industrial robots. The industry has seen not only large companies continue to automate, but lots of small and medium-sized enterprises, many of which were looking to implement robots for the first time. For example, companies from the pharmaceutical sector have been deploying robotic automation to help produce Covid-19 tests and aid the fight against the pandemic, while the food industry has seen an upturn in demand for home cooking ingredients and associated products. Robots have helped many food plants to combat extremely high supply chain demand in what is a very labour-intensive sector.

Indeed, the pressure for change in response to Covid-19 has posed many industry challenges, including for robot manufacturers. After a short downturn in orders, demand for robots rebounded rapidly. Here, highly automated production paired with a high level of vertical integration paid off. FANUC, for example, has been consistently automating its own factories since the 1970s and now uses thousands of robots to manufacture more than 100 different robot models within its range.

During the pandemic the trend for collaborative robots, also known as cobots, continued to grow. As such, cobots are now opening up new fields of application working alongside humans in a safe environment. Demand is also increasing because cobots can be installed directly in the current production system, with less space, than conventional robots. Equipped with intelligent features such as vision and force sensors, the flexibility of cobots means they can perform tasks like palletising, parts handling, assembly, bin picking and arc welding. Manufacturers adopting cobots, particularly those featuring vision and inspection systems, are not only seeing an increase in quality and efficiency, but a reduction in the requirement for personnel to work in close proximity to one another.

For example, FANUC's latest collaborative lightweight robot, CRX, has in the past year helped numerous companies to start automating their production in areas never seen before. With CRX, a standard tablet PC hosts an icon-based programming that gives a familiar feel to the programmer, making the cobot particularly suitable for first-time robot users. At the same time, the reliability and durability of a cobot is just as important as a

standard industrial robot, which is why CRX provides an assurance of maintenance-free operation for a minimum of eight years. Manufacturers require high versatility from their automation due to unforeseen market demands, so the capability to use the CRX in high-speed, non-collaborative mode is also proving very popular. As a result, it is critical that this cobot carries certification to ISO10218-1 and ISO/TS15066, the highest safety standards.

In view of the urgent changes driven by the onset of Covid-19, the fast delivery and commissioning of new robots was a central customer issue throughout the pandemic. Of course, this applied not only to the robot arm itself, but to peripherals such as gripping systems, screwdrivers and other assembly aids, as well as intelligent devices like 2D and 3D vision systems. One-stop solutions for integrated vision or force sensor systems were particularly in demand as they increase manufacturing flexibility, reduce cost and cut lead time where otherwise expensive fixtures would be required.

Another decisive factor for fast commissioning is simple operability. Clear and intuitive user interfaces, as shown in Figure 1, make it easy for beginners to enter the field of robotics, with wizards, apps and tutorials, all of which are easily accessible from the company's familiar Teach Pendant Tablet.



Figure1: FANUC CRX (“FANUC timeline programming” is shown on the screen of TP)

There is a clear trend towards flexibility in user interfaces; interfaces that allow simple icon-driven programming and the manual guidance of robots, while not limiting the robot to more complicated applications by programming in a proprietary language. This versatility is helping manufacturers to understand the full power of robot programming if required for more complex integration.

Although simple robot programming helps manufacturers to compensate for skills shortages, it remains necessary to train workers in robot programming and thus help maximise the return on automation investments. Robot manufacturers should not shirk this socio-political task, but actively contribute to education and training in the field of robot programming.

In addition to the basic training of workers in-house, other education routes can help to enhance staff learning programmes. Some robot manufacturers run their own training academies, while the support of educational institutions can also prove useful. For instance, Worldskills, an international organisation that stages the biennial world championships of vocational skills, is one of examples which is supported with an integral part of the responsibilities that robotics manufacturers should shoulder in support of wider industry. The promotion of such expertise will also prove crucial to developing a “smart factory of the future”, simply by creating enthusiasm among younger generations.

With production becoming ever-more interconnected, new efficiency gains in the manufacturing industry are looming, made possible through process monitoring and preventive maintenance, for example. However, reliability and service availability, including the use of remote service tools, will become progressively more important. In an increasingly competitive environment, unforeseen machine downtime is simply unacceptable. What is clear is that industry will see a big upturn in the take up of robotic automation due to its inherent flexibility and ease of use. These are truly exciting times for the automation sector.