

IN THE POUCH

FILLED TO THE NEAREST GRAM

When we go on a trip it is best to carry food and snacks in a small bag. It saves space. And this is also one reason why industrial pouch packaging is becoming ever more popular in the animal feed sector and food industry. But how do you fill pouches with food on an industrial scale? Our editor, Anke Biester, pays a visit to the Waldner DOSOMAT assembly hall.



There are various models of DOSOMAT machines for filling pouches – and each one is customised according to customer requirements.

From cat food to red cabbage – instead of an aluminium or glass container, an increasing number of pouches can be seen on supermarket shelves. But why? And how does the food or cabbage get inside? To answer this question, I arranged to meet up with Robert Weber, design engineer at DOSOMAT. We're standing in the ginormous assembly hall of Waldner, in front of an 18 metre-long packaging machine, which is currently running through its last test series before being delivered to the customer.

Space-saving and popular

Demand is on the increase. By way of explanation, Robert Weber pushes a small, colourfully printed pouch into my hand. It has a picture of a cute cat and some cat food on it. "It's space-saving, light-weight and you can print over the entire surface,"

says the engineer, summarising the benefits of the pouch. Hundreds of them are already lying in 10 magazines – nicely packed flat – waiting for the machine. "And what if I want a different size?" I ask, my gaze immediately falling on another magazine of different, larger pouches. Robert Weber grins, clicks out the old magazine using two handles, and replaces it with the new one. "The rest of the process is fully automated," he says.

Ink is used to indicate sterilisation

His colleague, engineer Bernd Bodenmüller, starts up the machine. "Slowly, so we can see what's happening." He has everything under control on a control panel. The machine starts up. Suction cups are used to pick up the individual pouches and place them in two clips – a bit like

pegging washing on a line, except that here the pouches stand upright. Held tight like this, in the next step, they are printed with the best-before date. This makes sense, because the pouches are currently still flat like a piece of paper. "Because the ink used changes colour after sterilisation, it is also a good indicator for this process," explains Robert Weber.

Individually controlled servomotors

And how do the flat pouches now open up in order to be filled? Once again, little suction cups are used, which pull the pouch open from the front and back, while the clips are pushed together – and then bingo! Not only is the top of the pouch open, but also the bottom, its standing surface. But what if it doesn't work like that? That could happen, couldn't it? >

A wide range of products can be filled into pouches. The DOSOMAT machines ensure reliable, hygienic filling.

Picture to the right: Per pick & place the pouches get out of the machine.



Bernd Bodenmüller (right) and Robert Weber from Waldner tinker with the sophisticated solutions of the DOSOMAT pouch machines.

> Bernd Bodenmüller smiles: “Take a look. At the next station we check the entire thing with a light curtain and a blast of sterile air. And that’s the clever thing: if a pouch remains closed, it simply moves on – it just isn’t filled. The advantage is that the filling process carries on regardless, filling the other intact pouches in the line without any issue. This means there is no downtime.” All this is made possible by numerous servomotors that are capable of directing each and every pouch. “We measure and save all of the available parameters for each pouch in real time. This way we can quickly identify any potential faults during filling,” explains Bodenmüller. What a lot of programming! “Well, we’ve been working on this pouch-filling machine for 10 years, and we’re still finding little improvements. Something like this isn’t created over night,” replies the

engineer, modestly, and he immediately discloses a new feature: “In future it will be possible to use a mobile phone as a service interface to request diagnostic and service data from the machine. A simple scan of the QR code on the control panel will be enough to request the data and have it sent in a convenient email, for example.”

Knife in the filling head

Now the pouches are destined for the actual filling station. This is where a filling head is inserted into the pouch, filling it to the exact milligram with feed from the storage container. But hang on a moment. How’s that going to work with cat food containing whole pieces?

You can’t cut that up! “You can, it’s all about the timing,” grins Robert Weber. “We’ve found a smart solution.

When it gets to the last milligram that’s supposed to end up in the pouch, we can use a knife hidden in the filling head to cut up this bit so that the last little bit can be metered out. It’s unique!”

Sealing with ultrasound

How do they come up with such ideas, I wonder? – Meanwhile, the machine continues its demonstration with the sealing process. The clips part, flattening the top of the pouch closed, and I hear a quiet, highpitched squeak as the vibrations and pressure of the ultrasound unit seal the pouch. A fast and secure method. I discover that the air is first pushed out of the pouch using steam, CO₂ or N₂ (according to customer request or requirement). “The reliability of the seal is very important, and this is why we monitor it using a highly

sensitive distance measurement in the µm range.” This is followed by what is referred to as a cosmetic seal. A lightly ribbed closure provides the necessary grip for later being able to rip open the packaging – while giving it an attractive appearance.

Each pouch is now laid on a set of scales and the weight is checked. If it does not meet the specifications, the pouch is not only rejected, an automated message is sent to the filling station of precisely this pouch – and this then adjusts the intake stroke for, in this case, the cat food. I find out that it is at this point, by the way, that specific pouches can be removed for sampling. The machine lays all of the other pouches in trays, which are then sent for sterilisation. And that’s it! “For every pouch, we automatically

collect a data set of approx. 30-40 parameters,” says Bernd Bodenmüller, who programmed the machine. “It is a bit like an individual electronic calling card that is attached to each pouch. It is easy to use for statistical analysis, and if there are any returns, it is easy for manufacturer to work out where the problem occurred. It’s heading in the direction of Industry 4.0.” And what happens when something is wrong with the machine, with its myriad of individual parts? Bernd Bodenmüller taps on the panel and I see an exact representation of the machine. “Thanks to the detailed overview on the control panel, we are able to check everything down to individual format plates. We’re able to find a needle in a haystack, no problem. Another unique feature is that, not only can we then easily remove the individual form plates, we can continue with

production without them, in other words, with a gap and the other form plates still in place. This means that the machine doesn’t stand idle while maintenance is undertaken.” I’m impressed with everything the two of them and the DOSOMAT team have come up with in terms of the design. I would love to take another look at the control panel or simply keep watching the clips and servomotors doing their jobs, but the 2 engineers have to go. Their mobile phones have been ringing the whole time. Demand is simply too high.

