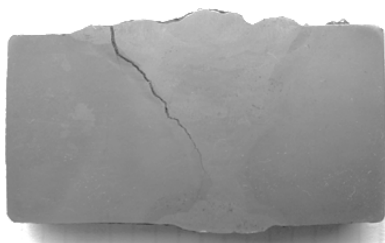


■ **Course title:**

Welding of materials in constructions of fertilizer plants

■ **Introduction:**

This course will contribute to a better understanding of welding of materials in fertilizer plants. Knowledge will be elaborated to avoid problems due to the materials behaviour during welding. This all in order to achieve reliable, sustainable and safe operating fertilizer plants.



Course outline:

Module 1

1. Welding of Carbon steel and CS alloys
 - a) unalloyed Carbon and Carbon-Manganese steels
 - b) fine grained steels
 - c) Quenched & Tempered steels
 - d) TM and TMCP steels
2. Behaviour of construction steels by fusion welding
3. Distortion and stresses by joined assemblies
4. Weldability of Carbon steel and CS alloys
 - a) cold cracking
 - b) hot cracking
 - c) Reheat cracking
5. Applicable welding processes for CS and CS alloys.
6. Post weld heat treatment of fusion welded joints
7. Conclusions / recommendations

Module 2

1. Welding of corrosion resistant stainless steels
 - a) austenitic and super austenitic stainless steels
 - b) duplex stainless steel
 - c) dissimilar welds: Stainless steel to CS

Author(s) / Trainer(s):



Jan Geerlings - IWE

Welding, Material & Inspection Engineer

Geerlings is trained as an Welding, Material & Inspection Engineer, specialized in welding. He has all the qualifications necessary to perform this function. His competencies were recently acknowledged again by his re-accreditation for a period of 3 years by International Institute of Welding (IIW) authorized by Netherlands Institute of Welding, as a recognized welding expert. He has built up a good name and reputation over a period of more than 35 years in this specialist field. Especially over the twenty years he has gained a broad experience in welding and troubleshooting with a large number of (internationally operating) companies in several technical positions with various responsibilities over the world. This knowledge and experience is the reason why he was appointed as a Welding, Material & Inspection Engineer by different companies in the fertilizer industry .

Geerlings experienced during the period he was working as a professional in the fertilizing industry that is of utmost importance that the use of a up-to-date knowledge base and actual competences give substance to the changing set of tasks and responsibilities for a welding expert. Over the years he established many contacts (internal and external), where he could bring together many and various interests in new projects, where the participation in interdisciplinary projects becomes a requirement, and where a pro-active attitude to knowledge development and knowledge sharing (internal and external) is a prerequisite. For Geerlings it is clear that working with shared goals and different responsibilities in interdisciplinary teams is the environment where he feels most comfortable.

2. Weldability of corrosion resistant stainless steels
 - a) hot cracking
 - b) weld decay
 - c) knife line attack
 - d) sigma phase
 - e) 475°C embrittlement
3. Applicable welding processes for corrosion resistant stainless steels
4. Pickling and passivating
5. Conclusions / recommendations

■ Learning outcomes:

By the end of this training course you will understand:

- The characteristics of materials behaviour during welding in constructions
- The parameters which influence these aspects
- Be more critical to equipment design, which can result in changing of weld details, specified welding process or equipment design, etc.

■ Who will benefit:

Employees who are responsible or share responsibility with respect to the mechanical integrity and safe operation of fertilizer plants: process, mechanical, maintenance, corrosion and mechanical & material inspection engineers employed in fertilizer plants.

■ Course materials:

- Hand-out presentation slides in PDF format

■ Price:

€ 400.00

■ Discounts:

- 2 places – 10% discount
- 3 places – 15% discount
- 4 or more places – 20% discount.

■ In-company training:

This course is also available as an in-company course (face-to-face or online) where content can be customised to meet your organisation's specific needs and delivered on a date/location that suits your requirements.

[Contact us](#) for more information.

■ Training code: MAT11