How GM Evaluates New Devices

Corporation finds it necessary to examine ideas emanating outside; none is ignored

BY JOHN A. DOBB*

The New Devices Section is a part of the engineering staff of General Motors. Those of us in this section are not attorneys—we are engineers and our role is an investigative one. I shall explain some of our policies, the procedures that are followed, and I will use some statistics.

Our activity started as the New Devices Committee in 1925 and was set up as the result of a letter written by A.P. Sloan. In that letter Mr. Sloan made a comment which is appropriate to repeat here. He said, "No matter how able our own organization may be or how much money we may spend in our research and engineering activities, it must be admitted that many useful and important developments must, of necessity, emanate from the outside. It is most important, in order to maintain the technical position of the corporation's products, that proper consideration be given to everything presented, even recognizing that there is hardly one in a hundred that justifies much of such consideration."

Our beloved "Boss Ket" was a charter member of the New Devices Committee which at the outset held monthly meetings to review the devices that were submitted. Soon after the committee was formed a New Devices Section was set up to handle the administrative function. Over the years the organization evolved so that our New Devices Section now does the initial screening of each device and coordinates any investigation that is required. We still have a New Devices Committee, too, with a member at each operating staff and division. Committee members have the responsibility for handling all new devices matters at their activities. This entails setting up procedures to insure that incoming mail is forwarded to the new devices section for handling and conducting evaluations at their activities when they are requested. The committee members are employed by their respective divisions or staffs, but as mentioned, their responsibility line is to the director of the New Devices Section when dealing with new devices matters. This may sound somewhat confusing but in General Motors we are all used to what amounts to a dual line of authority.

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Now, just what is a new device. A general definition could be this: A new device is an idea, suggestion, or invention that is brought to the attention of General Motors with the purpose of a monetary reward if General Motors should be interested in acquiring the rights to use it. For lack of a better term we also call thes "submissions." We would prefer that all of these submissions be patented or at least be the subject of a patent application, but many of them are not. In fact, those submissions consisting of patents or patent applications comprise only 12% of the total.

Perhaps we should also say something about those things we don't handle. We do not consider or review styling designs, sales slogans or programs, car names, advertising programs, or service complaints. In other words an item must be of a patentable nature to qualify as a new device. We an additional qualifaction that is important. We will not accept confidential disclosures. Moreover, before a device can be reviewed the submitter must complete our "Request To Consider Submission" form. This form states rather emphatically that General Motors' obligation in respect to the disclosure is limited to that provided by the U.S. patent system. This form is a tear-out page in a pamphlet entitled "Submitting Ideas & Suggestions to General Motors." This pamphlet is sent out to everyone we have contact with.

As to the processing of a device after it is received it is really quite simple. The initial screening is done by my staff consisting of four engineers besides myself. Using our experience in the automotive industry, and our knowledge of the product, we sort out those that need additional study. I might mention that between the five of us we have over 100 years in the business to help us. Those devices that pass the initial screening are then sent to a division or staff activity for further evaluation. This amounts to about 13% of the total. Many times more than one activity is involved in the investigation. As an example a transmission design might be referred to the Advance Product Engineering Group of the engineering staff, to Hydra-Matic as a manufacturer of the device., and to a car division as the user.

Merits

The extent of the investigation depends on the merits of the particular device. It can range from a brief paper study all the way to a prototype build with an extensive testing program. Sometimes we literally spend thousands of dollars before we can reach a decision of interest or noninterest. In about 3% of the cases

referred to divisions we find there is a technical interest and the file is then referred to the General Motors patent section. At that point George Frost and his attorneys take over.

For one reason or another, a number of cases drop out at this level. As an end result, we end up purchasing rights to about one or two devices a year. Last year it was two but in the two preceding years 1976 & 1977, we didn't acquire any.

This is a very low acceptance rate and perhaps we should explore some of the reasons for not being interested in acquiring rights to a device. The single largest reason is the simple fact that we are looking at a device that is old rather than new. General Motors employs a large number of scientists and engineers and these people do a lot of inventing in their searches for solutions to problems and in their quest for new technology. Some 300 to 400 patents are issued to General Motors every year as a result of our own efforts.

Accordingly, we have developed a large bank of technology in house. Some good examples I can use at this point are the many fuel saving devices that are presently coming to our attention. Almost all rely on an alleged improvement in the atomization of the fuel or leaning out the mixture.

Our engineers are well aware of the effects of these and we have conducted many tests of devices to accomplish this. In some cases, on individual engines, a slight increase in fuel economy can be obtained. None of these, however, will improve fuel economy in every car by 25% to 50% as some of them claim.

Another reason for noninterest is the fact that many devices are not technically feasible and in fact some are inoperable. A classic example here is the perpetual motion machine. Many engine designs we look at also fall into this category, with some inventors completely ignoring the basic laws of thermodynamics.

As an aside I might point out that over the years we have looked at over 200 alternative engines or power plants. Some of these are well known, such as the Wankel, Stirling, LaForce, Warren, Borque, Honda, Sarich and Texaco. I'm sure you have read about some of these in the newspapers and trade magazines.

Lack Interest

Some of these engines we look at do run, but are not interesting for a variety of reasons. These include high complexity, difficulty in manufacturing, the need for exotic or expensive materials, high cost, package size, lack of flexibility for mobile operation, and even poor fuel economy or poor emission performance.

Sometimes an idea or device is turned down because in our judgment it does not offer any, or at least enough, advantages over our own developments. I would suggest here that in the evaluation process there is room for differing engineering opinions. Our engineers, quite understandably, have a certain amount of pride in their own accomplishments, but more than that, they have a lot of experience with their own techniques, and consequently, confidence in them. Sometimes this is interpreted by others as having a closed mind and even more disparagingly referred to as the NIH (Not Invented Here) factor. I can assure you that in today's market and rapidly advancing technology we cannot afford to have a closed mind. We still operate with Mr. Sloan's philosophy in mind. Even though we look at 3,000 ideas to find one we are interested in, we feel we must do it.

In concluding, I may throw some numbers at you. We receive about 4,000 ideas a year (about one every half hour). In a typical year 400 or so receive intensive study, about 12 are evaluated patent-wise, and we acquire rights to one or two. In the slightly more than 50 years we have been in existence we have looked at over 320,000 devices and now have files on over 200,000 inventors. There isn't much we haven't heard about.