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DOCUMENTS "COM"

COM (85) 392

Vol. 1985/0151

Historical Archives of the European Commission

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COMMISSION OF THE EUROPEAN COMMUNITIES

COM(85) 392 final.

Brussels, 17 July 1985

MEDIUM-TERM GUIDELINES FOR TECHNICAL STEEL RESEARCH

(1986 - 1990)

(under Article 55 of the ECSC Treaty)

MEDIUM-TERM GUIDELINES FOR TECHNICAL STEEL RESEARCH
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PREAMBLE

All enterprises, research institutes and individual persons wishing to engage in research within the meaning of Article 55 of the ECSC Treaty may make application to the Commission of the European Communities for the grant of financial assistance.

Such applications must relate to the fields of science and technology outlined below in these medium-term guidelines. Upon receipt, applications will undergo selection by the Commission which will bear in mind the need to ensure that financial expenditure is concentrated upon research projects which best satisfy the criteria of this medium-term programme.

The procedures to be followed in applying for financial support, the terms and conditions of aid as well as the obligations relating to the dissemination of the results of the research are given in a communication published in the Official Journal of the European Communities No. C139 of 12 November 1974.

Application should be submitted before 1 September of each year in order to be effective in the following year.

I. BACKGROUND

Article 55 of the Treaty concerning the establishment of the European Coal and Steel Community specifies that the Commission of the European Communities shall promote technical and economic research relating in particular to production and increased use of steel and to occupational safety in the steel industry.

Guidelines for steel research are laid down periodically by the Commission with the aims of:

- concentrating effort on the priority technological needs of the steel industry and
- facilitating the selection of projects for financial support from the Commission of the European Communities

The most recent guidelines covered the period 1981-85 .

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The total amount of financial aid granted for these collaborative programmes since their commencement in 1955 is about 271 million European units of account which represents about 60% of the total cost of the research undertaken.

From the outset, the aim has been to encourage research and development effort to meet the common technological requirements of the steel industry with the overall objective of improving its international competitiveness. As a consequence, the policy for steel research forms an integral part of the Commission's strategy for the steel sector which is periodically defined in the General Objectives Steel₂.

II. OBJECTIVES

The two major objectives for collaborative research on steel are:

- the achievement of improved cost-competitiveness in the production and processing of steel along with the enhancement and greater uniformity of quality in its various aspects
- the stimulation of steel consumption, in domestic and export markets by the development of improved steel grades and new uses for products technologically and economically more advanced than those of our competitors.

Some 76% of the Community's steel is produced by blast furnace-oxygen converter route while the remaining 24% comes from the steel scrap-electric arc furnace. Over the medium term, there will be no radical change to this situation so it is understandable that much of the process-oriented research will be directed at achieving relevant incremental improvements to these technologies. In parallel with this effort, however, there will remain the need for some effort to be directed at developing radically new process routes.

While recognising the significance of process-oriented research, however, the present situation in the industry is calling for a major shift in emphasis to ensure that R&D becomes more market-driven. It is vital that product-oriented research is effective in defending traditional markets as well as in extending the areas of application and uses for steel. Issues of major concern will include substitution by other materials, better corrosion resistance steels, more consistent quality, increasingly stringent consumer specifications, lighter weight higher strength steels and the role of research as a stimulus in establishing new and up-dating existing codes and standards by the appropriate bodies.

It is also necessary to develop detailed scientific and technical information for users on a very practical basis in order to promote steel within and outside the Community. This effort is essential both to meeting users' requirements and to provide a real incentive for innovation.

In the achievement of these goals, ECSC steel research has a major contribution to make to the industry's common research objectives with emphasis being placed on short-to-medium term needs, as well as, on selected longer-term basic effort of practical relevance.

Thus, the programme will remain an important source of scientific and technical information which may be applied and exploited by individual companies in pursuit of their more specific and more commercial objectives as well as a major stimulus to collaboration in research within the steel sector.

III. CRITERIA

The criteria to be satisfied in the selection of applications for financial support by the ECSC are as follows:

- the objectives of the framework programme for Community research, and the general objectives for steel defined periodically by the Commission under Article 46 of the ECSC Treaty
- the interest of the research for the steel industry (producers and consumers) of the Community
- the value of the research in relation to the main objectives of the programme (outlined above)
- the advantages (added value) offered by undertaking the research at a Community level from the point of view of efficiency and financing or from the scientific and technical point of view compared with effort at an individual level.

IV. ORIENTATION OF COLLABORATIVE RESEARCH

In the application of these selection criteria and taking into account the two major objectives mentioned in section II regarding improved cost-competitiveness in the production and processing of steel and the stimulation of steel consumption, the priorities for collaborative research over the period 1986-1990, are:

A) For production and processing of steel

For the industry's energy requirements, coal will remain the primary source and further research will be directed at:

- energy saving and substitution
- direct use of coal both in existing and in new production technologies

Regarding iron ore, the trend to use high quality materials will continue but procedures will be needed in the future to permit the blast furnace to operate with lower quantities of them.

As increasing quantities of nuclear energy become available in the Community, attention will be focussed on:

- production technologies combining coal and electricity
- development and application of plasma metallurgy.

In steelmaking, continuous casting will remain a key area for research to include :

- improving casting machine performance (including product quality) and increasing casting speed
- extending the range of steel grades that can be cast continuously
- developing simpler and less costly machines with the capacity of producing thin sections.

Efforts to increase yield in steelmaking have implications for scrap availability thus raising problems connected with :

- scrap quality and up-grading techniques
- residual elements
- utilisation of alternative materials e.g. pre-reduced iron

In rolling, priority will be given to:

- the integration of the continuous casting machine with the rolling mill ("hot connection")
- improved control of dimensional tolerances
- greater uniformity of quality of rolling mill products

Finally, a major contribution to technological innovation in the industry will stem from the wider application of computer process control systems.

B) For stimulation of steel consumption

In order to promote the qualities of steel, which because of its properties is still an essential material in the development of modern technologies, and to thwart attempts to replace it by other materials (aluminium, plastics, etc.), the long-term cost-effectiveness of which still has to be demonstrated by an overall economic evaluation (cost of raw materials, processing, fabricating, recycling, etc.) it is essential to continue research on the specific parameters of steel, in particular:

- basic metallurgical research
- the development of grades that can withstand corrosive environments
- the design and development of clad steel
- the design of alloys meeting specific requirements
- the regularity of product characteristics and tolerances
- the improvement of the quality and reliability of measurements
- the preparation and distribution of "practical guides for users".

The fields of application to be given priority are:

- means of transport
- structural steelwork and infrastructure in general
- energy
- packaging
- tooling and engineering.

As regards the use of steel, existing contacts with fabricators and consumers must be intensified, in particular to ensure better transmission of information and wider availability of research results.

In brief efforts must be made to obtain:

- increased knowledge of the properties of steels
- greater competitiveness of steels and components
- better quality and reliability of products
- more advanced standardization and harmonization of recommendations and codes

Against the current general and more particularly economic background, the following must be taken into account:

- the cost of energy
- environmental problems
- savings in alloying elements.

As far as the necessary funds are concerned, it should be realized that support for research is a vital factor for the Community steel industry. By way of comparison, the Japanese steel industry spends approximately 1.2 to 1.5% of its annual sales revenue on research and development, about twice as much as Europe.

That is why a forceful R&D policy in the steel industry, bearing in mind all the random fluctuations in the current economic situation, requires the Commission to grant to steel research and development an amount of aid that will progressively be increased in real terms.

(1) O.J. No. C99/3, 2 May 1981

(2) The most recent version is "General Objectives Steel 1985"
(Com(83)239)

(3) O.J. No. C208/3, 4 August 1983