
SCIENCE NEWS

THE FOURTH CISFFEL COLLOQUIUM

The fourth International Colloquium on Electron Beam and Laser Welding Techniques (fourth CISFFEL Colloquium) was held in Cannes, France, during September 26–30, 1988. This colloquium was useful for the scientific and industrial community involved in research, development and application of high-energy beam sources.

The fourth CISFFEL Colloquium provided an opportunity for exchanges among 350 participants from 20 countries, including the Western countries as well as Eastern Europe and the Far East. These figures illustrate the international success of the colloquium, which is one of the few events, perhaps the only one, to consider electron beam and laser techniques as complementary technologies.

Over 100 papers were presented, more than half of them by scientists or representatives of industry from countries outside France. The number of papers presented for each technique demonstrated how much the laser beam technique has closed the gap with the electron beam technique and gained acceptance for other specific applications such as cutting and certain types of surface treatment.

The papers were divided into seven principal categories: characterization of the beams; interaction between beams and materials; welding; surface treatment; laser cutting; electron beam technology, and applications.

Each topic was addressed in reports presenting both development and application results. A wide variety of materials was covered, including steels as well as aluminium, titanium and zirconium alloys, under various conditions.

The electron beam technique has now reached industrial maturity and its capabilities are therefore

relatively well known. It is commonly used for a broad range of industrial applications, e.g. in the automobile, aerospace and nuclear industries, and for the assembly of common materials. From this standpoint, its use in industry is levelling off to some extent.

The laser beam technique is experiencing considerable growth. Its flexibility, owing to beam transmission via mirror reflection (CO₂ laser) or optical fibres (YAG laser), together with the use of robots, is a key factor contributing to its development and industrial deployment.

While each technique has specific applications in certain areas, e.g. electron beam techniques for welding extremely thick components and laser techniques for cutting, the technologies provide comparable results in other areas. In such cases, a technique is selected on the basis of economic factors and criteria specific to each application, without reference to any general rule.

Accordingly, it should be emphasized that the quality and interesting nature of the papers on industrial applications clearly illustrate the maturity of these technologies for mass production.

For more detailed information, particularly concerning applications, associated materials and parameters, requests for the collection of papers presented at the fourth CISFFEL Colloquium may be addressed to the CEA Technical Secretariat, CENS/DTECH-STA, 91191, GIF-sur-YVETTE Cedex, FRANCE. (Telephone 69.08.58.25, Telex ENER X 604641 F STA+.)

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