

SKILLED LABOR SHORTAGE – REASONS – EFFECTS – POTENTIAL SOLUTIONS

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Abstract:

In the 1980s, many companies began focusing on ways to streamline their operations. One strategy they used was eliminating any programs that didn't contribute to a positive return on investment (ROI). Which lead to fewer apprenticeship programs in industries. Current work force is getting older, and by 2030, all Baby Boomers will be at least age 65 and aren't being replaced by enough younger workers. This is also creating a gap in knowledge, as Baby Boomers are taking their extensive experience and knowledge with them instead of passing it on.

The younger generations - Millennials and Gen Z - tend to have a negative view of skilled labor. Many see these jobs as dirty, dangerous, and overly physical. And they'd rather do work that's more technology-focused than physically demanding. Parents, and even educators, view skilled work as a fall-back career - something undesirable for their kids to consider.

The good news is as Sarah Sladek, Chair of the FMA Virtual Annual Meeting in March 2021: "Leading an Intergenerational Workforce" provided very important information for both the production facilities and for the education of the institution. She apostrophized Generation Z of birth between 1996 and 2009 as a generation that loves challenges, loves to work with their hands, and strives to be in a work environment that is different from office ones. What can be done to attract this Generation, who loves to work with their hands to choose a vocational education in the industry, and how can we change the current negative image of skilled industrial workers, is the subject of this paper.

1 INTRODUCTION

What is the current situation on the labour market for skilled employees? A skilled employee is defined by specialized know-how, extensive training and experience to carry out complex tasks.

Overview on countries facing the greatest skill shortages:

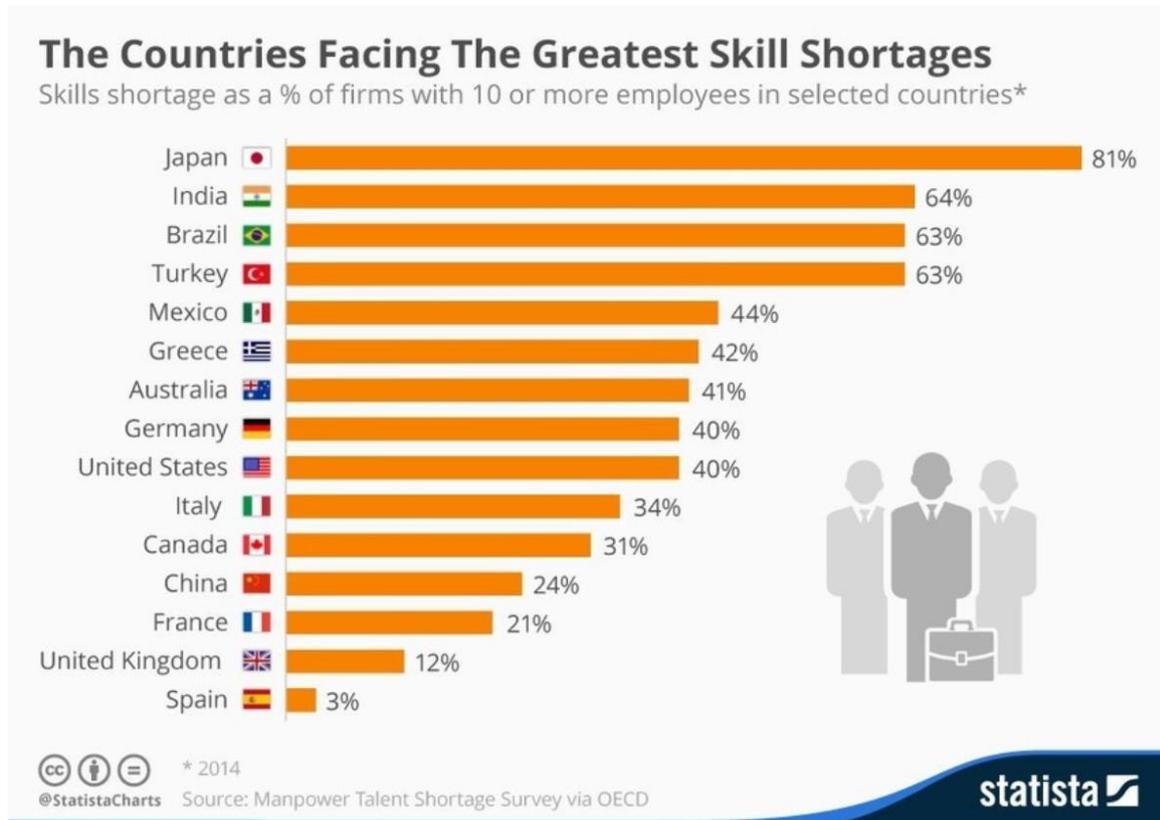


Figure 1: Source Manpower Talent Shortage Survey via OECD

Labour markets face challenges of shortages of skilled workers with relevant qualifications or interest to take up certain occupations. In general, shortages occur when demand for a particular type of labour exceeds the available supply at the current wage and conditions of employment, and in particular location. Low level of attractiveness of specific jobs for skilled workers in addition to working conditions, image of the profession and salary are important drivers for shortages. Also retiring Baby Boomers without being replaced by enough younger workers lead to great shortage. Last but not least the negative view of skilled labour, many see these jobs as dirty, dangerous, and physically demanding has a great impact. But it isn't just students who hold these false views either. Parents, and even educators, view skilled work as a fall-back career - something undesirable for their kids to consider.

The current situation is threatening the whole industry. The AWS states, that until 2024 up to 314'000 skilled welders will be missing in the U.S. There are no concrete figures for Europe, but we found on the Europa Eures portal for job seekers that before the COVID-19 pandemic about 60,000 welders were missing in Europe. We think this number has increasing, and not all open job opportunities are reported to this portal.

If we do not react now, it might be too late in a couple of years. Some welding jobs can be carried out by robots, but the need for human welders will still be high, as also welding automation systems need to be programmed by welding professionals.

2 EFFECTS OF LABOUR SHORTAGE FOCUSING THE WELDING INDUSRY

In some European countries, where welding has a big tradition, welding education and training are offered to numerous young professionals. This effects, that either big industrial production companies, such as Stadler rail, Mercedes, Audi, GE and so on, move their production facilities to countries, where there is enough workforce. But slowly but surely also these countries see difficulties in finding well skilled welders, as these move to countries and companies, where they have better earning opportunities.

We have identified following effects of labour shortage:

- Emigration of work force to countries with earning opportunities leads to language and communication problems and often result in poor quality of products
- Unemployed people get rudimentary trainings financed by employment agencies. The in-depth training needs to be carried out by employer, which is not only expensive but also time consuming
- Delay in production time
- Semi-finished products are supplied from Asia, but due to transportation problems and the pandemic these also had a huge impact on industrial production
- Automation of welding processes would be a solution, but skilled programmers with welding background are very rare
- Industrial employers realise, that it is important to treat workforce well, and investing in further education, healthy environments, recognition of work, emphasize vocational education and training for young people, organising open days and raising salary
- Traditional companies close, as they have not enough personnel for production
- If temporary welders are employed (from temporary employment agencies), often employees are placed who either lack qualifications / welding examinations or can formally present suitable certificates, but have no practical or professional experience
- The recognition of informal knowledge, own practical experience, in line with formal qualifications must be pushed further

3 STUDY REGARDING THE MOTIVATION OF YOUNG PROFESSIONALS FOR VOCATIONAL EDUCATION AND TRAINING IN THE WELDING TECHNOLOGY

A questionnaire was sent to Vocational education Schools, Training centres and industrial employers within Europe. We received 10 feedbacks. All the participants are involved or familiar with the recruiting process of young professionals within the welding industry. Currently 8 out of 10 are experiencing difficulties in finding enough young people for training as metalworkers or further training with a background in welding technology.

Main reasons mentioned are:

- young people do not encounter metal in primary or secondary school
- the profession welder does not have the best image
- difficult to recruit well trained welding personnel, because although welding training is required in our industry and our production system, in practice assembly line work is more likely to be done
- during the lockdown it was difficult to find practitioners
- generation with low birth rates
- little interest in technical professions
- people mostly want to study, no major interest in practical education
- no major political willingness to push practical education
- practical jobs are not very respected in our society
- the salaries aren't attracting enough
- young people don't know enough about the welding industry and what kind work they can do there

We asked participants, what are the factors that could motivate young people to choose a vocational education in welding technology? Following answers were given (multiple choices were possible):

- Motivation to create something tangible, lasting (4)
- Opportunities on the job market (8)
- Earning opportunities (6)
- Flexible working hours (1)
- Interesting training opportunities (7)
- Interesting employer (4)
- Parents who support this education (3)
- Competent and motivated trainers / teachers (6)

The participants were asked if and if yes which measures were taken to attract young people to their company or training centre. Nine out of ten reported, that they have taken measures to attract young professionals. Measures were:

- Visiting elementary schools to present their programmes and entice young people to opt for this and other occupations.
- Participation at an annual fair where all the schools present their educational programmes
- Yearly organisation of an “Open door day” when elementary school students come to visit different schools and see what is offered
- public appearances on different media
- on association’s social media and web page
- appearance in technical journal “Welding”
- through European projects
- Roadshows in schools, target group was 10-18 years old
- Some companies have taken sponsor schools, so that young people can make hobby welding (free time).
- welding competitions for young persons.
- Planning to produce videos of education and work history of persons. Those videos should be delivered for teachers and study counsellors and delivered in social media.
- for the qualification of personnel in welding, we have been addressing the attractiveness of the training provided through the implementation of work-based learning opportunities in welding and promotion of skills competitions
- homepage especially for apprenticeship and training
- projects in schools and other educational institutions
- Trial apprenticeship for a couple of days
- advertising on social media and print media
- taking part in the career choice course
- offering schools to oblige their difficult pupils to work with us for two or three weeks - this gives you contact with the teachers
- participation at the fair (our apprentices also work there)
- participating with apprentices at the SwissSkills competition
- and in general, we are very open to new things, to participate or to show the possibility of participating in the SwissSkills
- presenting future perspectives and showing possibilities for further education

We asked the participants for further ideas on how the image of the job description of the welder for young people can be improved or presented in an appealing way. Following inputs were given:

- Education (modern teaching methods and interesting educational programmes) needs to be harmonized with everyday habits of young people (mobiles, social media, informal and non-formal learning)
- Quality of life that comes with welding (better pay, possibilities of working abroad) should be emphasized more
- It is not only the work that should be shown, but also life as a welder and the opportunities which are offered by work

- Excellent job opportunities for skilled welders, also abroad
- Almost no Risk of unemployment
- Welding demonstrations and competitions with the digital welding simulator on the `Open Training Workshop Day`,
- Demonstrations in schools with the digital welding training system
- Digital and real welding championships
- Projects in which training companies can participate, which deal with given ideas and produce meaningful end products
- Dissemination of information via social media be it via video and especially when apprentices show the students what they are doing and how - with their words
- If you have more than just one apprentice, the trial apprentice is enthusiastic about learning this profession. A kind of group dynamic "you are not alone". Advertising for the job and the company takes time and enjoyment
- Young ambassadors of the profession that appeals to young people
- Try to reach the parents by letting them weld with the digital welding training system and show the potential in this profession, in the end they are usually a part of the decision
- Special programmes for girls and women to attract them to welding, also through role models and social media

4. CONCLUSION

Sarah Sladek (CEO of XYZ University, a firm with the mission to bridge generation gaps, improve teamwork, and retain young talent) held a session titled "Leading an Inter-Generational Workforce" during the 2021 FMA Annual Meeting held virtually in March. She outlined that the Generation Z, people born between 1996 and 2009 loves a challenge, likes working with their hands, and strives to be in work environments that are different (i.e., not an office setting). They witnessed first-hand the millennials' financial struggles and they don't want to repeat those mistakes.

Sladek said this is great news for manufacturing. The industry has a golden opportunity to attract members of this generation who are currently entering or gearing up to enter the workforce because it so closely aligns with what Gen Zs are looking for in a career. They want different; they want to make a difference; they aren't afraid of difficulty.

As to Cheyenne Holcomb, guest writer at the Lansing State Journal and is a high school junior at Negaunee High School and the Marquette-Alger Technical Middle College, and pursuing a welding certification at Northern Michigan University, women can be the answer to the welding industry's labour shortage- It's projected the U.S. will need 314,000 new welding professionals by 2024. With women currently making up only 3.8 percent of the welding workforce in the U.S., could recruiting and mentoring female welders be the solution to the labour shortage? She thinks so because she is one of those women welders-to-be. After she has done hands-on trial welding demos, her teacher noticed her natural ability and encouraged her to take welding classes.

Being a female in a male-dominated field could be intimidating, but with more young ladies as mentors and apprentices, it's less scary. It's now her reality and her goal. She encourages fellow female students to not be afraid about what others think of their role within this industry. If you put your best foot forward and keep going with it, you can make it far as a woman who welds. And maybe women can even be the solution to the welding worker shortage that's coming because they can do anything they put their minds to, especially with an angle grinder and some safety glasses.

Main potential solutions in our opinion are:

1. Improve existing educational methods by implementing modern teaching methods, digital education of both theory and practical welding training through digital training solutions, well trained teachers, that are also trained in soft skills and can motivate young professionals to grow to their excellence
2. Improve Image of welding, through social media and young ambassadors, by showing opportunities, no risk of unemployment, possibility to work abroad, be proud to be a welder and to reach out also for parents
3. Attract women to welding
4. Implement practical work with metal already in primary and secondary school
5. Build social recognition for practical workforce
6. Improve earning opportunities and conditions of employment (for example flexible work time, balance between family and profession/work, ...)

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