



## DRAUGHT-FREE JOURNEY WITH METZNER

There are high quality requirements for sealing profiles for the automobile industry. Metzner has developed a special system which provides both quality as well as high speed.

Fresh air is refreshing and exhilarating, just like a rain shower in late Summer which lets the earth breathe again. Yet air and rain in the vehicle are none of their business when you are travelling in the car. In order to ensure that neither moisture nor air nor dust can penetrate from the outside, vehicles need a protection which prevents that: sealing profiles.

The customer is one of the international leading manufacturers of sealing profiles for the automobile industry. With the objective of producing various profiles more

efficiently than previously, it has commissioned an automatic production line from Metzner. As an automation partner for the rubber and plastic processing industry, Metzner planned a system in collaboration with its customer which is precisely matched to the its wishes and completely fulfils the requirements.

### **Knowing where you are going**

The customer's requirements were clearly defined: The system should comprise complete manufacturing (cutting to length, punching, drilling, hot cutting and marking),

machining different profiles with various tools without problems, whereby all drilling tools can be swivelled by 180 degrees and operate with a dimensional tolerance of  $\pm 1.0$  mm on a profile length of 3000 mm. In addition, the retooling time for all tools should be less than 15 minutes and only need one employee for the complete system. The machine operating speed was also important: the cycle time for machining a complete profile had to be less than 10 seconds.

### **The implementation**

Faults are annoying and wasteful. Therefore,

## The Facts

### Customer profile

The customer is an internationally known supplier of sealing systems for the automotive industry. Among other things, the product range includes door seals, window seals, roof frame seals and tailgate / boot lid and engine compartment seals.

### Requirement

The following major requirements had to be satisfied during the development and planning of this production line:

- Complete manufacturing of sponge rubber profile, i.e.: cutting to length, punching, drilling at various angles, hot cutting and marking
- Various profiles had to be able to be machined on this system. For this purpose, all drilling and punching tools are equipped with quick-change mechanisms and can be set up at any positions in the system.
- The retooling time for different profile types is a maximum of 15 minutes
- All drilling tools must be able to swivel by 180 degrees so that the drilled holes can be made both from above and below and also from the side.
- The maximum permitted dimensional tolerances for the machining positions are  $\pm 1.0$  mm for a profile length of up to 3000 mm
- Maximum amortisation period of 24 months
- Only one employee is required for the complete operation of the system including material unloading and discharge.

### Benefits

Using the automatic production system which is precisely tailored to the customer's requirements, he can quickly and efficiently machine many different profiles on one system. The short cycle and retooling times also contribute to this as does the flexibility of the system.



Metzner paid attention during the planning to eliminating fault factors such as material twisting. In this case, there is an upstream profile conveyor for the system which feeds the rubber profile into the production line in the correct position, non-twisting and not stressed.

The machining is performed afterwards with the various boring and cutting tools which can all be moved individually across a section of 3000 millimetres on precision linear guides so that the complete profile length is machined in one work cycle. In this way, the automatic manufacturing machine achieves the required short cycle time of less than 10 seconds.

The sponge rubber profile is machined by pneumatic high frequency drills. An integrated pressure accumulator reliably prevents a possible pressure drop during start-up of up to 20 drills at the same time. All drilling tools can be swivelled by 180 degrees, thus drilling can be performed both from above as well as from underneath or from the front.

Next in the sequence is the hot cutting which separates a specific profile segment of 140 x 3 mm. The cut is made with minimum pressure on the profile and with a heated blade in order to eliminate material twisting. A colour marking with white paint is applied

to the sponge rubber for marking the subsequent installation positions in the vehicle. The paint is already completely dry after a maximum of two seconds.

Cutting to the desired length is performed afterwards.

### Technical special features and benefits

The complete machining of one profile is achieved in one work cycle due to the flexibility of all machining tools. This feature ensures a short cycle time with a very high dimensional accuracy at the same time.

All machining parameters are defined in one program thanks to the profile-related programming. Thus, operator errors are ruled out and optimum process reliability is achieved.



Metzner could realise the system for its customer with a very short delivery time by using fully developed components already tested in other systems.