

Form follows function

In engineering products, good looks should not be just skin deep

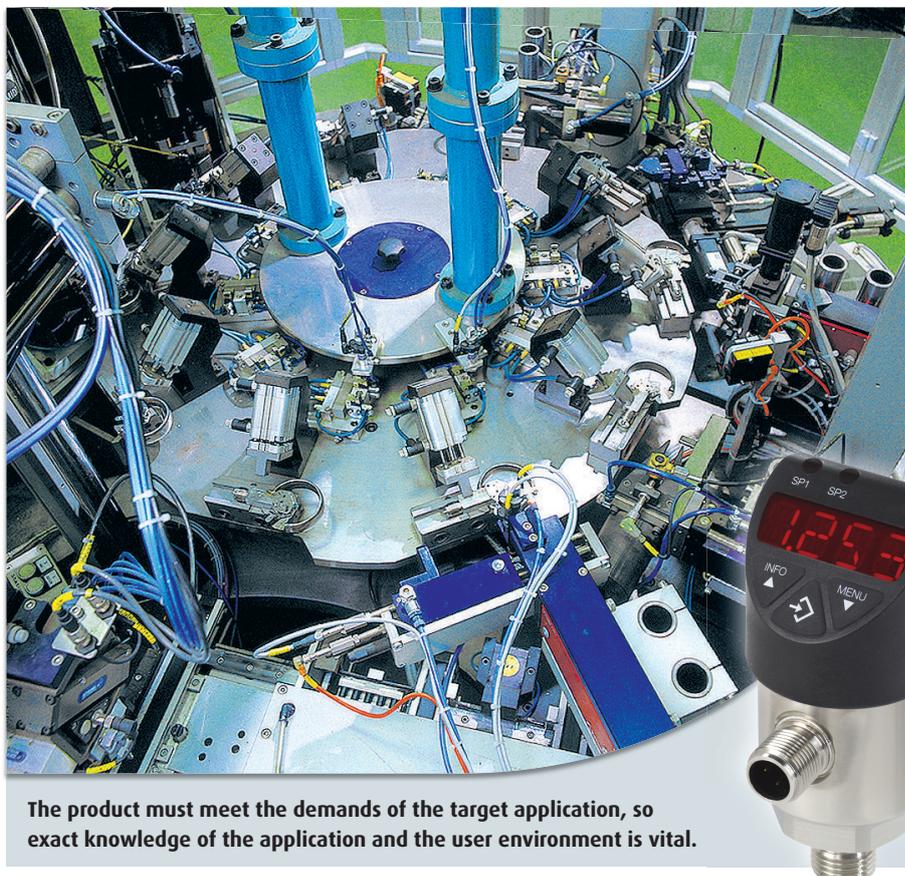
Attractive design is the rule in consumer goods, but in most industrial products it still plays a subordinate role. As a result, many products do not look at all in a way that matches their "all new" performance. The example of the new PSD-30 pressure switch from Wika illustrates the product design cycle, and shows that good design and high functionality need not contradict one another; instead, form follows function.

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In the German language the word "design" has a fairly narrow meaning: the conscious design of the look of things. In English, on the other hand, "design" applies to both functional construction and external appearance. This linguistic separation of external appearance and internal function is still present in the minds of many design departments in industry. The result is a complete misunderstanding of the maxim coined by architects of the Modernist school: "form follows function".

"Form follows function" does not imply that external design is subordinate to the functional aspects of the product. Rather, it says that external design is a logical consequence of function, and that the two concepts are inseparable. "Design is not just what it looks like and feels like. Design is how it works," says Steve Jobs, Apple Computer. In the real world, many engineers still equate conscious attention to aesthetics with unnecessary trimmings, decoration, and cost. As a result, only in few industrial companies is teamwork between industrial designers and design agencies a normal part of every development process. But the situation is changing slowly, as people in industry realize

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Pictures: Wika

The product must meet the demands of the target application, so exact knowledge of the application and the user environment is vital.

that good design is nothing less but the translation of functional specifications. When it expresses and supports functionality, design becomes a selling point.

Against the barricades

A lasting change in attitudes to industrial design must begin with a cultural change in product management, where all products have their cradle. Especially in business-to-business dealings, purchasing is often regarded as a purely rational decision, satisfying functional needs at the best possible price. But each purchasing decision, even when it is

highly formalized, also involves emotions and the weighing of opportunities and risks.

Important questions to do with trust and confidence are: How reliable is the supplier? How will they react if demands change? How exacting are they in terms of quality? The same applies when evaluating the performance of a product. In addition to the purely formal measures, such as speed or accuracy, confidence in the product will play a part.

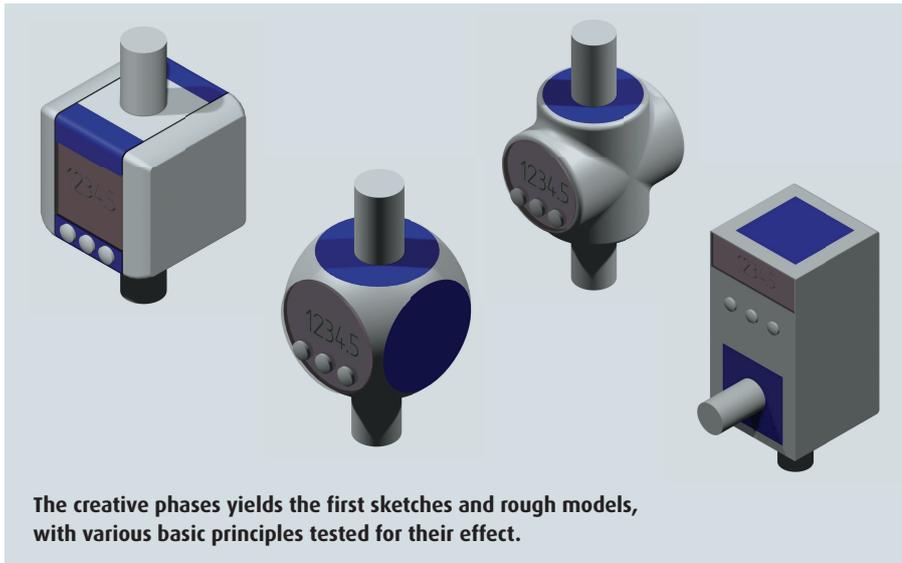
But what creates confidence in a product? How is it that we can decide, almost spontaneously, which of two similar products offers higher quality, is more expensive, more solid, better? The decision results not only from measurements but from our overall perception of the product, its handling, shape, surfaces, color, details, weight and so on. Our senses alert us to details such as whether something feels like "cheap tin" or is made of solid metal. We immediately pick up on design which looks artificial instead of supporting function.

Once we accept this insight, the next step is a detailed analysis of expectations and

PROCESS PLUS

Online • Further information and product details of the electronic pressure switch PSD-30 at process-worldwide.com via InfoClick 2078576.

Events • Wika at Hannover Fair 2010: Hall 7, Booth B21; visit the iF online exhibition: www.ifdesign.de



The creative phases yields the first sketches and rough models, with various basic principles tested for their effect.

demands on the product from a customer's perspective, and an exact description of the expected functions in use. We must also define how the product should fit and differentiate itself with regard to the target application, the company's own product portfolio, and competing products.

Next, it is time to start development and engineering. Most industrial companies have no internal design department, in which case it will be necessary to team up with a professional industrial designer. This can be a difficult phase if the company's own development department has little understanding of the value an external designer can add. But a good industrial designer should be able to prove their worth quite easily, however, through samples of their work and their detailed knowledge of materials and manufacturing processes. Early involvement of the development engineers can help to create a working atmosphere of mutual respect.

From the idea to a working design

The next phase is usually a creative one, in which numerous versions and ideas are tried and compared with the design brief for the product. Sketches and simple models are used to visualize proportions and basic functions. It could prove useful to involve several design agencies and to have a wide spread of ideas. In the following selection process it is essential to adhere to objective requirements and thus arrive at a good evaluation scale, instead of making decisions based on pure taste ("I like it").

Once the basic design decision is reached, the fine tuning begins. Of decisive importance now is cooperation between designer, product management, development and external suppliers, for instance of tooling.

Unfortunately it is often at this point that an elegant and creative design is distorted or the potential of a ingenious design not fully exploited. Slipshod or bland realization will kill even the best design, so attention to detail is crucial.

From this point on, time and costs really start to build up with each delay or repetition. And delays come in various disguise: a certain manufacturing process may turn out not to work, a surface may look different from what was wanted, a critical material may no longer be available or approved.

The temptation is to give in, or to accept compromises—even bad ones. There is no secret recipe. But discipline and willpower are needed to achieve the common goal.

The fruits of success

But in the end, excitement over what has been achieved makes one forget the difficulties. Now it is time to present the new product to the board, enter it in design competitions, and make potential users and decision makers aware of the new possibilities now open to them.

The Wika PSD-30 pressure switch won the prestigious German iF product design award in 2009. It was also nominated by the Bavarian Ministry of Economics for the Design Award of the Federal Republic of Germany 2010—the highest official German award in the design arena. An award such as the iF product design award recognizes a design which makes the use of the device, simple and convenient. A design which underlines Wika's high demands on reliability, robustness and other critical quality issues. A design which not only looks and feels good, but which really works.