Best-in-class products require a well-defined concept, taking into account later manufacturing, processing and performance requirements with all related aspects from day one.

The engineering services available from IAV Germany combined with our Indian engineering team on your doorstep will provide best-in-class design solutions for your business in India.

References:
VW Polo 240/250/25X, VWN Caddy, VW Eos, VW Golf plus, VW Touran, VW Golf 5-7, VW Lavida, VW Passat, VW Sharan, VW Tiguan, VW Touareg, VW Up, VW Blue sports, VW Phaeton, VW XL1, Porsche Cayenne, Porsche 9X1, BMW X1

Cost efficiency and quality are basic requirements in developing smart products that are best in class and meet budget constraints. The key cost drivers are raw materials, processing, cycle time, tooling and capital expenditure.

The consumer’s first impression of quality is determined by the look of a product – its design needs to be coherent, homogeneous and polished. This is then followed by haptics and acoustics, in other words what a vehicle feels like to touch and the way it sounds. Later on, this initial impression is confirmed by a high level of operational safety and reliability while hopefully never having to put crash safety to the actual test.

Drawing on 20 years of experience in automotive cockpit engineering, IAV has established an engineering process that is capable of meeting the most diverse aspects of quality and cost.

From 2013, this experience will also be available from our Pune-based Indian subsidiary, IAV India Pvt. Ltd., which will be providing off-shore support and assistance in meeting demands on the local Indian market.
IAV’s cockpit engineering process focuses on optimizing the draft design and proposed styling. The process uses master sections in helping our engineers to validate packaging as well as manufacturing and assembly requirements. Doing so, they regularly consult with the customer’s design department to find optimum technical solutions with aesthetic appeal. In reaching a joint understanding and following a highly iterative approach, the product idea is transformed into a best-in-class concept.

At this important stage, we take the following requirements into account:

- Styling idea
- Package / function / weight
- Stiffness / safety / airbag integration / airflow
- Manufacturing / complexity of tools and processes
- Assembly / disassembly

With more than 20 years of experience in concept layout, we have a team of specialists who thoroughly understand the following processes and manufacturing tools based on in-house and external 3D CAD resources:

- Injection moulding / compression moulding
- Thermoplastic foaming (MyCell®)
- PVC slush moulding with PUR back foaming
- PVC foam foil back wrapping
- Stamping / milling
- Water jet / laser cutting / laser perforation

The first 3D models are already part of the virtual design verification process, involving all disciplines. This helps to identify challenges that are not obvious in the section plan. The early use of CAE provides the basis for developing the prototype in terms of stiffness, crash, airbag, air flow and injection moulding for the purpose of obtaining virtual design validation. Simulation results are continuously verified during the later hardware testing phase.

The development process, either with or without prototype phase, generally leads to a production design requiring hardly any changes to product and tooling as both of these aspects are well defined during the concept phase.

Cockpit structure as a key factor in cockpit quality and weight

Producing a quality look for the instrument panel in a car requires an appropriate carrier structure, such as a cross car beam. More than ten years of cross car beam engineering in a team of specialists have created a deep understanding of the entire vehicle, body-in-white and cross car beam requirements from the aspects of crash safety and vibration as well as cockpit assembly tolerances.

The use of metals, such as steel, aluminium and magnesium in the form of welded sheet metal as well as cast parts, is standard practice. Hybrid materials – like glass fibre and CFRP – are also state of the art. Our concepts typically define the platform standard for global OEMs and are used by no fewer than seven vehicle makes across the world.

The most recent projects have shown that lightweight construction is not only a matter of material but also a global approach to design. An integrated concept both for cross car beam and instrument panel architecture produce the best results for the cockpit. Our demonstrator of a magnesium sheet-metal-based cross car beam will give you an idea of our expertise. Please contact us and we can discuss more details face to face.