



# VAIKUTTAMINEN

## KOULUTUS | HITSAUSTIETOUS



Suomen Hitsausteknillinen Yhdistys  
The Welding Society of Finland



# 30<sup>th</sup> Anniversary of International Welding Qualification in Finland in 2019

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# Outline

## 1. Past

- Background: International welding qualification system
- History of welding qualification training in Finland

## 2. Present

- Current training & qualification programmes
- National milestones and highlights

## 3. Future

- Emerging trends in welding training
- Foreseen education, training & qualification challenges



# 1. Background: IIW and EWF

- **IIW International Institute of Welding**
  - International networking organisation for information exchange in welding and joining technologies
  - The goal is to improve the quality of life globally
  - Founded in 1948, currently 56 member countries
  - **IIW-IAB International Authorisation Body** for personnel and company qualification and certification for technology and market needs
- **EWF European Federation for Welding, Joining and Cutting**
  - European body governing personnel and company training, qualification and certification
  - Founded in 1992, currently 28 member countries



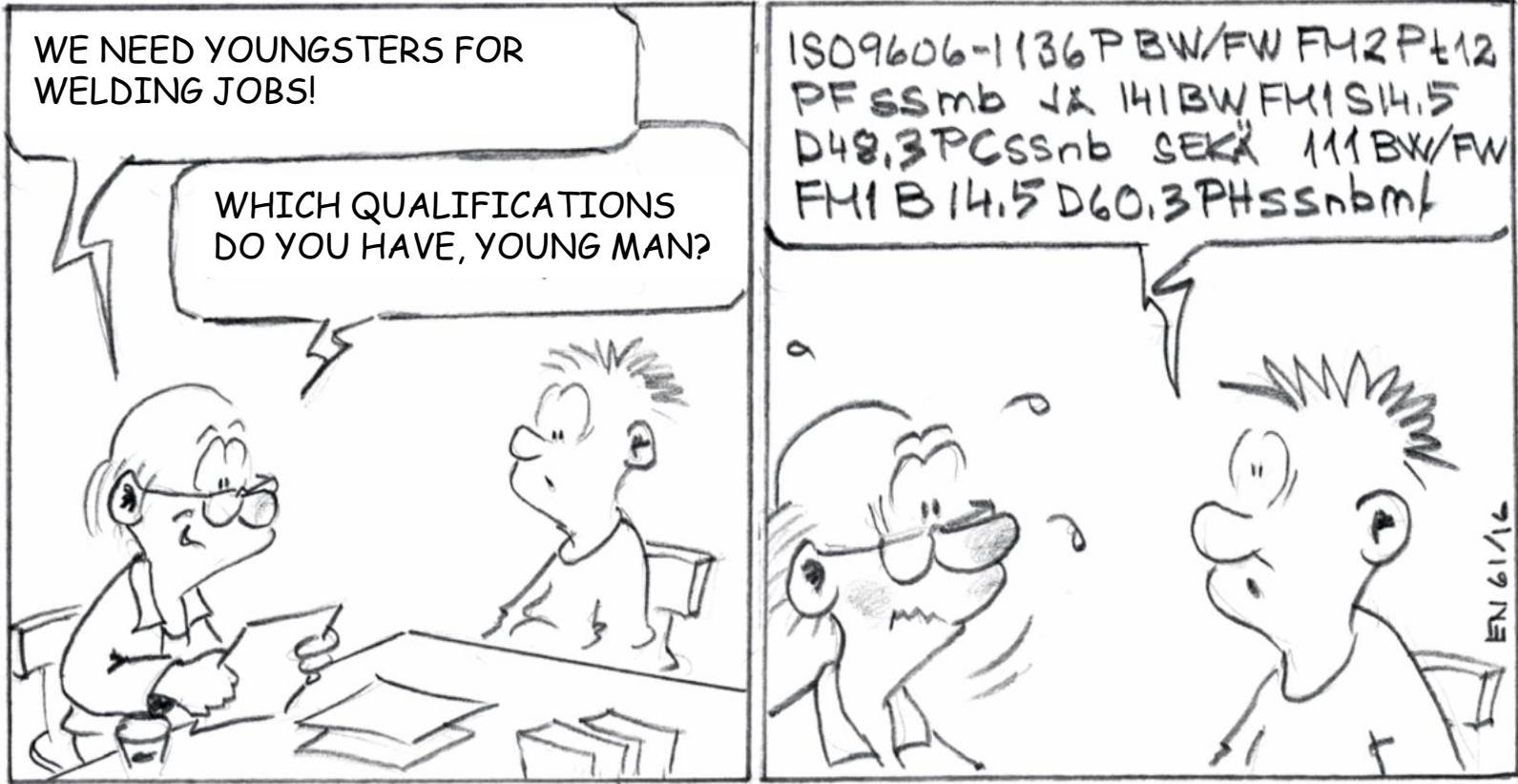
# 1. Background: Welding Society of Finland

- **WSF is the Finnish member of IIW and EWF**
  - WSF accepts the IIW-IAB & EWF rules and requirements
  - IIW & EWF recognise WSF as Authorised Nominated Body (ANB) to organise IIW-IAB & EWF qualifications in Finland according to their rules
  - WSF does not arrange training courses by itself
- **The independent Governing Board was established within the ANB WSF to organise & govern the qualification training**
  - Training rights are granted to Authorised Training Bodies (ATB) by the Governing Board
  - Passed regular audit required for keeping qualification training rights



# 1. Background

- Machinery industry is the backbone of Finnish exports
  - Highly skilled welding professionals are key factors in realising reliable welded structures
  - WSF has built up unique international training and qualification system during the past 30 years
    - Excellent coverage of welding tasks and programmes
    - Top level local offering and availability
- ⇒ Finland has an established **Global #1** position in welding personnel training and qualification!



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# 1. History of international programmes

- Standardisation of welding quality systems progressed in '80's
  - ⇒ Development of internationally harmonised welding qualification training programmes
  - European programmes launched by EWF
    - ⇒ Programmes for engineers, technologists and inspectors EWE, EWT, EWI
  - Currently governed by IIW, special courses under EWF
- The first Finnish EWE trained and qualified in Sweden in 1989
  - The first Finnish EWE course arranged soon after by LUT in 1989
  - Technologist, Inspector and all Welder courses followed shortly
  - Distance learning IWE/IWT courses launched by AEL in 2015





## 2. Present: Welding Society of Finland

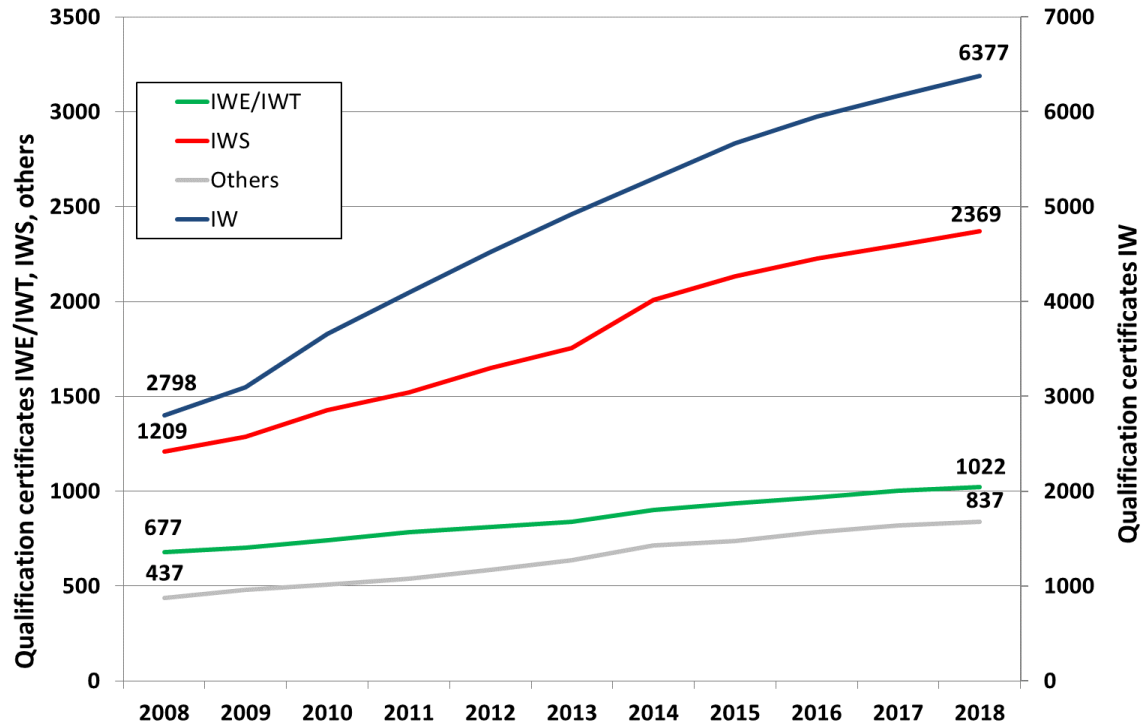
- WSF has been among the first ones to adopt IIW & EWF training and special courses
- Also very active role in preparing new programmes & courses
  - E.g. Welded structures Designer IWSD;
  - Mechanised, orbital and robot welding IMORWP;
  - As well as several laser welding related courses LWS, ELP, ELSO
- EW and later IW were included in vocational welding degrees
  - Removed in 2018 but the learning targets are still identical to IW
- The Annual Trainer Days are quite popular with ~ 50 attendees

# 2. Present: available courses & diplomas

- WSF is a forerunner in introducing international courses!

Course	Training launch in Finland	
	1989	2018
E/IWE (International Welding Engineer)	1989 EWE	2003 IWE
E/IWT (International Welding Technologist)	1991 EWT	2003 IWT
E/IWS (International Welding Specialist)	1994 EWS	2003 IWS
E/IWI (International Welding Inspector)	1994 EWI	2003 IWI
E/IWP (International Welding Practitioner)	1996 EWP	2004 IWP
E/IW (International Welder)	1996 EW	2004 IW
IWSD (International Welded Structures Designer)		2008 IWSD
ETSS (European Thermal Spaying Specialist)		2004 ETSS 2013
ETS (European Thermal Spayer)		2004 ETS 2013
LWS (Laser Welding Specialist)		2001 LWS 2012
ELP (European Laser Processing Personnel)		2013 ELP
RWS (Robot Welding Specialist)		2002 RWS
IMORWP (International Mechanized, Orbital and Robot Welding Personnel)		2013 IMORWP
WRB (Welding Reinforcing Bars)		2009 WRB
Heat Treatment of Welded Joints		2012 HT-Welded Joints
(R)WC (Welding coordinator to EN 1090-2)		2013 (R)WC
ELSO (European Laser Safety Officer)		2015 ELSO
Distance Learning (E/IWE, E/IWT)		2015 DL

## 2. Present: granted diplomas



## 3. Future prospects and trends

- Automation rate has to be increased to enhance productivity
  - Manual welding is still dominant in Finland: small series production
    - ⇒ 100% mechanised / automated welding is not a realistic goal
    - ⇒ Automation rate to be increased where it is economically justified
  - IMORWP is a way to increase the readiness for automation
- Design phase determines the welded product's competitiveness
  - 80% of production costs are fixed on the design board!
  - IWSD enables the decrease of the 80% share in Euros!



## 3. Future prospects and trends

- Courses realised as partially distant become increase in popularity
  - Distance - currently blended – learning for IWS level, too?
  - Can be taken alongside the regular job!
- Need and demand for modular training increases in the future
  - Demands of current work life favour studying smaller entities and degrees along the daily job
- Trend towards life-long learning and studying grows in future

## 3. Future prospects and trends

- Virtual technologies in welding education and training
  - Role of virtual welding in recruiting new personnel?
  - Both young people and career-changers!?
- Development work of Additive Manufacturing (3D printing) training programme in EWF
  - Estimated growth rates are huge for AM and true products emerge  
⇒ The need for trained and qualified personnel increases, too
- During the past decade IIW programmes are growing especially in Asia and particularly in China (now global #2 after Germany)  
⇒ Role of African countries in the future??

# Concluding remarks

- **Small series are welded manually in Finland also in the future!**
  - ⇒ Ever higher demands are set on the welders' skill level and coverage
  - ⇒ International welding training and qualification provides a solution!
- **Automation rate should increase in repeating routine welding**
  - ⇒ Skilled welders work in jobs that cannot be done by machines!
- **Welding fabrication of demanding steel structure continues in Finland at all welding job levels!**
  - As long as the arc flares, investing in high-quality international welding training will have to continue in this country!

# Concluding remarks



**Non-IW qualified**



**IW qualified!**

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Non-IW qualified

IW qualified!

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