

學術講演抄錄

I. Product Research Group

Technical Service Laboratory

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Biographical Sketch

Albert B. Baxter is a graduate of The United States Merchant Marine Academy, Kings Point, New York with a Bachelor of Science degree in Marine Engineering. Following service as an engineering and damage control officer in The U.S. Seventh Fleet during the Korean conflict, he joined Gulf Research and Development Co. in Harmorville, Pennsylvania. During almost thirty years with Gulf his experience included automotive testing, fuels and lubricants and engine and vehicle maintenance. His most recent experience with Gulf was technical service for automotive lubricants and OEM contact for heavy duty engine lubricants.

Abstract

Since my arrival on March 15, 1986 I can only give an overview of several topics which I think might stimulate ideas and questions from the members of this technical organization. These topics will include some thoughts about the Korean automotive industry, future needs regarding manpower and cooperation among manufacturers, the oil industry and the government.

Korea is experiencing a tremendous growth not only in the export market but also in domestic sales of motor vehicles. This expansion will require trained manpower in many areas of expertise. This growth in technology and manpower will require a great degree of coordination and cooperation between companies and government to reduce duplication, minimize costs and reduce reliance on foreign technology.

Intruduction

This is my first visit to Korea. I was tempted to say my first visit since the early 1950's when I was here with the U.S. Navy. However, during that time my closest view of Korea was from the comfort and safety of a ship operating several miles offshore in the East Sea. Our ship was part of the U.S. Seventh Fleet operating out of Sasebo and Yokosuka, Japan. Being involved at that time and interested in history, I am familiar with the devastation war inflicted on much of your country. I am very much impressed by the progress which has been made since those dark days. This is a credit to your people, their hard work and the free enterprise system.

Everyone has been very friendly since our arrival. The names Korea Oil Company and Yukong are not new to me having worked for almost 30 years for Gulf Research and Development Company. Letters, telexes and occasional visits by Yukong personnel for business or training maintained this business and personal relationship between Korea and Gulf Oil Company. I believe this new Technical Service Laboratory shows the dedication of the Sunkyong Group to the future of this company and your country.

I will be working in the Product Research Group advising on automotive activities including engine and vehicle testing, field testing and fuels and lubricants. In addition to technical service I will also be doing individual and group training. I have found technical service to be a very interesting job and vital to maintaining sales and customer relations, but training may be my most valuable contribution during my stay here.

I would like to discuss three areas briefly today. Please understand that these comments and observations are based on the limited observations of about three months and are meant to stimulate rather than criticize. Following these remarks I would be very glad to to discuss any item or try to answer any of your questions.

These topics are;

- 1) The Korean Automotive Industry-Export and Domestic
- 2) Future Needs-Manpower
- 3) Cooperation-Manufacturers, Oil Industry and Government

The Korean Automotive Industry

The Korean Auto Industry is developing its facilities and energy towards a large export business. The domestic or local business is expanding rapidly also. Some figures published recently in one of your newspapers showed production figures for Daewoo and Hyundai for 1984 and 1986; Also, export figures were given for Hyundai and estimates for both companies for this year.

	<u>Passenger Cars</u>			
	<u>Capacity</u>		<u>Export. (Est.)</u>	
	<u>1984</u>	<u>1986</u>	<u>1984</u>	<u>1986</u>
Hyundai	150,000	300,000	20,000	150,000
Daewoo	65,000	230,000	-	100,000

Obviously, regardless of the accuracy of these data, we are seeing tremendous growth with a large percentage of production destined for the overseas market. The successful penetration of Canada by the Hyundai "Pony" and the apparent success to date of the "Excel" in the United States look good for this company in the world market. Daewoo will be in direct competition soon with its "World car". Some interesting figures on international auto workers wages, including benefits, have been published recently which show:

	<u>U.S. Dollars/Hr.(Equivalent)</u>
U.S.A.	20.00
Japan	13.50
Korea	2.45
China	1.00

The recent changes in the value of the Yen have resulted in significant price increases for Japanese cars in America. However, first reports indicate these cars are still selling better than some U.S. models. These higher costs combined with a static local market in Japan may provide a great potential for the sale of Korean cars in The United States. The wage differential between Japan and Korea will be an important factor in their continued success in the world market but keep in mind that China is the unknown quantity in the background. Korea's day in the sun may be here but will China be the next rising star in the automotive business?

The most important factors for the successful sale of Korean cars in the American marketplace, excluding price, are quality, reliability and service. Cars sold in The United States most operate under a wide variety of ambient conditions. They must start and run at bitter cold temperatures in the north and northeast; They must also operate without problems in the extreme heat of the south and southwestern states. Also, cars are often operated at high speeds for many hours without stopping on the interstate road system. Although I cannot speak for export models, I have been observing driveability ⁽¹⁾ problems with Hyundai Excel and Pony cars even in the moderate weather of the Ulsan area. These problems would not be acceptable to the typical European or American car owner. Have these manufacturers done their homework, so to speak, in testing these cars for volatility problems, i.e. carburetor icing ⁽²⁾ and vapor lock ⁽³⁾ in addition to cold starting, warm-up and other problems associated with extremes in temperature.

In addition to driveability, the sophisticated world motorist has become used to a car which has few mechanical or electrical problems. When a problem does occur he expects to find parts and service readily available. A good example is Renault of France, who a number of years ago imported several models of cars into The United States without establishing a proper dealer network or a supply of parts. The result was a marketing disaster and they never recovered their image with the public until their recent merger with American Motors Corporation.

Quality as to body fit and finish and rust protection are also very important. The European and American motorists have become familiar with the high (con'd)

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quality of body fit and finish of the cars imported from Japan. American and European cars have also improved in these areas recently. Corrosion, or rusting, is a serious problem in northern Europe and the northern United States where salt is used to control snow and ice. Japanese cars, especially Honda, had a serious problem several years ago but all manufacturers have reduced this problem with the use of galvanized steels, redesigned body joints and improved sealants. Despite advantages in initial purchase price a serious problem in any of these areas of reliability, quality and service could damage the sales of Korean cars in the world market.

- * (1) Driveability is a term used primarily in automotive fuel testing to cover problems of volatility which may include starting, stalling, hesitation during acceleration and vapor lock.

- (2) Carburetor Icing is the formation of ice in the carburetor throat or on the throttle blade during certain conditions of temperature and humidity which can cause stalling or rough running.

- (3) Vapor Lock is the formation of vapor or gaseous fuel in the lines, fuel pump or carburetor which can cause operating problems such as hard starting, stalling and poor acceleration.

As for the domestic car industry one would have to be blind to not see the rapid increase in private, company and commercial

automobiles and light trucks on your roads today. This growth combined with the increasing sales of medium and heavy duty trucks shows a booming industry with great marketing potential for products and services. The motorist will need and demand products and services such as;

- 1) More and better service stations.
- 2) More and higher quality maintenance facilities at the auto dealership, the service station and from the independent maintenance garage.
- 3) More and better products: With the increasing sophistication of carburetion and fuel injection, as well as the coming of emission controls and catalytic converters, the oil industry will have to produce higher quality products, primarily gasoline and diesel fuels, which will operate without harmful deposits or emissions. The motorist will respond to advertisements for motor oils which he perceives will give him better engine performance and fuel economy.
- 4) The accessory business will also be wide open for expansion in the sale of auto parts, antifreeze, supplementary additives, polishes and waxes as well as non-essential items the motorist may purchase.

Future Needs-Manpower

The increasing sophistication and numbers of vehicles will require more technicians, mechanics and engineers. These people will be required by the vehicle manufacturers, the oil industry and the component suppliers. I mentioned technicians first and you may think this unusual, but I consider technicians as absolutely vital to the health of your industries. I am sure your technical schools are graduating good young people but this may not be enough. Industries must take these people for specific training in addition to developing

their own programs to train additional qualified people for their own special needs. Western countries who have either discontinued or severely reduced apprentice programs have suffered. I believe you have a great need for technicians in the fields of electronics, laboratory instrumentation and mechanical skills. Experience in vehicle instrumentation, emissions and testing is usually only accomplished by on-the-job training.

Your colleges and universities are graduating many qualified engineers of various disciplines. I am not able to estimate needs of mechanical versus chemical engineers but am sure you have government and educational committees studying this problem. I am concerned with graduate engineers who have no practical experience. This is not unique to Korea and I think the old European system of working for one year in industry prior to being granted a degree has much merit. Cooperative work-school programs are a step in the right direction. Hands-on practical experience of perhaps working at a drawing board alongside experienced designers would produce a better engineer than all the classroom exercises. Many oil and auto companies have their newly-hired engineers work alongside technicians in the laboratory or production facility for extended periods. This can be a valuable education for a new engineer.

Cooperation-Manufacturers, Industry and Government

Better cooperation is needed between the manufacturers and the oil industry: also among the oil companies. The European or American systems are not perfect but the cooperation between oil companies and the auto industry is effective. This cooperation, combined with joint participation in the American Petroleum Institute (API), Society of Automotive Engineers (SAE), American Society of Testing and Materials (ASTM) and their related committees such as CRC⁽¹⁾ have reduced costs in test development and standardized test procedures. Everyone has benefited. For example, by cooperating in test development, no one

company has been burdened by the time and expense of developing a test procedure and everyone benefits from improved quality products through standardized testing. Oil company representatives also cooperate in these developments through committee participation and membership and routine attendance at local and national meetings of technical organizations such as ASLE and SAE. These contacts with both OEM's and other oil companies provide a useful dialogue in providing information and ideas on common problems. This in no way affects competition which is healthy and vital to business.

(1) Coordinating Research Council, a non-profit, industry supported organization to develop and run cooperative testing of fuels and lubricants in the United States.

Cooperation is also needed between government and industry to accomplish numerous goals:

1. Reduce motor vehicle pollution especially in the larger cities and the inner city areas. This time table must be realistic yet effective. Your government has programs already underway regarding use of LPG in taxis and catalytic converters are scheduled. Pollution control methods can be effective, however, sometimes more drastic measures are needed. For example, Italy has banned motor vehicles from certain central city areas.
2. Government must not cripple the auto industry with unrealistic requirements as occurred in America, however certain things cannot come about without local or federal legislation:

- a) Noise levels are increasing and the indiscriminate use of horns is already a problem. Seoul residents have already "protested". Noise pollution can affect health and your increasing tourism business.

- b) Increasing vehicle density is resulting in traffic problems. Driver courtesy, or traffic manners, becomes important and can reduce accidents. Perhaps early training in the schools as done in America regarding "litter", as well as television would be a start.

How can these things be done in Korea? I don't fully understand

your country of your business philosophy so any solutions I might offer would be futile. I am convinced that secrecy is like a disease and damages more than it helps. In the area of automotive testing. It is not practical for Korea to establish testing using U.S. or European engines, fuels and reference oils- logistics and costs would be prohibitive. Full and open cooperation between the auto manufacturers and the oil companies could define the problems and establish the needs based on local conditions and equipment. Cooperative work could develop procedures using Korean built engines to solve problems and define oil quality. With time and results, correlations with other systems (CEC, ASTM) could be established such as the work being done by the Japanese. Currently it is not possible for a foreign company to become a member of CRC. however it might be possible to send working participants to gain experience in one of their field tests.

Lastly, I believe it is time for some of your engineers to stop studying European, American or Japanese test procedures, get away from their desks and into the laboratories or onto the roads, and run their own tests in Korea, with Korean fuels and lubricants in Korean built cars and trucks. Mistakes may be made but this is the way to gain experience and get results.

I hope these thoughts have been of interest to you and will stimulate some ideas, questions and comments. Thank you very much.
