

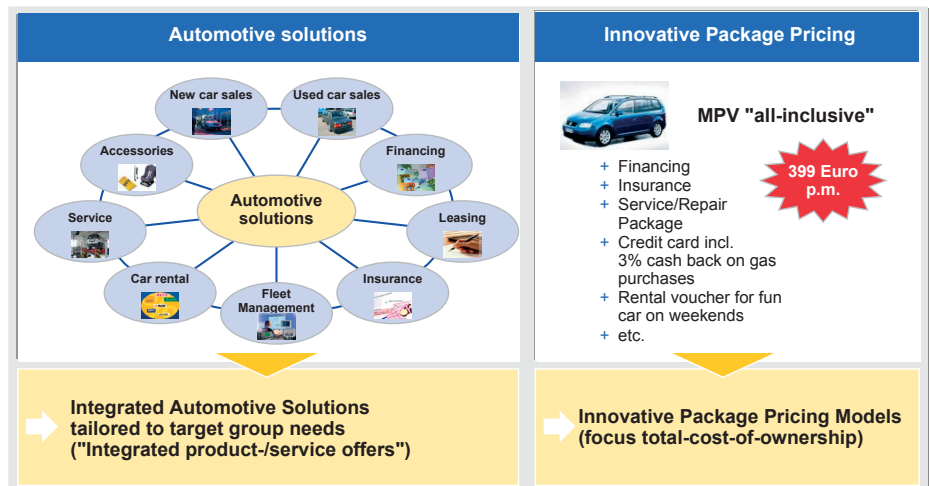
„From Cars to Automotive Solutions“ – a new Paradigm for Securing Profits

German car manufactures and dealers are facing increasing pressure to survive as diminishing margins on new car sales begin to stifle profits.

Pan European price transparency and tougher competition have created significant price pressure at the point of sale. Customers demand more for their money and consider multi-brand dealers or grey-market imports as viable alternatives. The result is that German car dealers have been forced into a culture of discounting.

While consumer awareness and competition are driving down prices, the cost per vehicle is rising. OEM's are faced with rising development and production costs. These are being incurred because of increases in model variety and resultant lower economies of scale. Similarly dealership costs are mounting as dealers invest in showrooms, technical equipment and personnel.

While the increasing cost base may be hard to tackle at the point of sale, margin can be secured by changing the basic proposition. Consumer awareness is shifting the focus of new car buyers from considering only the purchase price of a new car to considering the total cost of ownership during its life cycle. This chang-



ing consumer behaviour is marked by a distinct shift to finance or leasing packages. Approximately 70% of all new cars are now financed or leased. As consumers demand more convenient solutions tailored to their needs and budget, they seek „all inclusive automotive solutions“ that cover all the costs of the car ownership cycle.

As this trend develops, the key challenge for the future of automotive marketing & sales will be the effective exploitation of the downstream potential of these all inclusive packages. Current offers include financing or lease arrangements, insurance, extended warranty, inspections and repairs. However, a number of downstream services can be bundled into packages. Incentives such as accessory sales, rental car vouchers and credit cards with cash back on gasoline purchases, may be included. For corporate clients, also fleet management, and mobility services should be included.

Downstream services currently account for approximately 50 % of the total revenue within the automotive value chain. However, they account for about 90% of the profits!

Recognizing this fact, most automotive manufacturers already cover a good share of the products & services on offer but are often inefficient. In many cases, OEMs use a variety of separate teams to sell products and services to customers. Multiple sales forces therefore approach both retail and end customers with their individual product and service offerings. This results in poorly coordinated activities and significant inefficiencies. Such inefficiencies stem from: diverging objectives of different business units, unaligned product service portfolio, and inconsistent approach towards dealers and customers.

To tackle this problem, car manufacturers will have to face four central challenges:

1. Ensuring manufacturer and dealer profitability
2. Exploiting additional margin potential along the automotive value chain
3. Developing customized product and service packages that match customer demand
4. Ensuring efficient market development for the overall product and service portfolio.

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To meet those challenges successfully, car manufacturers need to break new grounds in the automotive market development. In future they must engage in marketing holistic „automotive solutions“ that are strictly aligned with customer needs. They could therefore offer product and service packages tailored to specific customer segments and used in combination with innovative package pricing models (see figure 1). The result will be a shift from price resp. low-interest discussions at the point of sale to the value-added by tailored „automotive solutions“ with attractive package pricing.

The marketing model for these integrated automotive solutions should focus on placing the customer in the centre of any activity and is based on four essential components:

1. Integrated sales strategy and objectives:

Shift to a shared profit maximization. The alignment of the objectives and scorecards of the business units involved at both the manufacturer and the dealerships according to the integrated sales strategy.

2. Integrated sales processes:

The alignment of marketing, sales, service CRM processes between the business units. E.g. development of common product and service packages, an aligned communication policy and an integrated sales service at the point of sale.

3. Integrated Organization:

The creation of a shared services organi-

sation by facilitating cooperation of the different units and removing departmental barriers and resistance to change.

4. Integrated systems:

At the point of sale all relevant information concerning product and service offerings including cross or up-selling potentials must be available to the sales force.

Internet presence and online car configuration facilities must be redesigned to suit this integrative model. Customers need to be able to view comprehensive and complete information on product and service offerings from the Internet.

Similarly customer data bases and the CRM-systems of the different sales units should be integrated. The resulting combined consumer data will provide the resource from which product and service offerings with attractive package prices can be specifically tailored to the target segments.

Automotive solutions are a new paradigm for automotive sales & marketing, and in order to capitalise companies will have to make significant changes to the way business is conducted.

The acceptance and buy-in of all market partners is critical and will considerably contribute to success:

Acceptance at the manufacturing sales units:

In most cases a joint marketing of product and service packages is diametrically opposed to today's objectives, scorecards

and business interests of the different sales units. A strong Top Management Commitment for the implementation of integrated sales strategies with interdisciplinary objectives and scorecards is therefore mandatory.

Acceptance of customers:

Pre-configured product and service packages are not the ideal solution for all customers. It is necessary to identify and define target customer segments with homogeneous interests and tailor solutions according to the needs of these segments.

Acceptance of retail organization:

The sale of product and service packages is a new challenge for the sales force at the car dealership. Looking forward, the sales force needs to be comprehensively trained across disciplines. It may be necessary to adjust the incentive and compensation system to account for these changes and to maintain/improve staff motivation.

Downstream Integration through the marketing of complete automotive solutions has the potential to yield enormous results. We see „automotive solutions“ as the way forward. When the true potential of an integrated market development strategy is achieved we envision that this kind of downstream integration will become a central management task within the automotive industry.

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Innovative Hybrid-Electrical Vehicle Concepts Drive Next Generation of Power Electronic Modules

I. Introduction

The emerging trend towards increased use of hybrid power trains concepts is creating an increased demand in power electronics. The function of power electronics is to control and convert electrical power; as a result it is a cross-sectional technology that can be found in various automotive applications. In modern cars, many electrical loads - from actuators to lighting systems - are now controlled via smart semiconductor modules.

Growing consumer demand for superior performance and enhanced safety features in today's automobiles are additional forces for preparing the way for increased application of mechatronic products with high integration potential.

Mechanical actuators and contacting sensors are being replaced by smart power and sensing components manufactured by complex semiconductor processes. The current environmental pressures on the automotive industry will result in increas-

ing numbers of hydraulic-based actuators being replaced by electronically-controlled systems which can reduce weight and system size and improve fuel efficiency.

The first components to adopt the new technology were technical products such as pumps, fans and blowers. Over time this has expanded to include engine, transmission and braking systems. But as each new developed power electronics system needs energy, this has resulted in electrical loads of the order of 2,5 kW for today's

premium automobiles. As a result, the automotive industry is seeking new efficient energy management concepts based on innovative storage technologies beside the conventional battery.

II. New power electronic modules

All new functions in the automotive development (e.g. X-By wire, Adaptive Cruise Control, Intelligent Battery Sensors), as well as the electrification of existing functions (e.g. power assisted steering) require the application of power electronics. Discussion regarding cost reductions are not yet finished and will be a major challenge for the power electronic industry.

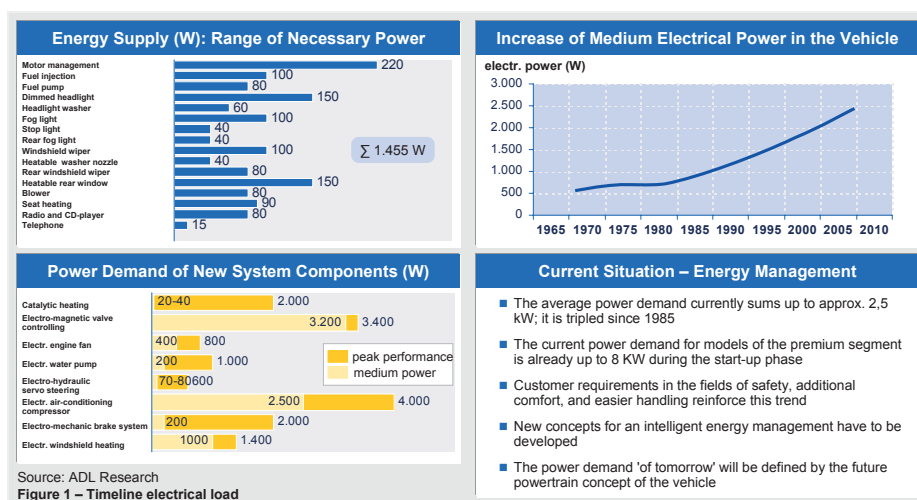
The following three examples will demonstrate the impact of power electronics on future mechatronic products.

Starter-alternator system

A starter-alternator system consists of a synchronous machine attached to the combustion engine and an electronic inverter placed between the battery and the E-machine is replacing the alternator. In starter mode the DC current is converted to AC current to turn the machine. In alternator mode AC current is converted to DC by the inverter. The electronics provide interfaces to CAN as well as direct digital and analog I/O.

Electronic clutch system

An electronic clutch system replaces the conventional mechanical link which opens



and closes the vehicle's clutch by an electric control. The clutch position is performed by an actuator and an electrical motor coupled with a position sensor. The electronic module receives positioning signals from the control unit. Pedal position and car conditions are analyzed continuously for clutch control optimization.

Advanced Xenon lighting systems

Decentral located intelligent electronic components are directly attached to Xenon lighting systems and their ignition unit. The ignition of the Xenon system reaches a peak voltage of about 20 kV, which is smoothly handled by power electronic modules. The innovative manufacturing process of fixing the SMD components on ceramics with heat-sink technology leads to this high temperature

resistance characteristics, which is a basic requirement for this harsh operational environment.

III. Conclusion

Cost reduction of power electronics is the key challenge for broad penetration in the automotive market. As discussed above, the automotive environment has specific key characteristics and higher long-term requirements than other industries. If the electronics industry is able to meet these challenges, the power electronics market is going to expand with accelerated growth.

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Product Portfolio and Platform Strategies – a Case Example of the Roadmap to Excellence

Introduction

Growth through innovation is back on the management agenda. In Arthur D. Little's third Global Innovation Excellence Study published in 2005, enhancing the innovation ability was considered to be the most important lever for companies to increase profitability and growth.

One key parameter to success is to successfully implement competitive product portfolio and platform strategies.

Case example – the challenge

A global automotive company asked

Arthur D. Little for help to improve company performance by implementing a best practice product portfolio and platform strategy. The company had been struggling with poor financial performance for a number of years. Area managers optimized their business performance, sometimes "bypassing" product planning to trigger product development. This drove a reactive rather than a proactive R&D behavior. In addition, there was no transparent link between business plans and product plans. This limited the CEO's ability to challenge suggested product

investments and their contribution to the overall company performance and priorities.

Define competitive field of play

The project started off by modifying the existing segmentation model. The new segmentation model connected the market/application dimension with the product dimension. In addition, the new segmentation model offered a high level of homogeneity in each segment in terms of market dynamics and a high heterogeneity in between.

Benefits:

- A base for competitive product planning through segmentation
- The right degree of complexity in terms of number of segments in the model (27 in total)

Prioritize to fulfill strategic intent

All segments were thoroughly analyzed from a market perspective to understand the current situation and the future business outlook over the next years.

Benefits:

- Highlighting mismatches between priority and R&D spend – 30% of the R&D budget was currently allocated to a low priority segment
- A clear definition of “where to compete”

Define product portfolio strategy

In finalizing the product portfolio strategy, questions like how, when and against whom to compete were addressed in all segments. Hereby, business ambitions in the business plans could be challenged and gaps closed.

To fully exploit the potential of the product portfolio, a new platform concept with an improved modularization structure was created. This overcame inefficiencies in the current structure.

All in all, this set the prerequisites for a competitive product portfolio, meeting the defined, business ambitions.

Benefits:

- An aligned product portfolio and corporate strategy
- A totally new platform and modularization concept
- A reduction potential in the number and variety of modules of about 40-

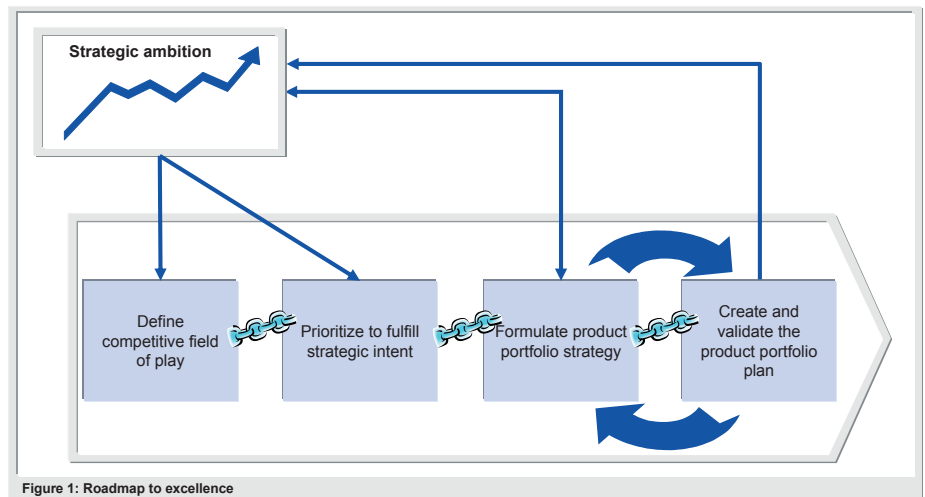


Figure 1: Roadmap to excellence

50%, with a product cost reduction potential of more than 10%

Create the product portfolio plan

After the product portfolio strategy was formulated, the initial product plan was built up.

A number of scenarios were developed to support management's decision on way forward, e.g.:

1. An aggressive scenario with a rapid parallel platform introduction pace supporting products in high and medium priority segments
2. A moderate scenario with a medium (serial) platform introduction pace supporting products in high priority segments first and medium priority segments later.

Based on management's restrictions, two major blocks built up each scenario:

1. The “Must have” – R&D efforts needed to stay in business in all business areas
2. The “Management options” – R&D resources available for optional actions

The segment prioritization guided the creation and order of the “Management options”.

The two scenarios were tested in a simulation session. Management decided to implement the moderate scenario.

Benefits:

- A new way forward for the company described down to the product and platform level
- A fully anchored product plan aligned with business ambitions
- A base to fully align market and supply chain strategies
- Increased CEO confidence in the decision logic from business planning to product planning

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