Structural Change in the German Steel Industry*

By Helmut KEGEL**

Yamabe-no Akahito, one of Japan’s sages, describes in a poem the charm of the cherry blossom with these words:

“If the glow of the blossoms of the cherry tree on the hills were to last longer than a few days, we would not love it so fervently.”***

This poetic image holds true for phenomena like the short lifetime of the gentle revival of nature. In the raw reality of the steel industry, a somewhat longer-lived period of flowering, especially after the long and hard economic winter, would fill us, if not with love, at least with great relief. Regrettably, however, today we are still marked by the last deep setback in the steel market and the resulting stagnation, which is only receding slowly.

Its results have affected the individual industrial nations to varied extents.

In the Federal Republic of Germany, crude steel production at the end of 1975 was almost a third lower than in the previous year (Fig. I). In order to nevertheless maintain employment for our qualified personnel as long as possible, the number of employees has only been reduced by 12 000 long-time members—less than 3.5%. Our plants have attempted to offset deficient employment by increased short-time work. As a result, in November of 1975, the number of long-time employees doing short-time work passed the 30% mark.

Despite price increases, the profit picture, suffering under rising costs, is still oppressive. In the 3rd quarter of 1975, as compared with the parallel period of the previous year, they lay approximately 20% higher in ore and coke, approximately 10% higher in personnel and interest payments. On top of this comes the additional cost increase per product resulting from the fact that production facilities are running at less than full capacity.

During the first few months of this year, the employment situation improved slightly. Here, in the iron-producing industry sector, the number of short-time workers had decreased by about half, coming down to 15% (this figure is estimated on the basis of present conditions). A certain amount of easing can also be observed on the price front. Nevertheless, we are still far from the point where we can speak of a recovery in our industry, let alone of counterbalancing the losses we have suffered.

Employment and profit fluctuations have also hit us in the past, as shown by the development of crude steel production in the last 20 years in Fig. 2. These gave rise to continuous improvements in operational and organizational procedures in our companies—measures which did much to strengthen our capacity.

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*** Miscellaneous poem on Spring in Man'yōshū (Collection of Ten Thousand Leaves):

"Ashibikīno Yamasakura-bana Hinabare
Kaku Sakitaraba Ito Koimeyamo."

Yamabe-no Akahito (Man’yōshū, Vol. V111)

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Fig. 1. The German steel industry at the end of 1975 compared with 1974
to compete and which enabled the German steel industry to claim fourth position in world crude steel production.

The deep slump of 1975, throwing us back to the production levels of 1971, can be attributed partially to the economic, political, and social conditions which have developed in our country in the last few years, and partially certainly also to the worldwide recession. It has, however, also become clear that a lasting improvement in our present situation depends not only upon a general rise in the economy and individual operational rationalization measures, but, to a decisive degree, also upon a broader structural adaptation of our industry to the altered conditions.

We believe that the growth of the steel industry in our country will no longer proceed at the same rate as it has in the past. There are various reasons for this. Steel consumption seems to be slowly reaching a certain saturation point (Fig. 2). It is true that in many parts of the world it still lies under 50 kg per capita, and, in view of the rapid growth of world population, we expect a dynamic development in world steel consumption. On the other hand, however, we anticipate a drop in the share of German steel production in direct supplying of world steel, because the conditions for the manufacture of specific mass-produced steel products are expected to develop more favourably in various other parts of the earth.

Conceptions as to the long-term capacities we should strive for in crude and rolled steel production are not very definite; they also fluctuate to a certain extent with the general economic development of the world. At present, we expect a rise in the present crude steel capacity of barely 63 000 000 t to approximately 71 000 000 t in 1979/80. Of the expected crude steel production of approximately 68 000 000 t at the end of this decade, some 76% will fall to L.D. steel, some 13% to electric steel, and 11% to open-hearth steel. Rolled steel capacity is expected to lie at around 53 000 000 t.

The potentiality for further improvement in the competitive abilities of the concerns in iron and steel production can be derived from the cost structure, as determined from the average of all plants and main products (Fig. 3). According to this, approximately 68% of manufacturing costs are for raw materials and energy from outside sources, i.e., coke, oil, gas, and outside power, approximately 20% for personnel costs, and the remaining approximately 12% for capital expenditures. If one examines the individual types of costs according to their susceptibility to rationalization measures, then, as shown in the outer circular diagram in Fig. 3, of the sum total, only about a bare quarter of manufacturing costs can be influenced by internal rationalization measures—primarily through the more efficient use of materials and energy and by labour savings. The potentialities which exist here have been extensively utilized during the past 20 years in the form of procedural developments, increase in plant size, and the reorganization and coordination of production programs via the achievement of optimal lot sizes. These efforts have led to the fact that since 1954, along with a rise in plant production, in part due to the expansion of production units, improvement in conditions of operation, and extensive automation in the production process, labor productivity has also been particularly favourably affected (Fig. 4). In the individual production areas in pig iron and crude steel and rolled steel finished products, the per capita production pro worker and year up to 1974 had more than doubled.

In addition to these possible internal rationalization measures, further cost cutting could only be achieved through interrelations among the concerns

![Fig. 2. Development of crude steel production and steel consumption in the FR. Germany](image)

![Fig. 3. Cost structure and its capability of being influenced](image)
government after 1945, "excessive concentrations" were to be eliminated and connections between mining and iron works dissolved. To some extent, however, the old associations were permitted to continue to exist in a loose form, since even though the mining operations were made independent, subsidiaries remained with more or less strong participation in the sphere of interest of the iron works. The 25 new management companies founded after the war in the Ruhrgebiet, the center of steel production, were unorganically structured and did not permit optimal production methods. Although the founding of the European Coal and Steel Community ended interference on the part of the former conquering powers, concentration and cooperation operations were initially delayed by the careful administration of the tools which had been granted the HIGH COMMAND for the supervision of competition of the common markets for coal and steel. With a more generous approach, the German steel industry then began a change which led to the consolidation of large, productive units, in order to be able to compete internationally. In 1974, at the end of this evolution, the concentration of approximately 95% of crude steel production belonged to 10 legally independent enterprises, of which 4 largest alone accounted for some 70% of the crude steel production of the Federal Republic of Germany. (Fig. 5)

All involved parties understand that this type of restructuring of the German steel industry with maintenance of the legal independence of individual companies and guarantee of a competitively-oriented economy must be further continued in the future.

However, the important role that domestic coal and integrated industrial set-ups played before the war, as far as the competitive ability of the German steel industry is concerned, cannot be re-won. True, the German steel industry, as a major customer, had become an indispensable client for the coal mining industry and production, which, in comparison to the considerably cheaper sources of our competitors, meant an existence-threatening competitive disadvantage for the German iron works. Temporary relief was achieved through measures on the part of the HIGH COMMAND and the Federal Government, by which a price adjustment for coal in the community was to be put into effect to mitigate the disadvantages. In 1969, the integration of steel plants with pit coal mining was completely dissolved. With the founding of an independent organization, Ruhrkohle A.G., more rational management in coal mining and decisively lower costs were to be achieved via a uniform total concept. The steel companies became stockholders, and delivery conditions were regulated by contract. The expectations of the steel industry, that they would be able to procure coking coal at competitive prices in line with the market, from their own country, were not, however fulfilled in the course of further development. Coke and coking coal are almost exclusively obtained by the German industry from German mining companies, that is, from Ruhrkohle A.G. or the Saarbergwerke.
Because of legislation regarding customs quotas for solid fuels to protect domestic sources of energy, no alternatives exist. A branch of industry which, for economic or structural reasons, is forced to pay more than its competitors for a significant factor of production, ends up in a situation which, sooner or later, makes a change in conditions imperative.

Here the effect from the raw materials side on the ability of the German steel industry to compete is still dependent upon procuring ore at reasonable prices. Since some 85% of the ores are obtained from overseas, the drop in the transport cost load, as is possible with modern large ships, is extremely significant. German plants located inland cannot, however, take advantage of this directly, since only the natural conditions in the Rhine delta, particularly near Rotterdam, offer the prerequisites for the construction of deep-water harbors and loading facilities which meet the capacities of modern ship units of 100,000 dwt and more. Approximately 65% of German ore imports come into ports on the Dutch North Sea Coast (5% into Belgian ports); some 30% are imported at German ports, where ships only up to a maximum of 80,000 dwt can dock. These factors, which have been further influenced by the development of modern pushing boat units for Rhine navigation, have had an effect on the structure of the German steel industry. Unlike the German plants which can only be reached via canals or rails, plants on the Rhine and Ruhr are able to procure their ore directly from the ports on the Dutch coast via ship units able to transport up to 11,000 t over a distance of 250 km from the coast in somewhat more than one day. This geographical advantage has contributed to the fact that today almost half of all German pig iron and crude steel production is concentrated in steel plants on the Rhine and Ruhr.

Considerations for further improvement in competitiveness, especially for plants which are unable to take geographical advantage of the Rhine, amounted to the influencing of location-connected costs through company policy measures. This brought about a new phase in the restructuring of the German steel industry, by which, through cooperation and mergers with foreign companies, the boundaries of local spheres of operation in iron and steel production were crossed. Here, the buying and selling advantages of various locations were to be combined. Such considerations led, for example, to the structural transformation of the Hoesch A.G. and Koninklijke Nederlandse Hoogovens en Staalfabrieken into the ESTEL Group. In addition, many German steel companies are presently investigating possibilities for steel production via acquisitions or participations in other European countries and overseas, in order to assure the long-term procurement of raw materials and energy. However, no serious structural changes in our companies are to be expected in the next few years, based on the present state of considerations of these activities. In addition to concentration and cooperation, which have principally influenced competitiveness in the area of crude steel production, in the past few years, expansion of manufacturing programs beyond the classical rolling-mill products and specialization in specific product groups have brought about a further change in the structure of our plants.

German companies have not, however, followed the tendency toward "diversification", which has nearly become a cliché, to the extent that many large corporations in other western countries have. The restructuring phase, which is at the present time not yet completed, and which is to supplement various post-war measures, is to a far greater extent characterized by expansion in the steel-related processing fields. Without relinquishing the traditional charac-
ter as steel producer, market position, know-how, staff qualifications, and available research potential will be used in order, through expansion in production programs to include higher quality goods, to influence progress in the processing of the steel product and to open it to new applications. In the present recession in the steel market, it has been shown that this form of structural adaptation of our companies to altered conditions, when they are purposefully and systematically realized, have contributed to an improvement in the total results of the company and to the offsetting of economic fluctuations in specific consumer areas for steel products.

The effects of such well-timed adaptations of the production program and successful expansion into new areas can be shown very clearly by the example of the structural changes of Mannesmann A.G., among others. In the framework of a division of labor with August Thyssen-Hütte A.G., rolled steel manufacture was first discontinued, in exchange for pipe production, and, in the further course of company policy activities, mechanical and planned engineering was extensively expanded as a second production area.

We are convinced that no company can avoid the necessity of altering its traditional structure if it wishes to be able to compete on a world-wide basis in the future and, despite the many unfavourable changes for the German steel industry in the buying and selling markets, to claim an adequate share of the supplying of direct and indirect steel consumption in the world. Perhaps the experiences in the past few years as to the proneness to crisis of many traditional forms and products of our industry have particularly sharpened our senses to the possible and the attainable. The necessity of constant structural changes and adaptation to altered conditions has always shown the German steel industry new paths and triggered new impulses, via research and development, whereby we have been able to retain our ability to compete through company policy measures.

May I express this realization in closing—after the words of Yamabe-no Akahito at the outset—through another ancient Japanese saying:

"After three years, even a misfortune may prove to be useful."

Let us hope that this will hold true for all of us and that the three years will soon pass.