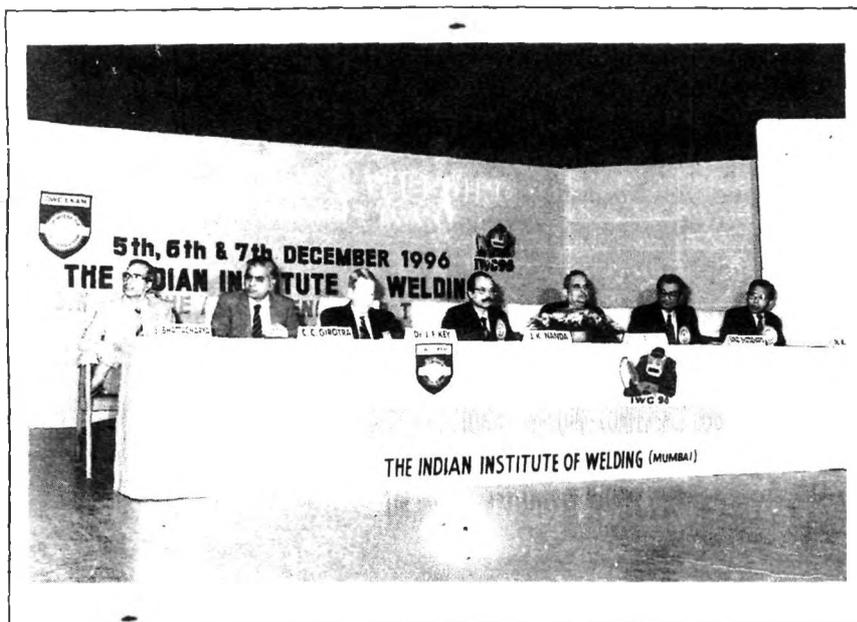


**SUMMING UP OF PROCEEDINGS -
INTERNATIONAL WELDING CONFERENCE '96
Mumbai**

5th to 7th December '96

by

D. S. HONAVAR (on 7th December, 1996)



At the International Welding Conference
(L—R) M/s. S. Bhattacharya, C. C. Girotra, Dr. J. F. Key, J. K. Nanda,
Prof. Rama Rao, Sanat Bhattacharya and N. K. Sarkar

Fellow Delegates,

I am thankful to the organising committee for the opportunity given to me to do the summing-up of the proceedings. We were honoured by the presence of Mr. S. V. Nadkarni, the veteran in welding, in the inaugural session. It was nice of the WELDING GURU to have spent some time in our midst. And now we have another veteran Mr. P. S. Viswanath presiding over this session.

In his inaugural address Prof. Rama Rao recalled his reservations and a bias against welding as part of engineering education when he was a teacher at BHU. He need not have told us, but such honesty and frankness are the hallmarks of great personalities and in a way, that itself was a lesson from a great teacher and a great scientist-metallurgist to the delegates. He went on to express his wish to go back to teaching so as to make amends for his biased attitude towards

welding in the earlier part of career. That was a memorable sentence which touched our hearts and enhanced our respect for Padmashree Rama Rao. Prof. Rama Rao was certainly not alone in the biased attitude towards welding because, if we recall, at that point of time, rivetting as a process of joining had been accepted as a time-proved and dependable process. Oxy-acetylene welding was limited to relatively thinner sections, and arc welding was something totally different. A design engineer would doubt if the welded joint would have the desired strength and ductility, particularly for dynamic loads. A metallurgist would doubt the compatibility of weld metal with base metal after the intense heat of the arc and the rapid cooling of weld joint resulting in high contractional stresses.

The steel shortage at the time when India embarked on planned industrial growth, made people realise the need for steel economy. This in turn called for increasing use of welding to achieve economy in steel consumption to the extent of about

15%. And then the ISI (now BIS) took up formulation of national standards on welding. And then there was no looking back.

The Keynote address by Mr. Sanat Bhattacharya was a fine presentation on the current status of the welding industry in India. He highlighted the relatively low percentage of automatic welding in India at a time when the industrialised/advanced countries are increasing the share of automatic welding processes from 55-60% to the higher level of 75-80%.

Dr. Parmar, in his typical and inimitable style of a seasoned professor, delivered the Keith Hartley Memorial Lecture, and gave us a fairly complete picture of the past, present and future of welding, starting with the invention of arc welding in 1881 by Slavianoff in Russia. He gave full and uninhibited expression to his unhappiness at the slow pace of progress in India in welding technology. Perhaps he wanted to arouse in us a degree of resentment on the technology gap and also determination to move fast to catch up with developed countries. He illustrated in a very lucid manner the latest advancement in welding processes and innovations, repair of satellites in space which was truly awe-inspiring. But then finally we have to come back to earth and take stock of what we, in India, have achieved in the last 20 years, i.e. after 1978 around which time the need for greater use of automatic welding pro-

cesses - SAW, MIG and MAG came to be appreciated and definite steps taken by many existing industries to change over to automatic process. Similarly, many new industries were set up after 1980 with emphasis on employment of automatic welding process. Moreover, use of robots in the new automobile units, mostly with Japanese collaboration, accelerated the pace of progress. Dr. Key, President AWS, honoured us by his presence and his paper on R&D activities in the U.S.A. proved highly informative. We in India can derive some guidance from the set-up, although the pattern of working, the agencies involved at governmental levels and universities and the research laboratories, and paucity of funds for R&D efforts, make the task difficult. Moreover, we do not as yet have a central agency or council to monitor R&D in welding to :

- a. decide on short term and long term needs;
- b. to place the priorities in the right order;
- c. to prevent duplication of efforts so as to optimise use of available funds.

The papers presented by BARC, IGCAR, WRI, IIT'S, DMRL are indicative of the high standard of research and development work in welding metallurgy, in special processes with emphasis on adaptation and/or modification, distortion control, residual stresses. Similarly papers by con-

sumable and equipment manufacturers made us aware of the steady progress. Papers by fabricators made us feel happy that a number of sophisticated welded jobs are being handled successfully, eg. strip cladding of monel by electroslag welding, gas pressure welding of high C-Mn steel rail. In assessing our progress in welding technology we tend to look at only machines and materials. But we should also look at the fast developing human resources in the form of young engineers and authors, which is a favourable trend.

Papers by overseas delegates give an insight into the technological developments in advanced countries in the areas of processes, equipment, consumables, testing and inspection techniques. Moreover, such a judicious mixture of technical papers from within the country and from developed countries enables us to make a comparison and to evaluate India's status as on date and then to assess the technological gaps in each area of the vast field. Having made such a realistic assessment, we have to apply our minds to evolve a pattern of development on short term basis for meeting urgent needs and on long term basis for the overall advancement in the next, say, 10 or 20 years. Inevitably, the technology gap may always remain because we started late and we have to face a wide range of problems. Therefore we need not worry unduly about the

gap as otherwise we may keep looking at the gap and find it widening and then worry even more about the bigger gap in terms of years. The short term measures are linked with import of technology and this is facilitated by the liberalised import policy and availability of foreign exchange. The long term measures have to be two-fold :

1. Making systematic efforts on our own to develop in the next 5, 10, 15 and 20 years.
2. Utilising the imported technology to best advantage, with adaptation and modification and innovation to derive long term benefits.

Let us remember how Japan developed on the industrial front by importing the latest technology from wherever it was available and at a cost which may have appeared to be high at the particular point of time. Having done so, the Japanese industry went in to action to make optimum use of the know-how, with adaptation and or modification, with emphasis on quality and productivity together with motivation to the employee workforce, so as to achieve overall economy to permit massive exports. As we all know, many large foreign companies are looking upon India as a dependable source to fulfill their export needs. In this process, as we can see in the automobile industry, ancillary units are also set up, leading to growth and employment opportunities.

So many fine presentations by young and not so young authors. Each session Chairman has commented on papers of the respective session. Hence it is neither necessary nor proper for me to add to it. However, commenting in a general way, papers on Education/Training, Health and Safety were indeed highly informative and enlightening. Dr. Achar, veteran professor, gave us a glimpse of what needs to be done for the 21st Century. Mr. Surendra Nath's paper on HRD contains useful proposals for making education, training and refresher courses a regular part of HRD programme. Dr. Panjwani's paper on the risk factors in different welding processes and in even the related operation of grinding added a wealth of useful information to whatever we know. In a way, anyone listening to his lecture would be aroused into action to implement in a planned manner the safety precautions for the welders'/operators' health and well-being so that, as years go by, the welder does not suffer permanent disability and does not tend to blame the very profession which is close to the heart of all of us and commands respect for the artist that every good welder is.

The exhibition can be looked upon as an outstanding success. In fact the response from not only delegates but the welding and fabrication fraternity in general has been overwhelming. I may be

right in stating that the interest shown and the number of visitors have exceeded the wildest expectations of the organising committee. My compliments to all the members, especially Mr. Girotra for the fine arrangements made in a somewhat limited space. This success holds out a lesson for the next hosting branch, be bold and confident with high expectations, but ensure that the results surpass the expectations. After all, we are today functioning in a result-oriented economy.

STEEL DEMAND Vs. PRODUCTION

Enormous growth in the next 15 years from the present level of about 20 MTA to about 57 MTA in 2011-12. One can visualise what this means for welding - art, science and technology, in the next 15 years. In gearing up for this growth, one area of paramount importance is education and training with diploma courses and refresher courses and inhouse re-orientation courses as a part of corporate HRD programme. In this connection let me read out a highly relevant para from the first professor Amitabha Bhattacharyya Memorial Lecture, delivered by Dr. Placid Rodriguez our past President : "The imperatives of modern technology demand not only engineers and scientists but also abundant supply of technical labour force that can constantly be re-trained and taught new techniques. As the recent OECD report on Technology and

economy points out, the absence of sufficient number of qualified technical personnel, makes the difference between the industrialised economies and the developing countries. In future, more and more the capacity of the labour-force to absorb new learning will determine the growth prospects of the economy. In this context, there is a need to reorient the training of a technician such that he is adept at a number

of highly skilled trades and can switch from one to another depending on the need of the day. Such people will also be able to undergo on-the-job refresher courses and re-training to learn new and advanced techniques. I am aware of a programme for training and human resources development for technical personnel carried out at L&T Works at Hazira where this concept of training in and practicing multiple

trades has been successfully carried out."

The organising committee has done an excellent job under the able leadership of Mr. Nanda, IIW President. We have enjoyed the hospitality and all the arrangements made. They had worked very hard and deserve to be complimented. Let us show our appreciation with standing ovation. Thank you.

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