

Terminal Evaluation

Latin America and the Caribbean

1. Outline of the Project

Country:

Argentine Republic

Project title:

Plasma Processing for Industrial Materials

Issue/Sector:

Standardization, Electrical/Electronics, Industrial Minerals

Cooperation scheme:

Third-country Training Program

Division in charge:

Central America and the Caribbean Division, Regional Department III (Latin America and the Caribbean)

Total cost:

34 Million Yen

Period of Cooperation

Fiscal year 1998 - 2002

Partner Country's Implementing Organization:

Comision Nacional de Energia Atomica (CNEA)

Supporting Organization in Japan:

Faculty of Engineering, Nagoya University

Related Cooperation:

Dispatch of Individual Experts

Expert Team Dispatch; "Plasma Processing of Industrials Materials"

1-1 Background of the Project

Argentina, having developed as a nation of agriculture and livestock, has tried to develop its industries to a higher level of sophistication and diversity. In the course of its effort, Argentina paid special attention to plasma processing because it was utilized for research and development in the fields of telecommunications and nuclear fusion in particular, and because it was recently found that plasma processing is effective for the coating metalworking machines.

With the need to introduce plasma processing techniques to the machine tool industry, one of the major industries of Argentina, pronounced, the Government of Argentina requested the Government of Japan to provide technical cooperation to transfer the techniques of plasma production and control and, based on those techniques, to establish plasma processing techniques and disseminate the techniques to the metalworking industry. In response, the Government of Japan dispatched experts from 1991 and a team of experts for three years from 1995.

During the above cooperation periods, Argentine Atomic Energy Commission (CNEA), the implementing organization, was very cooperative. In the last year of the above-mentioned cooperation, a seminar was conducted and the management and researchers of other research institutes (including four private institutes) not only in Argentina but also from Brazil, Colombia, Peru, Mexico and Venezuela showed great interest in the seminar, and the cooperation was terminated with success.

Through the seminar, it was confirmed that there was the need to learn plasma processing techniques both in Argentina and in its surrounding countries, and the techniques could be applied to a variety of industries. Furthermore, the technology could be applied to improve the global environment, which meant the technology was very promising. Under these circumstances, the Government of Argentina requested to the Government of Japan to implement a Third-country Training Program in Argentina to transfer the technology to surrounding countries.

1-2 Project Overview

JICA, together with CNEA as the implementing organization, implemented the Training to the participants from countries in Central and South America who are engaged in the materials plasma processing and transferred technology in the field of plasma processing.

(1) Overall Goal

Application and dissemination of the knowledge and skills acquired by grant holders in their own country.

(2) Project Purpose

Participants from guest countries acquire knowledge and skills related to plasma processing.

(3) Outputs

1) Participants learn the techniques and skills on surface modification (improving materials surface intensity, strength, scuffing characteristics and color to have the characteristics which better meet the purpose of the products).

2) Participants acquire the techniques and skills of thin film characterization (evaluating materials including molecular structure characteristics, materials components and the reasons which define material characteristics).

(4) Inputs

Japanese side:

Short-term Experts	4	Local Cost	34 Million Yen
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Argentine side:

Counterparts	3
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Land and Facilities

Local Cost	US\$ 126,160 (17 Million Yen)
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(5) Participating Countries

Cuba, Chile, Venezuela, Peru, Colombia, Uruguay, Mexico, Brazil and Argentina.

2. Evaluation Team

Members of Evaluation Team	JICA Argentine Office (Consigned to the local consultant: Amado Cabo)
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Period of Evaluation	21 December 2001 ? 15 March 2002	Type of Evaluation: Terminal Evaluation by Overseas Offices
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3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

There were differences of the level of dissemination of plasma processing techniques among the participating countries. Although there are gaps in utilization and dissemination among participating countries, the attained knowledge in the Training was utilized at the organizations participants worked for. In Addition to Argentina, Brazil, Colombia and Mexico, other countries have come to recognize the needs to modernize and to add value in the production processes in the techniques were applied, which indicates the appropriateness of the contents of the Training.

(2) Effectiveness

According to the final examination at the end of each course, and the participants' self-evaluation, the participants generally well understood the materials presented in the course. With regard to the ex-participants interviewed in Mexico and Brazil, the importance of the course could be assessed not only by the ex-participants but also acknowledged by the senior management of the respective organizations. Therefore, it is considered that the purpose of the training has been accomplished.

(3) Efficiency

The management and administration of the Training were appropriate. As for the training contents of the lectures, practices and study tours, some participants requested to make the practices more practical, but they were appropriate and fulfilling as a whole. Participants raised no points to be improved in terms of the lectures, including JICA experts, and their expertise and teaching capability were appropriate. Furthermore, the training facilities and equipment were also judged to be at the appropriate level. The participants were selected in an appropriate way, and most of the participants answered that they attained the expected results from the Training.

(4) Impact

In countries endowed with a relatively greater development in the area of plasma-processed materials (i.e., Brazil, Colombia and Mexico), participants use and disseminate the knowledge and skills acquired during the Training in their work. In some participating countries, they face insufficiencies in equipment and facilities necessary for the dissemination of the attained knowledge and techniques acquired in the Training; however, the participants in those countries endeavor to disseminate the techniques to the production sector in their respective countries at any rate.

On the other hand, an active network among some of the ex-participants has been established.

(5) Sustainability

The implementing organization, CNEA has maintained enough equipment and facilities necessary for the training course implemented so far. However, to add the newly-proposed items by the ex-participants to the training, new equipment and facilities are necessary. With the senior staff members of CNEA, CNEA has excellent lecturers; it is possible for CNEA to manage the Training by itself.

3-2 Factors that promoted realization of effects

(1) Factors concerning Planning

N/A.

(2) Factors concerning the Implementation Process

N/A.

3-3 Factors that impeded realization of effects

(1) Factors concerning Planning

N/A.

(2) Factors concerning the Implementation Process

As the levels of plasma-processing techniques differed among the participating countries, after the termination of the Training, the dissemination of the results of the Training vary widely by country.

3-4 Conclusion

- 1) The ex-participants indicated that there was nothing that should be improved about the course, and that the expertise and teaching capacity of the lecturers were appropriate.
- 2) Ex-participants from Brazil and Mexico, who have a relatively advanced knowledge of plasma processing, particularly highly evaluated the fact that the acquired knowledge and techniques were fully utilized at the organizations they worked for.

Therefore, the Project Purpose, "Participants from guest countries acquire knowledge and skills related to plasma processing" has been accomplished.

3-5 Recommendations

Looking at the financial aspect, it is difficult for CNEA to continue the training by itself, so it is necessary to implement a second phase of the Training with the support of JICA. This is because of the importance of utilizing the excellent personnel fostered by the Training through the equipment donation and technology transfer with the support of high-quality lecturers and dispatch of an Expert Team to meet the strong needs within the regions.

3-6 Lessons Learned

N/A.

3-7 Follow-up Situation

Based on the above-mentioned recommendation, the cooperation period will be extended five years from FY 2003.