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Design-in – working with the car manufacturers

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Abstract

To battery manufacturers, the demands of the automobile industry may seem extreme and unreasonable. But, it is worth the effort to investigate the situation further. When battery companies buy supplies, equipment or components, the best price, the highest quality and full service is requested. Likewise, when a car maker chooses a supplier, it will invest time and effort in making the products the best because the best is demanded. The battery industry must, therefore, rise to this challenge.

Introduction

'Design-in' is the process whereby car manufacturers depend on close supplier relationships to develop components – in the shortest possible time and at lowest cost – for use in their vehicles. The process starts with a battery company striving to be specified as an original equipment (OE) supplier. This takes time, hard work and intensive communication. More than anything, design-in represents, and must incorporate, a style of management from the very top that will only accept perfection of both the product and the manufacturing technology. Once accepted into the design-in process, the car maker informs its partner of the desired product goals and the price target, and then collaborates to realize these goals.

The basic requirements for a component supplier (according to Honda) are:

(i) willingness to enter into a long-term cooperative relationship with the car manufacturer, or have a history of such a relationship;

(ii) ability to meet the requirements of the car marker in terms of cost, quality and product competitiveness, and the technological capability to do advanced development work;

(iii) thorough understanding of the product and strategic planning of the car maker, and the capability to efficiently design and produce the component independently and to incorporate new technologies, together with the willingness to do what is required to achieve the desired result;

(iv) strict adherence to development schedules, especially prototype delivery;

(v) a commitment to keep all aspects of the car manufacturer's product plans and technologies strictly confidential.

If all this sounds possible only for large, locally situated, high-technology, component manufacturers, it is not so in practice. Batteries represent both a basic component and one of the products that can most affect the reliability of a car. A battery is directly affected by climate, and is easily substituted. Historically, batteries are among the first indigenous components to be incorporated into local sourcing.

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Benefits of design-in

What are the benefits of design-in, and the steps leading up to design-in?

Cost

The automotive battery industry does not determine its profit. Rather, this is determined by the car maker setting a target price. The profit is virtually fixed as the car marker has already analyzed how much each battery unit *should* cost. Where is the benefit of this low profit? the car maker will collaborate to remove all waste from the battery manufacturing processes and to increase efficiency. At the same time, absolute quality will be demanded. All this drives down costs, and should lead to greater overall profit and cash flow. The car maker wants the battery manufacturer to become the low-cost, high-quality producer. Furthermore, lower manufacturing costs are obviously reflected in higher margins on all non-OE sales.

Market research

Car makers spend hundreds of millions of dollars each year conducting market research on development trends, future needs, government compliance, market shifts, and vehicle demands. Information that is needed by the battery industry to assist in the car makers' plans is passed on continually. Thus, battery companies can be as much as 2 to 3 years ahead of trends, and not find themselves in purely reactionary situations.

Research and development

The actual rate of technology transfer from car maker to independent supplier is probably quite low, as most car makers withhold from suppliers what is considered to be 'critical' technology. Automotive, batteries appear, however, not to be in this area, unless related to electric-vehicle projects. The potential for being the recipient of leading-edge technology is far greater when working with a car-maker partner than when waiting independently for the commercial devolvement of techniques or materials.

Continuing improvement

This is demand by the car makers and is the key to competitive success. Cost and quality are both moving targets. The car maker demands a commitment to *continuing* improvements in technology, cost reduction and quality improvement. This is commonly known as the Japanese concept of 'Kaizen'.

Problems with design-in

Besides the opportunity for a company to distance itself from domestic competition, there is also the structure of business, overall, to consider. The car makers have an incentive to consolidate the power of their distribution system. After-market control ranges from Japan, with 85% of the automotive parts distribution controlled by the car makers, to the situation in the USA where the figure is only around 15%. The stated goal of the car makers in both Europe and the USA is to maximize OE parts distribution through dealerships as in the Japanese model. Batteries would be included in this exclusion of independent replacement parts. In Asia, attempts at consolidation through well-placed importers is likely.

Another risk, although distant, comes from 'intellectual property' laws and the attempts by the car makers to make exclusive anything that goes into, or onto, their

vehicles. Attempted legislation both in the USA and the UK included batteries as 'design' components. Under the proposed US regulations, that now exclude batteries and other under-hood components, there would be a ban for the first 10 years of a vehicle's life on any components supplied other than by the car makers themselves.

Traditionally, OE supply has been domestic, often internal. Today, due to political/economic pressures and helped by advanced communications, design-in is available to non-domestic sources. In fact, international design-in allows for 24-h efforts as a further incentive to all parties. This is OE supply carried to its extreme.

Design-in is about quality in all aspects. It is not confined to the USA, Japan, or the largest factories. In the author's experience, some of the best quality producers of batteries have been the smaller, family-owned factories. High labor cost is apparently not a major factor, either, as some of the most high-quality, low-cost producers are in this area. If one automatically thinks of high labor cost as the driver of improvements, consider that a recent M.I.T. study has rated the Ford assembly plant in Hermosillo, Mexico as the highest quality auto assembly plant in the world. This is a plant filled with people, not robots. Success and profitability has not resulted from the amount of investment made, but from the equipment that has been specified and bought, and how it has been managed, applied and used. The outcome relates to the goals of investment and the long term: the wrong investment in equipment can be more damaging than help.

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