THE FUTURE OF WELDING INDUSTRY IN FINLAND - ROADMAP 2020

Background Welding is one of the most essential manufacturing processes in metal and machine workshop industry. In traditional workshops welding activities are changing both in technological and in functional ways. In electricity and electronics industry the impact of welding is becoming more important. The global development of industry forces to inspect critically the status of welding in Finland while the main markets are in Europe or outside Europe. The driving force to move manufacturing away from Finland is of course lower labour costs compared with the productivity. One of the threats is also the high average age of welders and problems to get new welders.

It is important both in economical and functional ways that welding production continues in Finland. Almost 50 % of all workers are using welding at least partly. There are about 14 000 full-time welders but the impact of welding reflects on much wider group of workers (metal processing, manufacturing of components, machining, assembly, surface treatment, maintenance).

We can recognize three primary conditions for the future and continuation of welding in Finland:

1) To reform of activities in welding production
2) To improve of competitiveness of welding technology
3) To ensure the availability of welding personnel

The first item requires the new all-inclusive way of thinking where the factors of welding industry are classified in the new way. The second goal requires research and development activities which are targeted very carefully. The productivity and price competitiveness must be at the same or higher level as in low cost countries and still the high level of quality must be maintained. The third goal requires purposeful development of education systems and content for welding personnel in order to attract young people to start studies in welding related subjects.

There are some surveys about the needs of development and future trends in welding which have been made in Finland and in other countries. The Welding Society of Finland made a survey - together with VTT and Lappeenranta University of Technology – about the needs for welding clinic activities in Finland. The clinic was planned to serve small and middle sized companies. The American Welding Society published in 2000 the Welding Technology Roadmap – report which includes heavy metal industry, automotive and aviation industry, petrochemical and energy industry. In the year 1999 in Welding Design & Fabrication magazine there was a leading article named Global Welding Perspective.

The above mentioned research projects offer a good basis to create the all-inclusive development plan for welding and related processes. However the industrial change has been so fast during the last five years that it must be taking into consideration when the

development plans are made. One on the newest Road Maps have been started in Canada. The Road Map has been listed important also in Finland: It was the most important subject when Material and Production forums hade their Brainstorming session In Jyväskylä in June 2005.

Goal

The goal of the project is to prepare the all-inclusive development plan (Road map 2020) for Finnish welding industry which ensures that Finland will be one of the leading countries in welding technology in the world and which ensures sufficient conditions for welding industry in Finland.

The basis of the plan is to define the current and future needs of Finnish companies. The long term plans are stressed in the plan. At the same time international trends and their impacts are taken into consideration in order to create a synthesis with a help of other Road Maps and their needs for R&D. These requirements and the requirements of EU directives for e.g environment are analysed taking in to consideration the competitiveness and internationalization of Finnish welding industry.

Content

The strategic goals of Finnish welding industry are defined in the Road map 2020. With the help of these goals the primary challenges for welding R&D and education and training. The needed actions will be defined taking in to consideration priority and schedules.

The vision of welding will be defined separately for heavy welding industry, production of thin plate products and electronics industry. The goal is to get as comprehensive and relevant development plan for each sector.

It will be defined how capable research centres are to answer for risen challenges. The proposal to develop actions, resources and international co-operation of research centres will be defined in the plan.

The proposal for changes in content and in volume for education programmes of welding personnel will be defined (welders, welding operators, designers, inspectors, coordinators). At least for the following subjects the concrete plans will be defined:

- Image and internationalization of welding education and training for young people
- Operating training for light mechanisation
- Supplementary training for qualified welding coordinators and inspectors (IWE, IWT, IWS and IWIP)
- Future development of the guideline for designers for welded structures

Implementation

The basis of the project will be the clinic survey, the Road Map of AWS and other international surveys. This information is completed by literature research and by visit in foreign companies and research centres. In this way the prevailing trends are defined. In Finland company surveys are made especially in big Finnish companies which play an important role on international markets. The changing needs and challenges of small and middle sized companies will be gathered. These companies work in close co-operation with big companies in the network.

The Welding Society of Finland will be is the responsible coordinator of the project and it acts in co-operation with the experts of industry, VTT and Lappeenranta University of Technology on the field of welding technology, business management and research of the future.

Schedule The project will be carried out during 1.11.2005 – 31.12.2007.

Costs [€]

	2005	2006	2007	TOTALLY
Labour costs	32 000	135 000	105 000	272 000
Travel cost	2 500	14 500	10 500	27 500
Other costs	1500	4 500	4 500	10 500
Totally	36 000	154 000	120 000	310 000

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