



2022 October Edition: Newsletter 25

Value Vs. Number



One of the important considerations for implementing effective integrity management is to establish acceptable levels of corrosion rate.

In general, corrosion rate of carbon steels:

- <5 mpy (~0.1 mm/y) is considered low.
- 5 to 10 mpy (~0.1 to 0.25 mm/y) is considered moderate.
- >10 mpy (>0.25 mm/y) is considered high.

Establishing number helps engineers to achieve target and to demonstrate compliance. However, using number without considering its value is irrelevant. For instance, a 5 mpy corrosion rate of coupon does not mean anything, unless information on where the coupon is placed and how the corrosion rate of coupon is related to the structure or pipeline corrosion rate (into which the coupon is placed) is also taken into consideration. Such analysis will provide "value" to the integrity management.

In general corrosion rates decrease as follows:

Bottom coupon > Middle coupon > Top coupon >>> Pipeline.

How much the corrosion rate of the coupon is higher than that of pipeline depends on many factors including the position of the coupon, type of coupon (conformal or protruding), and corrosion damage mechanism (localized vs general). Analysis of all these will provide "value" to the coupon corrosion rate and will justify use of coupons for corrosion monitoring.

Localized pitting corrosion prediction software such as [iFILMS™](#) intuitively correlates coupon and pitting corrosion rates and such correlations were established based on the analysis of several years of field data and field experience as well as on the location of the coupon, corrosion damage mechanism, and field operating conditions.

Raising Star of This Newsletter:

Lisseth Ocando



My Story

I am Venezuelan. I grew up with the pride of coming from an oil country par excellence with one of the most profitable companies in the world (PDVSA). That is why I always felt motivated to develop professionally in oil and gas field, so I studied Chemical Engineering.

After graduating in 2002, I applied to a contest to belong to the teaching and research staff of the most important university in western Venezuela - La Universidad del Zulia (LUZ). At that time, Venezuela was going through an unprecedented political crisis, and many people decided to compete for the vacant position, something that was unusual, since PDVSA had fired almost all its personnel during a national strike. Thanks to my excellent grades, I was the winner out of more than 20 contestants, despite not having any experience. I thank God for that!

It turned out that this position was to train me as a professor of Corrosion Engineering and I would be part of the prestigious Centro de Estudios de Corrosión of La Universidad del Zulia, which, it is worth saying, in 2019 obtained the "NACE Distinguished Organization Award". Fortunately, I was trained by excellent specialists in Corrosion, and I began to investigate in Microbiologically Influenced Corrosion (MIC) with the support of two great professionals, Dr. Matilde de Romero and Dr. Zoilabeth Duque. Of course, behind them was a long list of very important mentors. All of them motivated me to carry out quality research and to publish in international events, mainly in NACE International Conferences, now AMPP. For example, in 2006, I participated in the "Student Poster Session" of the NACE Annual Congress, an unforgettable and enriching experience.

This is how my professional life passed, combining teaching with research for private or public industries. Proudly, during this time I was the godmother of several promotions in the Chemical Engineering School, I was the tutor of many undergraduate and graduate students, and in 2012, I obtained an award for the best

technical article presented in Spanish at the NACE Latin American Congress, in the city of Lima, Peru.

Unfortunately, in my country the political crisis deepened, bringing the economy to the ground. The situation in Venezuela was unsustainable, the salaries did not allow to live with dignity and the equipment and technology were falling further and further behind. My research activities stopped and even classes were reduced by the crisis. It was then when I was hired as advisor at a Pipeline Integrity Management company, where I began to learn many new things. Sadly, in October 2021, the activities of the INTTEC company ceased due to the Venezuelan crisis caused by the COVID-19 pandemic.

For family reasons, I moved to the USA to go along with my husband, who took a position of business developer for an Integrity Management Company. And suddenly, something wonderful happened... I was selected along with 5 other professionals by the AMPP Organization as the recipient of the 2021 “Diversity and Inclusion Grant”. Already when I wanted to throw down the gloves in my professional career, this award motivated me to start over... Not from scratch but from experience.

Since January 2022, I have begun to study again in the MIC area and to attend events, courses, and training ... I still have a lot to offer to the corrosion industry with a view to having a more sustainable world.

My Style

It is difficult for me to identify my style, but if I had to define it, I would say that it is “optimistic”. I like to look for the best in every situation to solve problems despite adversity. I am kind of resilient. My former students laughed with me because I liked to talk to bacteria reactors during my MIC experiments and played upbeat music for them to grow properly.

I use the scientific method in almost every aspect of my life. I like to make hypotheses and brainstorm for each problem that arises, to select the most appropriate solutions.

And finally, my Latin nature leads me to always establish good relationships with people around me. I consider myself an outgoing and extroverted person who seeks to create ties with the people around me.

Things That Excite Me to Continue in the Industry

Corrosion industry has been my life for 19 years. Every time I look around, I notice corrosion... A corroded nail, pitting in stainless steel, galvanic couples, etc. However, now that I have immersed myself in pipeline corrosion integrity management, I feel that there is a world of things to learn, and this motivates me to continue in the industry. Of course, I can't leave my MIC background behind. New technologies regarding the measurement, quantification, and estimation of the diversity of microorganisms associated with MIC open a world of possibilities that did not exist 20

years ago. I am excited to be able to analyze corrosion cases with more advanced tools, but at the same time I feel the need to find sustainable solutions.

Changes I would Like to Make in the Industry

I would like to change the mindset in the industry that corrosion control or mitigation is an unnecessary expense. Many people still think about it and in many cases, they just wait for some asset to be damaged to replace it. I would like to encourage companies to start adopting a form of "circular economy" where products and materials are kept within productive use for as long as possible, and when they reach the end of their use, they are effectively cycled back into the system. For this, it is necessary to adopt methods and strategies for "Material Sustainability and Stewardship". The latter is a new vision of integrity management and asset risk reduction and can include principles such as durability and design of multiple lifecycles, which must be the vision of any corrosion engineer.

Advice to Attract Youngsters to the Industry

I would like to tell the new generation that the Corrosion Industry is very broad and that there will be plenty of work for them. We will need youngsters and their modern vision to improve collection and handling of big data, development of new communication methods in apps and social networks, generation of new non-personal inspection technologies (drones and robotics), among other activities.

I would like to take the opportunity to give young people some advice so that their transition to the corrosion industry is as favorable as it was for me:

1. Look for a good mentor... a person who patiently shows you good corrosion practices and guides and motivates you to be a better professional every day.
2. Surround yourself with "good" people and I don't mean academic or professional quality, I mean kind, honest people.
3. Seek to surround yourself with people who add to your team, not subtract, much less divide.
4. Whatever you do, no matter how simple, do it to the best of your ability. At the end of the task, ask yourself if you gave your best, but remember that "perfect" is the enemy of "good" when you try to solve a problem quickly.
5. Keep up to date with scientific and technological advances in the industry, reading articles or attending conferences or events that allow you to keep up to date and share with your peers.
6. Study or take courses to keep up to date as well.
7. Belongs to associations in corrosion, such as AMPP, and participates in their activities to the extent possible.
8. Publish your achievements, experiences, case studies, etc., in peer-reviewed journals. Don't worry if an article is rejected... You can also learn from negative experiences and try again.