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The Untertürkheim model makes noises as far away as Japan.

Screw fastenings could be much cheaper. But costs do not reduce with the price of the part alone, according to the experts at screw manufacturer Arnold Umformtechnik – and they are backed by companies such as DaimlerChrysler and Mahle.

“It is important to think about the process and not just the cost of the individual part”, said Roland Bopp of DaimlerChrysler AG. And Bopp is not just anyone. Some years ago

he took on the role of “small parts optimisation” (SMO) manager at the car manufacturing company. This project, and its interactive function with automotive research and development, was so successful that the term has been adopted by Japanese engineers.

The objective was to reduce costs, cut throughput times, and increase quality. Bopp created a “round table” consisting of no more than seven people. Besides

the design engineers, the round table consisted of the technical purchaser, the quality assurance manager, the assembly and production engineers, and the parts supplier, contributing its specialist expertise in fastening technology. This prevented any department from simply reducing their “own” costs only to create more for another cost centre. The small parts optimisation (SMO) teams massively reduced the number of different small parts per vehicle. For example screws are restricted to just three tensile strengths and two surface qualities. The unit prices have been reduced considerably by increasing batch sizes. But the main point is that the handling is much more straightforward. Previously, one vehicle contained around 23,000 reference items. The round table has managed to obtain a good 57% of all its small parts using only 1,200 SMO numbers. “Perhaps one day we’ll achieve 70 percent of SMO parts”, conjectured the DaimlerChrysler manager. The SMO parts include new and special designs, but only those with a high savings or quality assurance effect. Bopp’s approach is clear: if you want to reduce the cost of fastening technology, you have to look at the overall production and assembly process. For this reason, experts in the field such as Arnold Umformtechnik GmbH & Co. KG in Forchtenberg, Germany, with whom Bopp is in constant touch, need to be included in the design process at a very early stage.

Reinhard Barth, Product Manager at Arnold Umformtechnik, takes up the story: “Smaller companies could do what a big company such as Daimler is doing even more effectively,” he said encouragingly. According to him only 8% of the cost of a screw fastening is



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down to the cost of the part itself. Over 50% of the cost is taken up with the preparation work such as drilling or tapping, 20% in staff costs, and a further 8% in tool costs. The objective must therefore be to reduce the system costs: "Only by looking at a fastening as a whole can effective cost savings be made." Barth mentioned some examples: A manufacturer of lamps increased its order for fasteners by 30% over the previous year, yet paid only 13% more for them. They managed to do this by drastically cleaning up the assortment of articles: This meant a reduction in the number of materials supplied from 54 to 30, and so the average unit price fell by 14%. The same thing happened for a car seat manufacturer: With the help of Arnold Umformtechnik, they saved at least 250,000 euro, by improving their joining technology, introducing logistics concepts such as consignment storage and Kanban, and cutting out 13 reference items. There is just as much savings potential in the company's self-tapping screws, which when screwed into a core hole, form their own nut thread. DaimlerChrysler is already using this type of screw in 50% of its applications. Arnold Umformtechnik offers Taptite 2000, which, with its improved thread geometry, is able to apply preload forces with almost the same process reliability as metric screws. Product Manager Thomas Jakob explains the savings effects that can be achieved in

another example, showing a cost analysis made by Mahle Filter Systems GmbH of Stuttgart. The Mahle study assumes pre-cast core holes and comes to the following conclusion: A Taptite 2000 can reduce the manufacturing costs for an automatically fitted screw fastening by up to 80%, and that of a manually fitted fastening by up to 65%.

The Arnold Group is a wholly owned subsidiary of the Würth Group, which, with over 50.000 employees and with 314 companies world-wide operates on a global basis with earnings of over 6 billion euros.



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