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Description	シンポジウム

2B13 Hoechst in Japan—A Main Pillar in a Global
R&D Network

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Hoechst is a worldwide operating chemical company with 170,000 employees. The headquarter is located in Frankfurt-Hoechst/Germany. 4,500 of the 30,000 people employed in the headquarter work in excellently equipped research facilities. The research subjects cover almost the whole range of Hoechst's activities.

What is, therefore, the motivation for doing not only applied, but also basic research in Japan, a country with a different culture, but a rather similar industrial structure? Why do we have to create know how in Japan instead of just transferring it from our parent company's research center, as we did in the past? What are the fields and locations we are doing research in Japan? What are our experiences and expectations? Why are we doing basic research at all?

Under the topic "Hoechst in Japan - a Main Pillar in a Global Research and Development Network" I shall try to answer these questions.

It all started in the year 1863. As its first product Hoechst produced Fuchsin, a purple-red dyestuff. The strong

competition, however, pushed the young enterprise into a fatal situation. In the first business year the losses amounted to 50% of the sales. The upturn came with an own development: the "Green of the Empress." An evening dress worn by the French Empress made Hoechst's aldehyde green the height of fashion.

Further pioneer and epoch-making product and process developments followed, so that only 6 years after the disastrous start Hoechst could make a profit in 1869 amounting to 28% of the sales.

This short historical review shows that a creative research and development are the most important prerequisites for the success and long-term efficiency of an enterprise.

Nowadays seventy-seven percent of Hoechst's sales are realized abroad. This is made possible by a worldwide sales, production and research organization.

Research by Hoechst is presently carried out by 14,800 employees in 16 countries all over the world. Of the total research costs amounting to approximately 2,200 Oku Yen, 40% are accrued abroad.

The bridgeheads of Hoechst's international research strategy are the research and development facilities in the technologically leading countries with especially high

dynamism and a marked inventive genius. These are Europe, USA and Japan.

Why has Japan been selected as the third pillar of Hoechst's global research foundation?

There is a national and an international aspect.

Next to the USA, Japan is the second largest domestic market in the world. Its above-average economic growth is expected to continue.

Japan has come to occupy a leading position in several very promising sectors, because, as a country deficient in raw materials, it continues to pursue the objective of producing products with a high value-added component. It thus strives to strengthen its position in the fields of electronics, new materials and biotechnology, by further expanding basic research in these fast growing disciplines.

Japan has one of the best education systems in the world. Although often criticized, it is the backbone of Japan's economical success. It provides enterprises engaged in science and technology with young talents. By saying talents and not scientists, I want to indicate that the in-house training of researchers plays a more important role in Japan than in Germany.

Many of the internationally applied industrial standards are developed in Japan and an increasing number of globally relevant developments originate in Japan.

Japan's overseas investments are skyrocketing.

The role that Japanese companies play as large-scale customers for products of the chemical industry, will continue unabated for many years. Only those manufacturers who are supported by basic research that takes the latest developments into consideration and who can promptly translate scientific knowledge into products that are in demand, will be accepted as suppliers. Only such enterprises will have the opportunity to participate in future developments as cooperative partners of Japanese companies and as a member of state-sponsored projects.

Besides the importance of Japan as a big market, as a center of technology and besides its heavy engagement in the USA and Europe one has also to recognize its leading position in the Asia-Pacific rim, the area with the fastest growing economies.

Many foreign capitalized companies have understood the signs of the times and invest in R&D centers in Japan. Thus Japan seems to turn from the "Factory of the World" into the "Laboratory of the World."

The set up of research in a foreign country can be the

consequence or the prerequisite of the business activity.

What does this mean?

Traditionally the business activity starts with sales on import basis. Technical service, local production, and custom-made process and product developments follow. In Japan these application oriented developments must often conform to strict high level technical standards. In order to achieve this, basic research on scientific fundamentals is frequently required. This research, in turn, often leads to the discovery and development of new product groups for new application areas.

This reciprocal dynamism shows very clearly that the regional research facilities of an internationally operating corporation are playing an increasingly more important role in bridging the gap that frequently exists between basic and application-oriented research.

The just mentioned procedure may also be called the **COMMERCIAL APPROACH** of establishing research in a foreign country.

In the **SCIENTIFIC APPROACH** the basic research originates in the foreign country. It aims at getting the trust and confidence of potential customers in a first stage, and the realization of production and sales in a second stage.

Following both ways, Hoechst can look back to almost 25 years of scientific research in Japan

Currently 630 employees with an annual budget of 109 Oku Yen are researching and developing high value-added specialities for Hoechst in Japan.

The great attraction of the Japanese pharmaceutical market and the Japanese efforts to harmonize domestic registration guidelines with international ones encouraged Hoechst, beginning in 1966, to build up pharmaceutical research in Japan. Meanwhile 380 Japanese scientists conduct basic research as well as development activities in modern facilities in Kawagoe and Shirakawa. The latest, but not the last research project is a pilot plant for the production of recombinant proteins which is currently being constructed at an investment cost of 33 Oku Yen.

The Agricultural Research Center in Naruto carries out extensive analytical investigations and biological studies under laboratory, greenhouse and outdoor environments. Through the cooperation and division of assignments with stations in other parts of the world, test results are put on a broader basis and development periods are shortened significantly.

In the industrial field we find the whole spectrum of doing chemical, physical and technical research. Hoechst in Japan

hereby relies on the parent companies' long-term oriented basic research, generates own know-how, originates research in Japan-specific high-tech fields and sensibly reacts on the rapidly changing requirements of the Japanese market and customers.

Hyperpure silicon is one of the research subjects in Yokohama.

Research in physical fundamentals, process and application technology of high performance polymers and engineering plastics is carried out in Fuji.

Shizuoka is the center of research in pigments, surfactants and auxiliaries, reactive dyestuffs, silicones, plastic dispersions and photoresists. The emphasis lies on product development, process and application technology.

In Gifu R&D-results obtained in the field of polymerization and dispersion are converted into large scale production.

The full scale research for the worldwide activity in disperse dyestuffs is conducted in Kyushu.

In Kawagoe 37 Oku Yen have been invested in a research laboratory for advanced technology and electronic materials, such as new photoresists and ferroelectric liquid crystals for flat panel displays. With the inauguration of the modern facilities on October 16 another decisive step has been done

in strengthening basic research in the triangle Japan, USA, Germany.

Hoechst also participates in state-sponsored projects and closely cooperates with scientists at Japanese universities and other scientific institutions.

You see, as far as Hoechst is concerned, the internationalization of the Japanese science and technology has already started almost 25 years ago and it rapidly proceeds.

By integrating the endurance, the excellent motivation, cooperativeness and the perfectionism of Japanese researchers into the western conception of doing research, products are developed which are oriented towards worldwide acceptance on the one hand and towards the demanding Japanese market on the other.

For Hoechst the question is not any more whether or how to do research in Japan, but how to recruit sufficient open-minded, flexible and creative talents from Japanese universities.

Foreign capitalized companies who are not engaged in the consumer sector have to make much greater efforts in recruitment than highly reputed and, by their publicity and products, well-known Japanese enterprises. Currently it seems that not the company with the best product ideas, but with the

best recruitment ideas will win the race.

Foreign capitalized enterprises will be successful in recruiting Japanese scientists and in conducting research in Japan, only if they can offer attractive research subjects, excellent working conditions and an intensive in-house training, which sensibly pays attention to the trainee's mentality and educational background.

Doing research in Japan is expensive, but not doing research in Japan is even more expensive, because it deprives the business of its basis in Japan as well as in other parts of the world.

The international science society has greatly contributed to Japan's worldwide success. Japan seems to understand that , in return, its contribution to the global science society is now in demand.