*In Commemoration of Silver Jubilee Year*

# 25 Years of IIW
# Looking Back & Looking Forward

- H. L. Pravakar

The professional activities of Welding Engineers in India started ahead of the formation of IIW, thanks to the encouragement given by Indian Standards Institution (now, BIS) and particularly by its the then Director, Mr. B. S. Krishnamachar. One of the earliest gatherings of Welding Engineers, was the Ninth ISI convention held at Bangalore during 1965 and it had an exclusive session on "The Standardisation In The Field Of Welding". The manufacture of coated electrodes started in India during 1943 by a TATA enterprise and since then, the welding consumables manufacturers are the pioneers in the dissemination of technical information on welding engineering. Mr. S.V. Nadkarni of Advani Oerlikons and Messrs R. Ghosh and V.R. Subramanian of Indian Oxygen have done yeomen service in spreading the knowledge of welding engineering. Some companies like M/s Advani Oerlikons published regularly technical bulletins on welding, both for welders and welding engineers. Many in-company training programmes for welders and engineers were based on these bulletins.

During 50's and 60's, heavy fabrication industries started, functioning, particularly in the Public Sector, like BHEL, BHPV, etc.. New Welding processes like Electro-slag welding, flash butt welding were also introduced. The need for an open and frank dialogue between welding consumables manufacturers, users and inspection agencies was keenly felt and IIW through its various technical sessions and seminars provided a forum for such activities. Till late 60's, there were limited number of speakers, mostly from the welding consumables manufacturers. The participation from fabrication industries was remarkably good, though the number of papers were not many. Inspection agencies participated in a very limited way.

The first National Welding Seminar attracted about 20 technical papers and the duration of the seminar itself was a single day. The favourite topic during 60's was the weldability of IS 226 & IS 2062 and this was discussed threadbare whenever and wherever the welding engineers met. The steel plant metallurgists who heard about the plight of welding engineers were moved to tears and they improved the weldability of IS 226 & IS 2062, so much so, that the topic became obsolete ! Another popular topic during late 60's was 'Low Hydrogen Electrodes'. Thanks to the peripatetic efforts of Mr.S.V.Nadkarni, Welding Engineers became aware of the versatile nature of low hydrogen electrodes. Measurement of hydrogen in the weld metal, correct drying of these basic electrodes and other intricate details were extensively discussed in technical sessions. Unfortunately the growth in the consumption of low hydrogen iron powder electrodes was rather slow as the high cost of indigenous iron powder became an impediment.

The establishment of numerous fertiliser factories, nuclear power stations and oil refineries during 60's and 70's generated the need for indigenous low alloy, stainless steel and special electrodes. This challenge was again met by the pioneers like Messrs D.S.Honavar, D & H Secheron Electrodes (P) Ltd., Indore, P.S.Viswanath, Advani-Oerlikon Ltd.,Bombay and H.D.Govindaraj, Weldcraft Electrodes (P) Ltd., Bangalore. We have today the entire range of electrodes for welding of armour steels, stainless steels of varying compositions required for urea and ammonia services. Some electrode manufacturers have started corrosion laboratories also. As a direct fallout of this facet of industrial activity, the IIW chapters particularly in the Western region, initiated extensive discussions on the various aspects of stainless steel fabrication. Expressions like Huey corrosion test, Schaeffler constitution diagram and its variant Delong's diagram, delta ferrite etc., entered into the vocabulary of welding engineers with infectious enthusiasm.

There were some set backs too. The induction of high yielding processes like CO2 welding met with stiff resistance and the welding engineers developed an aversion to it. The process was hastily introduced into the fabrication scene with East European equipments and very little product support by way of consumables, spares etc., was planned and hence, it met the cul-de-sac. The resurrection took place a decade later when indigenous equipment manufacturers came out with dependable power sources and above all with wirefeed drives with positive wire movement. The users responded well and fabricators, now, have the advantage of a single window shopping for consumables and spares.

The Indian Standards Institution, now Bureau of Indian Standards, have done a commendable job in bringing out various standards on welding. Most of the welding consumables have ISI certification also. Inspite of this, repeat tests are demanded by various inspection agencies. Fabricators of pressure vessels and heat exchangers have frequently vented their feelings on this vexed subject. One fabricator in the Western region remarked that about 15% of the welders are continuously busy with the testing of welding consumables. This is a national waste. I wish ISI asserts itself to stop this repetitive testing of welding consumables, once the consumables obtain ISI imprimatur.

The establishment of welding engineering courses in many Indian Institutes of Technology and starting of Welding Research Institute at Trichy have provided opportunities for research in many aspects of welding technology and metallurgy. No new welding processes have been observed on the horizon. Hence, the thrust areas of welding technology for the coming decades will be the mechanisation and integration of electronics and computer graphic to welding engineering. The synergy of materials, design, fabrication and welding technology coupled with the application of large scale integrated electronics will generate consistent quality of welds. Electronics can also play an important role in reducing the cost of welding, primarily by reducing the energy (consumption) for welding processes. Over 60% of power sources for welding are transformers which are prone to lower the power factor of the system. The connected load of all welding power sources in India is variously estimated as 3000-4000 MW, the entire output of a Super Thermal Power station ! Even assuming a lower figure of 3000 MW, we can imagine the savings one can expect by the use of electronics in reducing the energy consumption.

Lastly, the participants of welding seminars have not yet benefited by detailed discussions on failure of weldments, be it a pressure vessel or tank or a bridge. Does it mean that there are no failures at all? Or is it more likely that welding engineers are hesitant to write about failures ? In case there is a bold soul, employers may not permit such a confession in public. But the urgent need to discuss about failure of weldments remains open. And I sincerely hope that the present generation of welding engineers will accept this challenge. (with a professional out look).

## Shri H. L. Pravakar

*- A profile*

H. L. Prabhakar is a graduate of Mechanical and Electrical from the University of Mysore, Bangalore. He had an early exposure to welding and fabrication at the works of Steeinmuller in West Germany. Later on, he was incharge of welding and erection of the boilers of the first Russian Power house at Neyveli Lignite Corporation. Subsequently, he was the Chief Welding Technologist of Trichy unit of BHEL and Manager, (Welding) at Larsen & Toubro.

He is the founder member of three branches of IIW, at Trichy, Bombay and Bangalore. He has published many technical papers on different facets of Indian Welding and Fabrication Industry. He is the recipient of Sir L. P. Misra Memorial Award and the theme paper was "MIG/CO2 Welding in India".

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