

Wealth of Variety

Product diversity is a hallmark, but for enterprises it can also quickly become a serious problem. For a wide range of products and product variants often involves costs that are too high. These costs are due to extra outgoing expenses for development, production, procurement or sales. Porsche Consulting shows through its variant management approach how complex procedures can be brought under control again. Properly understood, the method provides transparency, and even enables companies to achieve a hitherto undreamt-of level of product diversity.

☰ Christian Weiss

The consultants at Porsche Consulting may be too old for this, but they still love to play with building blocks—because it’s the most impressive way to show how much variety can be achieved in development and production. It’s vital, though, that such variants be produced with as little expense as possible. Otherwise, the whole business is in danger of foundering on its own complexity. “It’s one of the biggest challenges facing companies today,” says principal Demetrios Kappos. “Customers are demanding constant innovation with individual solutions, and the industry is delivering them. That’s creating unmanageable product diversity.” And that was exactly what the Porsche consultants heard when a utility vehicle manufacturer called for help: We aren’t in control of our products any more—our products are in control of us.

“Innovations and a broad product range are obviously good things,” says Kappos, “but it all has to be done systematically!” Because it’s the management of

this diversity that distinguishes the successful from the less successful enterprises. But focusing solely on the management of the product range is also a dead end. Properly understood, variant management goes much further. The approach is a holistic method to make a company’s product program future-proof and reduce its complexity. Unprofitable slow sellers must be traced and eliminated, lost transparency must be recreated, and the costs of development and production must be cut. In their professional jargon, consultants talk about product program rationalization as well as product and process structuring.

“The method is especially well-suited to plant and mechanical engineering,” says project manager Dr. Norman L. Firchau, “but in essence it’s applicable to all other enterprises too.” In the end, product diversity problems are the same everywhere: high construction costs, small production batches, the potential for confusion, high set-up costs, large warehouse stocks ▶

plify the product program and reduce warehouse stocks. “We showed by a classic ABC analysis that 20% of the items were contributing 95% of sales volume,” says project manager Frank Seuster. “Moreover, more than 900 products that were ready for delivery had achieved no sales at all in three years.”

Success has borne the product rationalization program out. The method sounds simple and its success promising. “But you have to proceed very carefully,” says Frank Seuster, because the public impact when products are dropped from the program should not be underestimated.

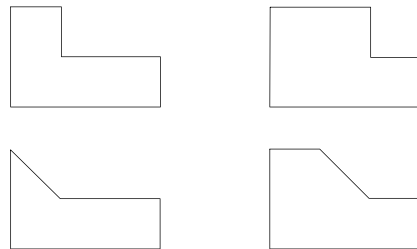
But, from an internal perspective, complexity is also reduced by cutting and combining components and item variants. This is made particularly clear by the so-called variant matrix, which lists all products of a range. Variant-determining characteristics and dependencies are highlighted. It’s clear at a glance where the problems are and how the range can be optimized, e.g. with common part development, modularization, and process structuring.

“Variant management is an opportunity,” says principal Kappos. Because the method also provides very new and unexpected opportunities by which the product range can even be extended further. The consultants delve deep into their box of tricks—and those building blocks—to clarify the idea.

There are four models on the table. They look like stones from the game Tetris—an “L” shape, a large square, one plain simple triangle and one with a roof. “Up to now, our fictitious enterprise has been manufacturing exactly these four product variants,” says Norman Firchau. Customers are now demanding more individuality, which at first sight should also mean more complexity. Firchau takes a model in his hand. “All ▶

Modularization

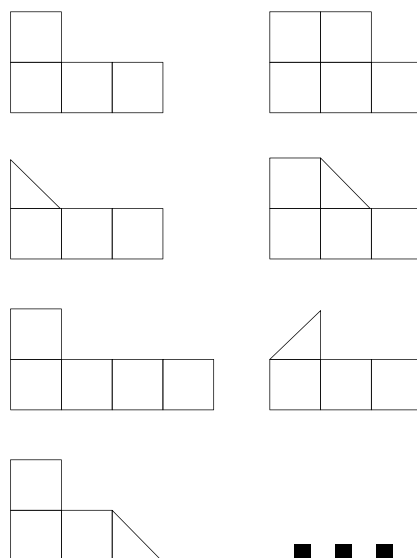
Before: four component variants, each expensive to make



After: only two configurable components (modules)



Result: unlimited variants with minimal development costs



Variant management in the automotive and supply industries

Example: wiring harness

Before



- 3 variants of 3 different lengths
- variant-specific expense in development, product management, change service, dispatch, planning

After



- 1 item number
- shorter lengths achieved by looping
- cost only for 1 length variant

Result

- Material costs cut by approx. 7%
- Product management costs cut by approx. 18%

our products up to now have actually consisted of two basic components—a square and a triangle.” He dismantles the products into these two modules, and starts rearranging them into new patterns. After a few playfully inventive minutes, a plethora of different variants has been created. “Modularization enables us to make just about as many product variants as we want, and at the same time to make drastic reductions in development costs.”

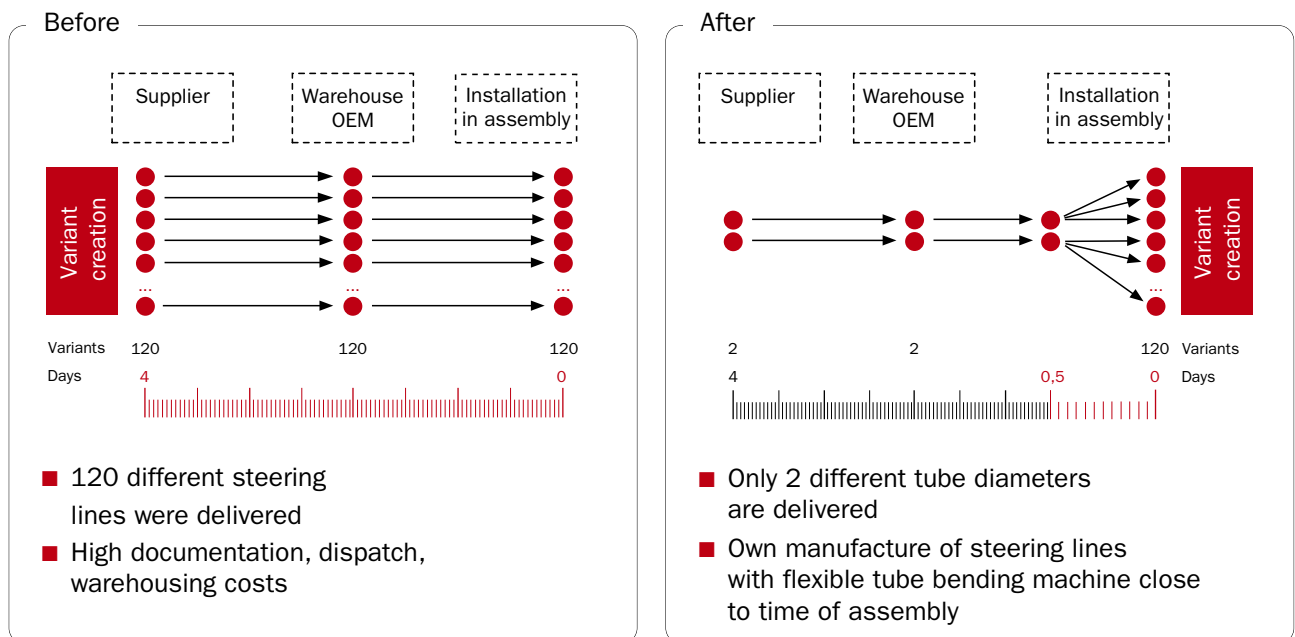
What works here on a playful level also works in mass production, as the previous example of the utility

vehicle manufacturer shows. At a cabling point on a utility vehicle, the company used to work with three different cable lengths. Porsche Consulting hit upon the idea of a knot. Today, production makes do with one cable, the longest. Lesser lengths are accommodated by simply putting in a loop. The benefit: the company now only uses one component, has full cost transparency, and has managed to cut material costs per cable by seven percent, thanks to economies of scale.

By contrast with product rationalization, the solution in process structuring isn’t common parts, but

Variant management in the automotive and supply industries

Example: steering lines for utility vehicles



Result

- Number of variants procured is cut from 120 to 2
- Cycle time cut by approx. 87%
- Logistics costs cut by approx. 5%

common processes. As a result, cutting complexity in manufacturing means that the point at which the variant is introduced is postponed to as late as possible in the production process.

Norman Firchau cites another example from the same utility vehicle manufacturer. The supplier used to deliver steering lines to the conveyor in various lengths, diameters, offsets, and connections. The requisite variation encompassed more than a hundred different item codes that had to be separately ordered, produced, delivered, stored, issued, and transported to

the conveyor accordingly. In today's solution, the right steering line is made only a few stations upstream of the installation point, directly next to the conveyor belt, in a tube-bending machine. Only two variants of different diameters are now needed from the supplier. The result is very impressive, and has led to much better capacity utilization, simplified and standardized flows, shorter cycle times, greater flexibility, less waste, and less reworking.

After all, an enterprise should be in charge of its variants, not the other way round. ◀