



► Over the last few years, but especially in 2020 due to the pandemic, the demand for wet wipes has risen sharply.

Production Machine for Wet Wipes

Fast and precise — over the entire line —

The wet wipe or "Wet Nap" was invented in 1958. Today wet wipes are used for personal hygiene, as well as for disinfection: An example of this include skin cleansing wipes for babies, the packaged moist towelettes after the barbecued chicken or wipes soaked in alcohol, used for example, before an injection. Especially in 2020, the need for disinfecting the hands and surfaces has increased dramatically due to COVID-19 and therewith, the production of wet wipes.

The Turkish machine manufacturing company Temcon has specialized in the development and production of production machines for non-woven fabrics such as fleece. Founded in 2008 in Izmir, the company provides its customers with system solution for the complete manufacturing process from wet wipes to the packaged product, which we consumers find on supermarket shelves. Over the last 3 years, smart new functions were integrated into the wet wipe machines that resulted in even more processing speed and precision. The modern automation technology – both hard- and software comes from Sigmatek, and for applications engineering, Temcon relies on the experienced system integrator Dedem, which has made a significant contribution to their success with its extensive know-how in highly dynamic motion applications.

Customer-Specific Lines

Each wet wipe production line is unique. Based on a modular toolkit system for various processing functions such as cutting, impregnation and packaging that has grown over the years, Temcon manufactures customized production lines that are often over 40 m in length with a width of 4 m. In 2018 the modern TFP120 wet wipe production machine came on the

market. The wet wipe production units used are entirely in-house designs from Temcon. In the last two years, the team has worked to make the production processes even more efficient and comfortable for system operators.

Often, 10 to 24 rolls per line are regularly in use. An automatic roll change "auto splicing" minimizes the down time and a precision adjustable rotating blade accelerates the format conversion. The length of the 20 to 40 cm wipes can be up to 30 cm, as they are often folded when packaged. A dual labeling concept used by the packaging unit provides increased output.

"The new generation of machines produces up to 120 packages of wet wipes per minute and has therewith, a significantly higher output than conventional machines" says Nail Erkan, Technical Director at Temcon satisfied. With this high-speed application, coupling and synchronizing the production and packaging unit is particularly challenging: this demands the highest precision since even at maximum speed, the length offset must stay under 5 mm. Since the market introduction of the first wet wipe machine in 2010, more than 60 lines have been delivered and 40 more are currently in production. The machines are delivered worldwide in medical technology,

as well as in the hygiene and pharmacy sectors – whether in Turkey, the UK, USA, Mexico, Canada or Australia.

With Sigmatek, Temcon has a specialist for demanding automation tasks as a partner: The Austrian provider of complete solutions stands for performant controls with highly dynamic drive axes and strong visualization combined in an integrated object-oriented engineering platform. The modularly constructed, scalable system solution optimally fits with modular approach of Temcon production lines.

Customized Wipes

During wet wipe production, 10 rolls are standard. With the new generation, up to 24 fleece rolls are often in use. For the online impregnation, nozzles are used to wet the material. The damp fabric panels are brought into position over one another. Rotating blades cut the fabric to the desired length (600 cuts/min). The wipes, cut to a maximum of 30 cm, are then sent to the stacking unit. Here, the wet wipes are stacked and compressed in the shortest cycle time possible. With 20 rolls, 5 punch-operations are required for a package



► Between 10 and 24 fleece rolls are used for wet wipe processing.

„Every Sigmatek component can be tracked with its unique serial number. A big plus for our service business.“

of 100 wipes. With 10 rolls, 10 stacking and compression operations are needed. This demands high precision is so that the wipes are exactly stacked when they are transferred to the packaging unit via synchronized conveyor belts.

Efficiently Packaged

For the packaging process, customers can choose from different modules: Tubular bags, plastic boxes - with and without removal attachment. A vision system ensures the correct positioning and sufficient distance between the wipe stacks. After sealing the top, the packaging foil is cut to the desired length and the remaining sides are sealed. For product traceability (production codes, dates), a dual labelling system is implemented. If a plastic removal cover is required, SCARA robots are integrated into the line that place up to 120 covers per minute.

Complete Automation Solution

A complete production line usually consists of at least three machines: Wet wipe preparation and cutting machine, packaging machine and lid applicator machine. The production line is equipped with multiple HMIs allowing efficient and simple

operation. With the modern 19- and 12-inch ETT multi-touch operating panels, operators can comfortably adjust and supervise the fully automated production process. In order to avoid overflow problems, a sophisticated synchronization functionality is integrated so that when a machine is stopped, the other sections also come to a coordinated standstill.

In these machines for production and packaging of the “wet wipes”, the thin and robust S-DIAS control and I/O system for the DIN rail is used. The high-performance CPU “CP 112” with EDGE2 Technology processor is only 25 mm wide, 104 mm high and 72 mm deep. In addition to real-time Ethernet VARAN, two standard Ethernet-ports, CAN- and USB-interfaces are on board. S-DIAS I/O modules have a standard width of only 12.5 mm and provide all required signals and functions. Motion and Safety modules are also available in this format. By using a fully integrated automation solution from Sigmatek, Temcon has the possibility to perfectly adjust the CPU performance to the application and customer requirements.



► The damp fabric panels are brought into position over one another. Rotating blades cut the fabric to the desired length (600 cuts/min).



► The modular S-Dias system is the right choice for demanding automation tasks. The performance can grow with the line or customer requirements. Different CPU and Safety controller modules, as well as I/Os are available for any task.

By using the LASAL MachineManager software, Temcon is able to easily share application data between any stations of the line, including controllers and HMI. Data communication is simply configured via drag and drop.

All machines of the line are networked via Ethernet. With such a high-speed application, coupling and synchronization of the connected units is particularly important for achieving high precision (± 5 mm) and keeping rejects to a minimum. In most Temcon lines, the production unit is the master. If desired, the packaging unit can also function as a master, since the speed can be adjusted in both directions.

Depending on the line size, up to 15 large servo and 3 asynchronous motors are in use in the production unit: for rolls, conveyor belts, pullers, blades, stacking unit, press, transfer and for adjusting the band height. In addition, up to 11 servos and 3 asynchronous motors are included for the packaging process. For motors with higher power requirements, the compact SDD 300 servo drives are used. For smaller motors, the modular MDD 100 drive system with up to 8 axes per supply module is implemented. Industrial Ethernet VARAN bus connects all servo drives, valve terminals and other peripherals to the controller in real time.

Flexibility through Object Orientation

The application software is created using the all-in-one engineering suite LASAL. Thanks to object orientation, graphic representation and ready-to-use software functions, engineering time is reduced enormously. This is also emphasized by Mohammad Zaher, department manager at Dedem Mekatronik, Temcon's engineering partner: "The initial start-up of the axes is

► The cut and stacked wet wipes are packed in plastic boxes or, as shown in the photo, in bags and fitted with removal covers - up to 120 packs per minute.

very easy and quick – it only takes a couple of hours to commission 15 servo axes." An additional advantage of LASAL is, that once developed and tested, software functions (classes) can always be reused since code and data are handled separately. With modularly constructed, customized machines, that is a big plus. "Customers get exactly the options required for their application. Object-oriented software development with LASAL thereby provides maximum flexibility. Software variations are quickly created and shortens delivery times", says the software engineer. Remote maintenance has been provided via Teamviewer and Remote Desktop until now. Since reliable remote access for remote maintenance is essential, Temcon will rely on the web-based Remote Access Platform (RAP) from Sigmatek in the future. The service technician can create a secure VPN connection to the desired machine with one mouse click and at the same time, operate the machine or system visualization over VNC. Software updates, debugging and maintenance can be performed as if the technician was directly on-site.

Speaking of customer service: "Each Sigmatek component is clearly traceable with its unique serial number. A big plus is the protection of our service business, as Sigmatek does not provide replacement parts to our end customers. In this way, we stay in contact with our customers and provide excellent service", Nail Erkan, Temcon's technical director, states with satisfaction.

Although his team is fully occupied with fulfilling the many new orders and putting wet wipe production machines into operation, Nail Erkan already has visions for the near future: "We constantly have new ideas for future designs, so it is particularly important to be able to count on innovative and strong partners such as Sigmatek and Dedem. This helps us stay a step ahead our competitors in this highly competitive market."

Direkt zur Übersicht auf
i-need.de
www.i-need.de/p/14630



Ingrid Traintinger,
Head of Marketing Communications,
Sigmatek GmbH & Co KG
www.sigmatek-automation.com

