

item

Press-information

© item Industrietechnik und Maschinenbau GmbH
Friedenstrasse 107-109 D-42699 Solingen
Tel.: +49/ 212/ 65 80 300 Fax: +49/ 212/ 65 80 310
✉ info@item-international.com
www.item-international.com

Date of last save: Solingen, 05.07.2006
Number of pages: 5
Number of words: 1.582
Number of characters: 9.941

Pressekontakt: Nicole Grewer
Tel.: +49/ 212/ 65 80 322
✉ n.grewer@item-international.com

Porsche develops new assembly track: **It's experience that really counts**

When Dr. Ing. h. c. F. Porsche AG was planning and designing a new engine assembly track, they initially counted on the skills of their own, internal production machinery department. This department, however, had to compete with external offers.

Porsche, as a luxury marque, is well-known for its production of excellent, pedigree sports cars. Whether it's the 911 or the Boxster, a Porsche is a status symbol, without a shadow of doubt. It is even more an expression of personal lifestyle – and more and more people are evidently developing a feeling for it. How else could over 120,000 people worldwide be organised in around 360 regionally administered Porsche appreciation clubs? And the tendency is for this to increase. The excitement surrounding these classical vehicles from Stuttgart, Germany is also a good reason for shareholders to smile.

Engine assembly continuously improved

It is hardly necessary to tell those in charge at Porsche that demanding Porsche drivers insist on leading-edge quality as a priority. Which is why Dr. Ing. h. c. F. Porsche AG's factory facility at Stuttgart-Zuffenhausen concentrates on precision-assembly of that part of the car that really makes a sports-car driver's heart beat faster, the Porsche engine. A total of 24 workers are employed on two tracks assembling the engines for the 911 and Boxster. "The tracks are now over 15 years old. Back in 1993, we started revamping them and adapting them to the technical requirements of modern assembly methods. For example, we replaced the manual feed system with a continuous, motorised system. We have also developed new commissioning trolleys and a preselector mechanism for rotating the engines to the correct assembly position. This enabled us to almost double the numbers of engines produced per day," explained Wolfgang Zimmermann, Project Leader of the 19-strong team of the Porsche production machinery department in Stuttgart.

Opportunity

An additional assembly track has been on stream since May 1999 at this facility for assembling the new Turbo, GT3 and Cup engines. The company took the opportunity by the horns and decided to design a completely new track, using their many years' experience from the old assembly tracks. Normally, this would be the

task of the production machinery department. But if you think that this internal department was automatically given the job of designing the new track, you have another think coming. "It was a tough battle", Wolfgang Zimmermann looks back to the preparation phase, during which he and his colleague, Herbert Binder, were required to compete with outside suppliers in a bid to find the most suitable concept and most efficient budget. "In the final analysis we were, in fact, able to tip the scales in our favour since we had special know-how in the assembly of Porsche engines, which meant we were able to produce the better concept and ward off the attacks from outside", smiles the 60-year old, who arranged to be released from his other duties to concentrate on the project.

Extremely short development times

It took Herbert Binder and his production machinery department a mere eight months from the first drawing to final completion of the track. "This is a remarkably short development time", the two engineers stressed, "when you bear in mind that not a single part of this new track is the same as any part on the old tracks." In the design of the new equipment, it was not only factors such as the numerous technical developments, intended to facilitate the assembly of the engines, that were important but also the overall appearance: "We show numerous visitors around the facility and we want to be able to show them our new project looking its best."

Suitable state-of-the-art partner sought

Then Porsche AG needed a suitable partner with the skills to convert these innovative constructions both technically and visually into efficient assembly tracks - and they found item Industrietechnik und Maschinenbau GmbH. "The company, with its Headquarters in Solingen, can not only look back on decades of experience in special-purpose engineering, but with its MB Building Kit System consisting of aluminium profiles, fasteners and functional elements, it provides designers with a multitude of options to enable them to put specialised applications into practice that are noticeable for both their attractive design and the high levels of functionality", commented Alfons Löpenhaus, Sales Manager at item in South Germany. This may sound a bit like item blowing their own trumpet. But Wolfgang Zimmermann, too, is convinced that item's modular elements are the answer: "Our project required visually attractive components that allow us to build versatile constructions that are, at the same time, extremely sturdy with excellent matching and fitting accuracy. We compared many suppliers and eventually decided to use item's modular components."

High rigidity combined with lightweight design

Each individual engine, and there are a total of 12 stations on the new assembly track, weighs in at 300 kilos. The trolleys for transporting the engines weigh 200 kilos each. The base construction must, therefore, be able to cope with a total weight of 10 tonnes. "The components that make up the machine base in this case are item profiles that have been reinforced with tie rods. A guide rail made of steel runs around the machine base and is anchored to it - this is for mounting the engine trolleys. Although the assembly track has to support tremendous loads, loads that are also in motion, the use of item aluminium profiles prevents the construction looking heavy and ungainly the way a steel construction would", commented Wolfgang Zimmermann.

Ergonomic work methods

The advantages of the new assembly track can be seen with regard to the engine and commissioning trolleys, which are also partly constructed from item

components. Both the engine trolleys and the commissioning trolleys are suspended and travel with the track. The height of the engine trolleys can be adjusted at any time and at any point on the track. As far as the workers on the track are concerned, this is a tremendous improvement in terms of ergonomic working methods and means that the worker is always in control and can select the most comfortable working stance. The engine can also be rotated in 45°-steps clockwise or anticlockwise so it can always be rotated to the best working position the quickest way – such that the engine can always be worked on from the most accessible point. "Every single engine trolley is controlled by its own CNC control. This individual programming facility means that each worker can select the required engine position automatically or at the push of a button. This has not been possible on any assembly track in the past and is completely new", emphasised Zimmermann.

The control panel for the engine trolleys has also been constructed by the Porsche designers using item system components. "Basically, all we had to do was to connect up the profiles using the corner fasteners, slide in the panels with corresponding cut-outs for the controls and hide all the wiring & circuitry – done", Zimmermann explained the minimalist approach by his production machinery department to manufacturing control panels from no more than 12 individual components and in any required size, individually tailored to suit requirements.

Quick and easy expansion possibilities

In May 1999, this masterpiece of Porsche production machinery construction was first set in motion. Around 25 engines are manufactured here per day at an average track speed of 16 cm per minute. "The track speed is relatively slow, in comparison with our other assembly systems that move at 60 to 80 cm per minute", Wolfgang Zimmermann aired his reservations. On the other hand, "the engines that are manufactured on this track are also much more complex." Apart from the speed, productivity on this 20 metre track can be considerably increased simply by adding in more stations. "All we have to do is move the drive units, add in sections of item profiles, guide rails, busbars, drive chains etc., attach some engine and workpiece trolleys and off we go. This work could be carried out, if properly planned, over a weekend. There are, of course, certain limitations in terms of drive capacity but a length of 50 metres of track would be no problem at all. Another decisive factor is obviously the factory floor space."

Fascinating opportunities for other applications

Porsche AG has now patented this assembly track. The development should be of interest to other fields of industry, too, since the innovative system developed in Stuttgart can also be applied to a host of other parts. Be that as it may, this car manufacturer reckons the investment, that has cost around a million deutschmarks, has set them up for a powerful start to the new millennium. Nevertheless, Wolfgang Zimmermann would not be a genuine 'Schwabe' (inhabitant of Swabia in South Germany, renowned for their 'careful' approach to spending money!), if he had not already worked out "considerable opportunities for savings" on the second track, which is already being planned. "The next one should be a good 20% cheaper than this one" he reckons.



(Name of graphical metafile: Porsche04.tif)



(Name of graphical metafile: Porsche03.tif)



(Name of graphical metafile: Porsche02.tif)