Hard-hit Parts Makers Turn to Car Manufacturing

By Ikeda Masayoshi

Japanese car manufacturers have long enjoyed steady expansion, but the recent collapse of the "bubble economy" has brought their many hidden weak points to the surface. Faced with the severity of the situation, automakers are staking their existence on sweeping improvements in the quality of their operations.

A thorough review of skyrocketing development costs in recent years is a characteristic common to the rationalization schemes. Curtailing the number of body styles and parts, postponing model changes for longer periods, cutting back on facilities investments, and adjusting manufacturing capabilities to the saturated market are also part of the moves.

Orders drop sharply

The attempts by auto manufacturers to curtail development and manufacturing costs have also adversely effected *keiretsu* parts makers which adhered to their parent companies' development diversification strategies, investing large amounts in plants and facilities. Many die press, welding tool and other production machinery manufacturers, who have cooperated with their parent firms' attempts to set up development and production networks by investing in expensive equipment such as 3D CAD (computer-aided design) systems and numerical control (NC) machines, have been particularly hard hit, with reductions of 20%, 30%, and even 50% in order volumes and are reaching the breaking point.

Die press firms, which form the core of the development and production support network, have been especially squeezed. Automaker's long-term prosperity has been based, until now, on an expansion of new models, especially luxury models. After the yen gained appreciably against the dollar, these firms introduced 3D CAD and high-precision NC milling machines, promoted the use of CAD/CAM in die press operations, and boasted that their production capabilities were far superior than their European or U.S. equivalents.

Orders for metal molds from car manufacturers in the EC, U.S., eastern Europe and East Asia led to disruptions in Japanese maker's production plans during peak times. Some companies began to operate their die press operations in-house. However, the situation changed and there is an increasing risk that the demand for metal mold production will drop sharply regardless of whether future economic conditions are good or bad. For example, even at Ogikura, the largest die press manufacturer, orders for 1992 fell to half that of the same period for the previous year. Word has it that the company was only able to cover the shortfall with overseas orders.

According to an analysis in a recent report by the Sakura Institute of Research, if the cycle for changing car models was extended from the usual four to five years, and from one to one and one-half years for electrical appliance metal molds, output costs would drop by 7.6%, or ¥139 billion. In other words, as far as metal molds for cars are concerned total demand would decline by 20%. Add reductions in car varieties and body styles to this and there is no doubt that the metal mold industry will be facing a structural crisis.

Confronted with these turbulent conditions, manufacturers of car metal molds are splitting into two camps. On the one hand, some are trying to survive by attempting to break away from carmakers. Others are trying to place more emphasis on car manufacturers' needs by shifting to the high-tech arena and improving their CAD/CAM capabilities in order to cut costs and the length of time required for manufacturing metal molds. Tsubamex in Niigata Prefecture is one example of the latter type. Full utilization of 3D CAD/CAM allows complete flexibility with regard to car models, reduces the time required for die press production from 10 to seven months, and has slashed

Photo: Mitsubishi Motors Corp.

The popular Mitsubishi RV Pajero is, in fact, manufactured by a parts maker, Toyo Koki Co., Ltd., a subsidiary of a textile manufacturer with 2,200 employees.

costs. These steps have helped maintain a stable flow of orders from carmakers.

There are few examples of this type of cutting-edge firm, however, and some of the small- and medium-sized subcontractors, which represent a majority in the metal mold industry, are suffering heavily from the recession. A fair number of them are faced with bankruptcy or are being driven out of business. Summing up the recent moves in the Japanese car industry described above, there is an overall trend towards the production of fewer cars. It appears that restructuring will involve cutting out the small and medium manufacturer, whose energy and diverse activities, until now, had shifted to small-lot, multi-product manufacturing and shortened product cycles.

Competition to develop cars for the Japanese market has always been fierce. With the production of smaller variety of models, leading to active technological developments and management reforms among small- and medium-parts manufacturers and other manufacturing support industries, market dominance by the major corporations is increasingly threatened. It seems inconceivable that these small and medium manufacturers will once again let major corporations incorporate and dissipate their accumulated energy.

Consignment manufacturing

Consignment manufacturing (OEM system) has steadily increased in the Japanese automotive industry during the past 10 years. To explain this new trend, I would like to introduce an actual case of a car manufacturing parts maker. Currently it appears that the slump in new domestic car sales will be prolonged, but in the midst of this situation three companies, Mitsubishi Motors Corp. (MMC), Toyota Motor Corp., and Suzuki Motor Corp., all which produce RVs (recreational vehicles), have turned in comparatively favorable results. Automotive companies' business results, in general, are becoming more dependent upon whether or not they offer RVs. MMC in particular possesses a variety of models, including the highly popular Pajero, RVR, Chariot, and Delica Wagon. Moreover, because 20% of the company's total sales come from RVs—the industry leader—of the 11 carmakers, MMC has felt the least pressure from sagging domestic sales.

However, the extremely popular Pajero is not manufactured by MMC, but is actually consigned to a parts maker. Currently 13,000 Pajeros are manufactured monthly and the entire vehicle is produced by Toyo Koki Co., Ltd., a textile manufacturer subsidiary with 2,200 employees. Although MMC holds 35% of Toyo Koki's shares, Toyobo Co., Ltd. is the majority shareholder (holding 63.3% of the shares).

Isuzu Motors' Bighorn RV, which rivals the popular Pajero, is also manufactured under consignment by Press Kogyo Co., Ltd., a well-known automotive die press manufacturing company. Previously all manufacturing was done by Press Kogyo. In the two firms' joint manufacturing system, presently Press Kogyo produces 3,000 units monthly and Isuzu manufactures 2,000 in-house. Bighorn is also sold locally by the Subaru-Isuzu Automotive Inc. (SIA) under the Trooper brand name in the United States.

As can be seen from the examples given above, there are many consignment manufacturers which assemble a small number of many types of vehicles in addition to the 11 automobile manufacturers, a number which is steadily increasing. The diagram summarizes the situation in consignment manufacturing by Japanese carmakers. As can clearly be seen, all Japanese car manufacturers have employed consignment manufacturing since the 1980s, and with an increasing variety of RVs and light vehicles, the shift to consignment manufacturing has accelerated.

Up until now large volume makers, like Toyota and Nissan Motor Co., Ltd. consigned a portion of the production of their high-volume models to their own specialized consignment manufacturers such as Toyota Auto Body Co., Ltd., Kanto Auto Works Ltd., and Nissan Shatai Co., Ltd. During the past 10 years, however, a different type of consignment manufacturer has begun to appear, parts makers involved in traditional sheet metal and die press operations which were able to utilize the technology they applied to panel production for auto body manufacturing.

Although these companies manufacture vehicles, they don't produce everything from the chassis on up in-house as the carmakers do. For example, Press Kogyo manufacturers the Bighorn and Isuzu supplies a one-ton pickup type truck base to use for the chassis. But the basic vehicle component, and the body that covers it, is constructed in Press Kogyo's own factory. Many other parts, such as the engine and transmission, are also supplied by Isuzu, but Press Kogyo is stepping up procurement of its own parts. With strengthened in-house development capabilities the company will undoubtedly put more emphasis on independent procurement.

This situation is extremely interesting, as once these companies begin to build cars they must build up their in-house development capabilities in order to improve their design techniques and quality. In the end this will result in some firms establishing development centers like Press Kogyo, with product planning and design departments. As they accumulate their own in-house vehicle production capabilities, they will also acquire small-lot, multi-product manufacturing know-how which previously had been restricted to the large volume automotive manufacturers.

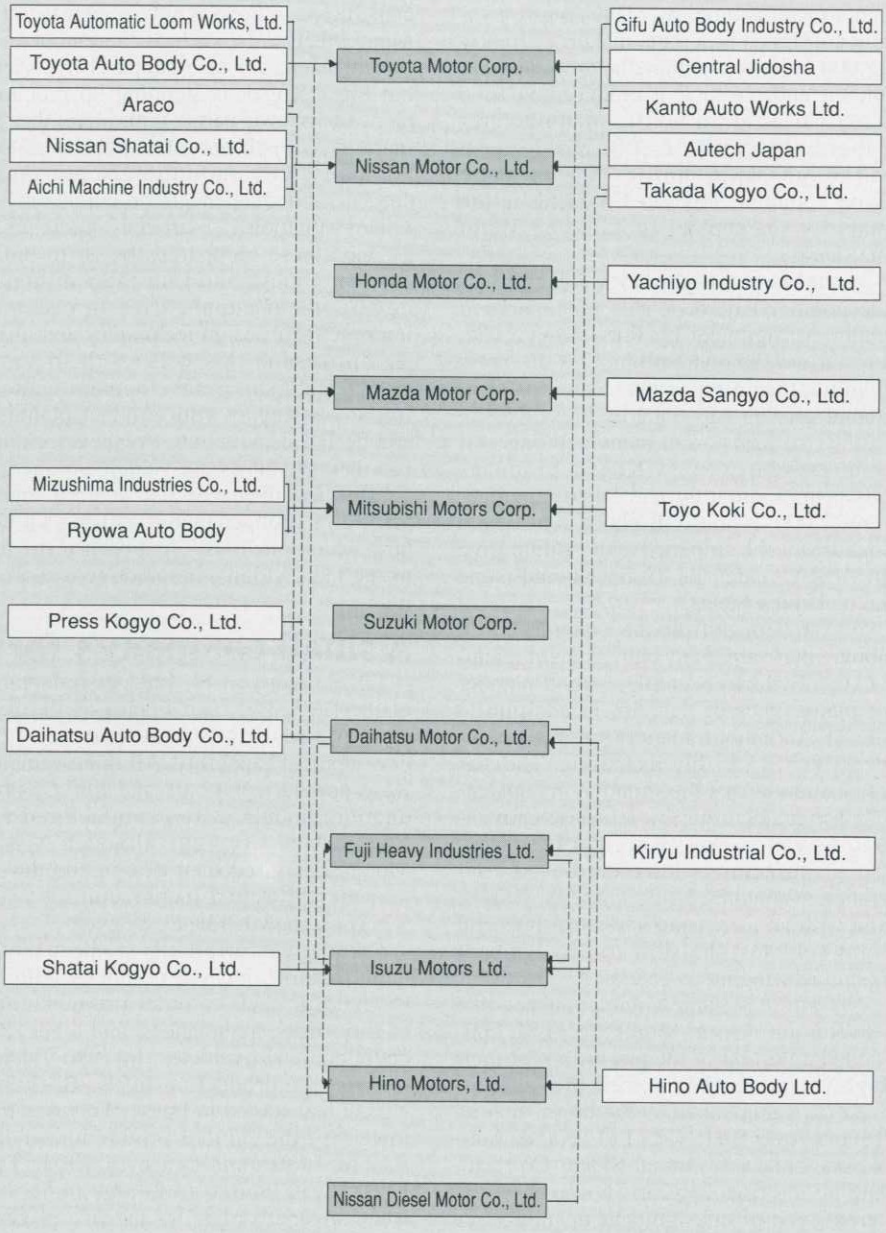
A small company's forte

Takada Kogyo Co., Ltd., manufacturer of the Be-1, Pao, and Figaro, is the best example of this type of independent development capability. All three vehicles were popular mini-cars and limited production models were manufactured for Nissan Altia Co., Ltd. Although Nissan Motor supervised their design and development, the actual manufacturing work was consigned to Takada Kogyo.

Takada was originally a sheet metal manufacturer, but the company entered the field of made-to-order manufacturing of fire trucks, ambulances, and other specially-equipped vehicles. In 1986 Takada took on the production of the Be-1 that Nissan had started in-house. This was followed by the limited production of the Pao in 1989 and Figaro in 1991. The Figaro was limited to 20,000 units, but when advance orders for the first production run were received there were 27 times more applications than vehicles produced. A second production run in June also drew 21 times more orders than the number of units manufactured.

Takada Kogyo has about 1,000 employees and only 65 design engineers, but through cooperation with Nissan's 16-member development team production, the Figaro was completed in just one year. Manufacturing advanced towards an end

Auto Makers Consignment Manufacturing



Note: Excludes specially-equipped vehicles
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of run 2,000-units per month pace from 1991 through 1992. Development of a next-generation vehicle is currently underway and the manufacture of the new model will commence in 1994. The company currently has the ability to produce 3,000 vehicles monthly, but can make a profit by turning out only 500 units of one model per month. It is extremely interesting to contrast this to Nissan's withdrawal from multi-product, small-lot production after the company's manufacturing diversification strategy failed.

In one sense this latest recession is a turning point. More and more it appears inevitable that multi-product, small-lot manufacturing will be divided between major automobile makers and consignment manufacturers like Takada Kogyo.

When asked, consignment manufacturers all indicate that they have increased confidence in their small-lot, multi-product manufacturing capabilities and that they want to attempt vehicle manufacturing and development in the future.

They are also garnering increased profits from vehicle manufacturing. For example, Takada Kogyo used the consignment manufacturing of the Be-1 as a springboard to remarkable growth. Looking at the annual turnover, the company's final result for 1988 was ¥19.6 billion, ¥25.5 billion for 1989, and reached ¥43.2 billion in 1990. Toyo Koki had an annual turnover of ¥34.2 billion in 1991, but the firm's earnings soared to ¥50.7 billion in 1992.

The secret to the growth of these companies undoubtedly lies in the flexibility of their manufacturing systems, a situation which does not exist in the major corporations. For example, Takada Kogyo has 65 engineers in the design department, divided into four sections, but this is not by any means a fixed organization. The manufacturing system is set up to deal flexibly with each project according to its progress.

During the developmental stages the engineers devoted themselves to design work, but they also move on-site during the manufacturing stage and got involved with quality control as well. It is precisely here that small- and medium-companies have their feet on the ground, with everyone participating in vehicle development, and have increased their sales and profits. This refutes the inflexible view that vehicle production can only be handled by major manufacturers and will undoubtedly produce revolutionary results.

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