



Evolution of NDT Personnel Qualification and Certification at TenarisSiderca

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The objective of this document is to evidence the evolution of the plan of non destructive testing personnel qualification and certification that ended within the IRAM ISO 9712 and ISO 17024 standards frames and credited by the Organismo Argentino de Acreditación (OAA) (Argentine Accreditation Organism).

The above-mentioned plan evolved in the following way:

- Qualification by means of a company domestic system under the SNT-TC 1A standard.
- Qualification and certification with a plan according to ISO 11484 standard, with the services of an external qualification entity.
- Qualification and certification under ISO 9712 standard, being the qualification obtained through an external Qualification Entity and the accreditation granted by the IRAM Certifying Entity. All this within the Accredited System frame, obtained from the Organismo Argentino de Acreditación (OAA) (Argentine Accreditation Organism).

This evolution reasons may be summarized in the following idea:

“The participation in globalized markets usually faces us with requirements of customers and markets of the highest demand level, in terms of services and quality.

These markets demand even more frequently that NDT operators and inspectors are certified under the international ISO 9712 regulation, being already in some cases an unavoidable condition.”

Backgrounds

TenarisSiderca has personnel trained in non destructive testing techniques since 1970.

The first courses were dictated internally and they were framed within a general training for the tubular product quality control inspectors.

The activity has 200-hour duration from which, and for example, only 16 hours corresponded to level I magnetic particle technique.

It was dictated through external personnel and it did not have a specific examination on NDT techniques, as it was an integrating exam and in which there were only few questions about magnetic particles.

As the company starts introducing itself in even more globalized and demanding markets, it was necessary to increase the qualification levels and to organize the plan in accordance with the demands of the standards.

Consequently, in the middle of 1985, the first qualification courses started to be dictated internally for personnel holding NDT job positions.

These courses answered to the plan proposed by the SNT-TC1A standard, dictated by a Level 3 professional external to the company, coordinating his/her tasks with the TenarisSiderca Level III responsible party.

This person was the responsible party for assembling the course contents, dictation and exam taking.

It was started with a level I magnetic particle technique and the first times were of adequacy as the study and exam plans stated by the standard were not usual within the company training plans. For example, the multiple choice technique is an example of that.

Under this plan, 60 persons qualified in level I and II magnetic particles and 20 persons qualified in level I and II electromagnetic tests were available.

From 1993 and always as per the market requirement, TenarisSiderca transferred to a personnel qualification and certification plan under ISO 11484 standard specific to the pipe market.

The dictation of courses and exam taking were performed by the NDT department of the Universidad Tecnológica Nacional (National Technological University) Facultad Regional Delta branch that had formed as an NDT qualification entity.

Under this plan, the following certificates were issued:

- ✓ Magnetic Particles level I – 174 Certificates
- ✓ Magnetic Particles level II - 272 Certificates
- ✓ Ultrasonic Testing level I – 31 Certificates
- ✓ Magnetic Particles level II- 49 Certificates
- ✓ Electromagnetic Tests level I – 43 Certificates

- ✓ Electromagnetic Tests level II – 58 Certificates
- ✓ Visual Inspections level I –83 Certificates

The work continued in order to obtain a more trustable operation of the whole control and inspection system, standardizing them, and to provide a higher transparency and equity to the granted certification levels, based on the fact that an independent third party carries it out avoiding conflict of interests.

These were the main reasons to climb up one step in the plan and to aim at having the system under the ISO 9712 standard.

Development

At this point the company had to make the decision between selecting a certification system granted by internationally acknowledged entities, such as TUV of Germany or the Centro Italiano di coordinamento per le prove non distruttive (Italian Center of Coordination for Non Destructive Testing) of Milano, being the latter responsible of TenarisDálmine certifications; or taking the option of achieving the certification granted by a national entity.

In order to favor the country, the second option was selected formalized through the IRAM and with the involvement of AAENDE.

This was favored by the fact that TenarisSiderca forms part of the IRAM Comité de Esquema del Organismo Argentino de Certificación (Committee of the Argentine Certification Entity Plan) for many years now, which regulates the application of the ISO 9712 standard in Argentina.

This instance, that even though was offering to the company the possibility of having a local entity of acknowledged experience, showed an obstacle to be overcome and it was that the system needed the accreditation by an upper entity within the country regulatory activity.

In this way, the works started in order to achieve this and the result was the NDT personnel certification system accreditation by the Organismo Argentino de Acreditación (Argentine Accreditation Organism).

The plan structure with respect to qualification and certification concretizes through Organismos de Calificación (OCAS) (Qualification Organisms) and the Certifying Entity is formed by the IRAM. One of the OCAS that form the system is the UTN-FRD, qualifying organism that carried these activities in TenarisSiderca.

Tasks related with the Accreditation were intense and took more than two years of work.

It started by the analysis of strengths and weaknesses that generated a plan of action:

- ✓ To work along with the UTN-FRD for the implementation of the required regulation.
- ✓ To generate a framework agreement that would include: amount of Levels III and administrative ones required.

- ✓ Necessary equipment.

Once these items were agreed upon with the UTN-FRD, the plan included among others issues:

- ✓ The generation of a Quality Management System.
- ✓ The generation of domestic procedures.
- ✓ The generation of manuals of courses.
- ✓ The generation of sets of question for exams.
- ✓ The generation of sets of test specimens for courses.
- ✓ The generation of sets of test specimens for exams.

The UTN-FRD has the following techniques and levels in order to certify TenarisSiderca personnel:

- ✓ Magnetic particles level I
- ✓ Magnetic particles Level II
- ✓ Magnetic particles Level III
- ✓ Induced currents Level I
- ✓ Induced currents level II
- ✓ Induced currents level III
- ✓ Leakage flow Level I
- ✓ Leakage flow level II
- ✓ Leakage flow level III
- ✓ Ultrasonic testing level I
- ✓ Ultrasonic testing level II
- ✓ Ultrasonic testing level III
- ✓ Penetrant dyes level I
- ✓ Penetrant dyes level II
- ✓ Penetrant dyes level II
- ✓ Visual inspections level I
- ✓ Visual inspections level II
- ✓ Visual inspections level III

In the present, TenarisSiderca has the following quantity of persons certified by technique and level.

Technique	Level		
	I	II	III
US - Ultrasonic Testing	48	51	2
EE – Electromagnetic Tests	58	59	2
PM - Magnetic Particles	232	295	2
EV - Visual Inspections	83	0	2
LP – Penetrant Dyes	0	2	0