

# A plan for the growth of Welding Research, Education and Training activities in India

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## 1. Introduction

In the past National Welding Seminars, it was clearly evident that there was greater awareness in the country of the need for having trained personnel at various levels in the field. Similar thoughts have also been reflected in the deliberations of several other seminars and welding courses conducted by the various branches of the Indian Institute of Welding. Further, great emphasis was also laid on the need for developing research activities in the field in the country, with suggestions like establishing Welding Research Institute, Welding Research Council, etc. As a matter of fact, this has also been emphasised by the National Productivity Council Study Team in 1963 itself.<sup>1</sup> Summarising, there has been a general consensus that long-standing efforts must be made in increasing the activities of the various facets of welding. In this context, the author stresses upon the need for a very systematic approach so that a firmer foundation could be laid in this direction. The present paper is a product of some of the thoughts nurtured by the author on these aspects.

## 2. Preparatory Steps

In developing the various activities in the field of welding, it is essential that there has to be consolidation of information on already existing activities.

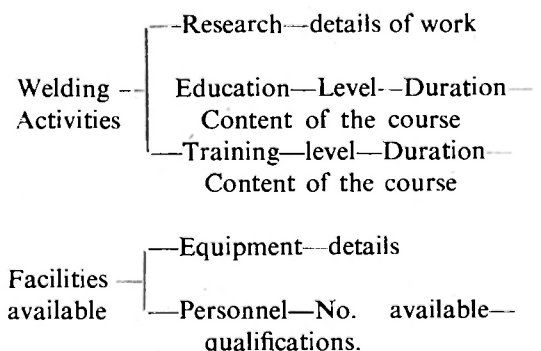
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This has been felt all the more after hearing some of the deliberations in the various seminars. It was realised that there was a large information gap of the activities that have been going on already with regard to welding and technical institutions in the country.

Further, for sound planning, it is also essential to know the future needs of the industry, say in about ten years. This consolidation of information with regard to existing activities and future needs can be carried out by the Indian Institute of Welding, by sending out suitable proformas to all the concerned industries and technical institutions. The proforma may seek the information as detailed below :

1. Proforma for consolidation of information with regard to existing welding research, education and training activities :

Name of the organisation :



2. Proforma for consolidation of information with regard to present and future (after 10 years) needs of the welding industry :

I. Name of the organisation :

II. Requirements	Present	Future
1. Relevant research areas	—	—
2. Welding personnel—		
i. Specialists/ Engineers	—	—
ii. Supervisory staff like technician, Foreman, etc.		
iii. Welders—Gradewise	—	—

### 3. Proposals

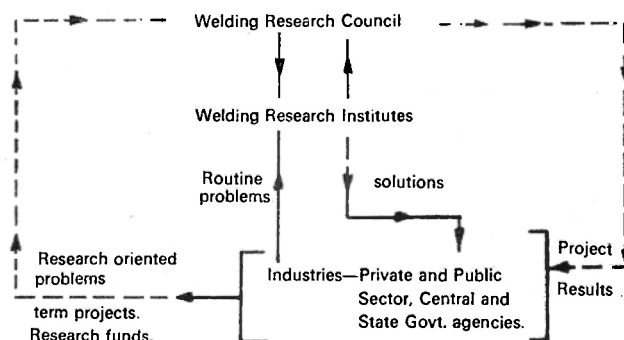
After having consolidated these two informations, a 3-Tier system of welding research, education and training has been suggested to meet the demands of the welding industry at various levels in the country.

- I. Tier: (i) Fundamental research activities that have immediate or future relevance to industries, long term projects, etc.
- (ii) Post graduate programmes in welding technology
- (iii) Introduction of some welding knowledge at the under graduate level.
- (iv) Periodical refresher courses, seminars to update the knowledge.

These activities could be entrusted to a few selected universities and Technical Institutions, after ensuring the requisite staff and equipment positions. In this direction, it may be relevant to mention here, that the above activities have been in full swing at the Indian Institute of Technology, Madras<sup>2</sup>.

- II. Tier: (i) Industrial oriented research, short term projects from industries, solutions to periodical problems from the Industries, etc.
- (ii) Training programmes at technician and supervisory level.
- (iii) Periodical short term courses.

These tasks could be entrusted to the Welding Research Institutes that are to be established in the country. For a vast country like ours, with its varied industrial growth all round the country, it can be safely estimated that we would require about six to eight of these Research Institutes. These could be located in the industrially developed areas in the country, so that they could be of immediate help to the industries. Further, each of these Institutes could concentrate on problems associated either with a particular type of industry—for example, boiler, ship building, etc. or with a particular type of welding problem—for example, process development, fatigue behaviour, fracture toughness, weldability, etc. This will help to develop an in-depth information on all the fronts of the welding problems within the country. These institutes could be generally guided by the proposed Welding Research Council, so that all the welding research activities, including the ones to be conducted at universities and technical institutes could be centrally funded. In turn, all the private and public sector industries, central and state government agencies could give all the necessary funding to this Welding Research Council. A broad outline of the working of the Welding Research Council and welding research institutes is given below :



Here, the existing Welding Research Institute at Trichy, can easily fit in to be one of such Institutes in the scheme proposed.

- III. Tier: (i) Training and testing of welders for general and specific type of work— Certification similar to ITI.
- (ii) Short term welders, training programmes.

This could be entrusted to Welding Training Institutes (similar to Advanced Training Institutes) which are to be established in the Country. It is suggested that these are better established in industrially under-developed areas in the country. This can also generate certain amount of self employment amongst the rural youth.

**4. Concluding remarks**

It is thus seen that the various requirements of the welding industry with regard to welding research personnel can be met in the proposed scheme.

This is condensed and shown in the table below.

Requirements of the industry	How these are met in the present proposal
1. Welding research on immediate and future problems	I. Tier—Universities and Technical Institutes II. Tier—Welding Research Institutes.
2. Welding specialists/Engineers	I. Tier—Universities and Technical Institutes
3. Technicians and Supervisors	II. Tier—Welding Research Institutes

4. Welders training and testing, general and specialised
- III. Tier—Welding Training Institutes.

A consolidated scheme of this kind, emphasising the all round development of various facts of welding technology, has already been proved to be of great success in France<sup>3</sup>.

**Reference**

1. Report of the National Productivity Council study team on Welding Industry, 1963.
2. 'The Needs for Welding Education in India'—D. R. Gopala Krishna Achar, National Welding Seminar Proceedings, S-3, Article 5, p. 1-4, Feb. 1977.
3. "Welding, a subject for teaching and a means of teaching"—H. Granjon, 1977, Portevin Lecture, International Institute of Welding.