Robot keeps Newtech at the cutting edge of cake slicing

Ratingen, Germany 3.3.2016

When automation OEM Newtech looked to design a new ultrasonic cutting machine for the bakery industry, it turned to Mitsubishi Electric for a fast, efficient, flexible and clean robotic solution. The result is an innovative machine design that can cut cakes to the highest levels of precision, working flexibly for different portion sizes and quantities, and eliminating problems of damaged product.

Based in Bedford, Newtech is a specialist supplier of standard machines which provides today's food manufacturers with cost-effective, high quality automation systems, with the highest levels of flexibility to meet ever-changing market demands. One of the company's innovations is the adoption of ultrasonic cutting technology, giving best-available cut quality for products which are difficult to process using conventional methods.
Cakes, in particular, are notoriously difficult to cut reliably: machines tend to be time consuming to set up for different cake sizes, depths and portion numbers, whilst traditional cutting technologies can result in uneven, messy cuts and unacceptable levels of damaged product.

With a new machine design, Newtech set out to overcome these limitations by combining ultrasonic cutting with robotic actuation of the cutting blade. For an out-of-the-box solution which would be easy to integrate into the machine, Newtech turned to Mitsubishi Electric.
The solution offered by Mitsubishi Electric was built around an RF13 13kg payload, six axis robot, mounted within a stainless steel cell. One of the fastest robots in its class, the RF13 is also highly dextrous, being

capable of reaching all the way behind itself and also very close to its base, giving a highly flexible and compact working area.

The robot is controlled via the Mitsubishi Electric MELSEC iQ Platform. The iQ Platform is a multi-functional automation environment which incorporates Q series PLC control and uniquely, an integrated robot controller within the same rack. This removes the need for a network connection to a traditional external robot controller, which means that communication exchange between the PLC CPU and the robot controller is handled across the rack, increasing speed, data throughput and reducing robot setup times.

A CC-Link network is used to connect other machine control components such as a Mitsubishi Electric inverter drive and a dedicated Mitsubishi Electric WS safety controller providing a totally integrated machine control solution. A Mitsubishi Electric GOT2000 HMI provides a user interface where operators can select different cake recipes and set parameters such as product height, portion size, total number of portions and trim size. The GOT HMI also acts as a teach pendant for the robot via dedicated screen templates within the HMI.

The ability to deliver this versatile product portfolio, ex stock, as an easy to integrate out-of-box solution means that machine builders of any size and capability have it within their grasp to integrate robotic solutions, quickly and easily. All products are programmed and configured using the Mitsubishi Electric iQ Works integrated engineering environment, which speeds up design and development, reduces commissioning times and eliminates “double entry” of tag data via its common database.

Flexible cake cutting performance

The result of the robot integration is the newest model in Newtech’s robot range of machines, delivering the ultimate in flexibility for cake portioning

within the bakery industry. The in-line format machine provides a compact, multi-product platform. The high-speed ultrasonic blade offers precision, clean cutting as standard, even on the most detailed of cake products.

In operation, a through-conveyor indexes product in and out of the machine, from left to right. Product is fed into the machine in standard size bakery industry aluminium trays – with the machine accommodating bakery tray sizes of 30”x18” or 30”x16” (approx. 76cm x 46cm or 76cm x 41cm). A series of inductive sensors identify the tray size and ensure that it is in the right position in the machine cell, whereupon the tray is fixed and held in a precise position by a series of clamps. This accurate positioning is important to ensure that the ultrasonic blade does not contact the tray edges.

Once the tray is in position, the robot actuates the ultrasonic blade to portion the product based on the parameters entered on the HMI. During the cutting process, another tray can be loaded onto the conveyor, and once the cutting cycle is complete the next tray is indexed into the cell.

Working with smaller tray sizes

As well as the standard size bakery trays, the machine is also capable of cutting products in smaller foil trays. For this mode, the foils are placed in a row of three on a nested product board. The same clamp arrangement is used for accurate positioning. The robot automatically selects a smaller blade – purposely profiled to fit within the shape of the foil tray – via an automatic head change unit.

An innovative feature of the machine is a cleaning tank to wash the ultrasonic blade. During the cleaning cycle, the robot takes the relevant blade to the cleaning tank, and a series of water jets spray both sides of the blade. The blade is then dried as the robot passes it through an air

blast.

“Working with Mitsubishi Electric for the robot integration made the whole process easy,” comments Newtech managing director Steve Rawlinson. “The high capability robot, combined with a full automation product offering, all with the same software package, made it simple to integrate the robot into the machine. This enabled us to take advantage of ultrasonics for precise, neat, damage-free cake cutting.”

Another benefit of the RF13 articulated robot in this application was its smooth sleek design, as Rawlinson explains, “It is a very clean robot, with smooth faces and very few gaps where waste product can accumulate - that’s a real benefit in a food processing and manufacturing environment.”

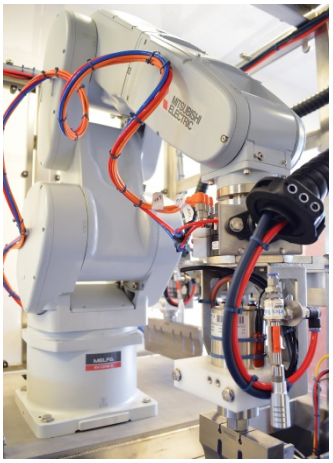
Summing up his experience of working with Mitsubishi Electric on this robotics project, Rawlinson says, “Mitsubishi Electric provide a very good product offering, plus excellent technical support and fantastic availability. It’s been great service all round, and we’ll definitely be using them again in the future.”

Note:

Learn more about this application by watching our video case study: https://youtu.be/GAgDVJWijP0

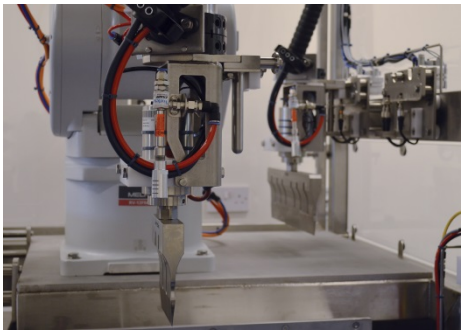
[1] See how Mitsubishi Electric is able to respond to today’s automation demands:
eu3a.mitsubishielectric.com/fa/en/solutions

Image captions:



Picture 1: The Mitsubishi Electric MELFA robot is controlled via the Mitsubishi Electric iQ Platform. The iQ Platform is a multi-functional automation environment which incorporates Q series PLC control and uniquely, an integrated robot controller within the same rack.

[Source: Mitsubishi Electric Europe B.V.]



Picture 2: One of Newtech's innovations is the adoption of ultrasonic cutting technology.

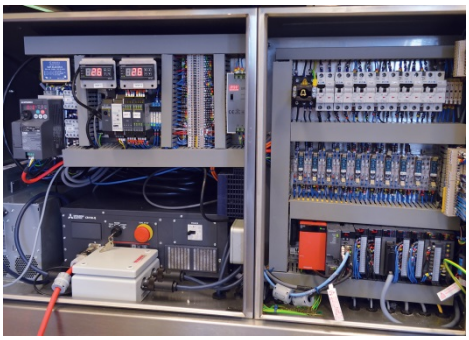
[Source: Mitsubishi Electric Europe B.V.]

Picture 3: The solution offered by Mitsubishi Electric was built around an RF13 13kg payload, six axis robot, mounted within a stainless steel cell.

[Source: Mitsubishi Electric Europe B.V.]

Picture 4: Once the tray is in position, the robot actuates the ultrasonic blade to portion the product based on the parameters entered on the HMI.

[Source: Mitsubishi Electric Europe B.V.]



Picture 5: The Mitsubishi Electric iQ Platform is a multi-functional automation environment which incorporates Q series PLC control and uniquely, an integrated robot controller on same rack.

[Source: Mitsubishi Electric Europe B.V.]

Picture 6: A CC-Link network is used to connect other machine control components such as a Mitsubishi Electric inverter drive and a dedicated Mitsubishi Electric WS safety controller providing a totally integrated machine control solution.

[Source: Mitsubishi Electric Europe B.V.]

The image(s) distributed with this press release are for Editorial use only and are subject to copyright. The image(s) may only be used to accompany the press release mentioned here, no other use is permitted.

Note to Editor: if you would like the text in another language please contact Philip Howe at DMA Europa – philip@dmaeuropa.com.

First released in United Kingdom November 2015

About Mitsubishi Electric

With over 90 years of experience in providing reliable, high-quality products to both corporate clients and general consumers all over the world, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, water and waste water, transportation and building equipment.

With around 129.000 employees the company recorded consolidated group sales of 36,0 billion US Dollar* in the fiscal year ended March 31, 2015.
Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Mitsubishi Electric Europe B.V., Factory Automation European Business Group (FA-EBG) has its European headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of FA-EBG is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.

**Exchange rate 120 Yen = 1 US Dollar, Stand 31.3.2015 (Source: Tokyo Foreign Exchange Market)*

Further Information:

eu3a.mitsubishielectric.com/fa

Follow us on:

youtube.com/user/MitsubishiFAEU

twitter.com/MitsubishiFAEU

Press contact:
Mitsubishi Electric Europe B.V.
Factory Automation European Business Group
Monika Torkel
Expert Marketing Communications
Mitsubishi-Electric-Platz 1
40882 Ratingen, Germany
Tel.: +49 (0)2102 486-2150
Fax: +49 2102 486 7780
Monika.Torkel@meg.mee.com

PR agency:
DMA Europa Ltd.
Mr. Roland Renshaw
Europa Building, Arthur Drive, Hoo Farm Industrial Estate, Kidderminster, Worcestershire, UK
Tel.: +44 (0)1562 751436
Fax: +44 (0)1562 748315
roland@dmaeuropa.com
www.dmaeuropa.com