

EMERSON USES DÜRR NDT'S HD-CR 35 NDT TO ENSURE PRODUCT INTEGRITY AND PROVIDE HIGHEST QUALITY MEASURING INSTRUMENTS

Emerson was founded in 1890 in St. Louis, Missouri, as a manufacturer of electric motors and fans. Over the past 100-plus years, they have grown from a regional manufacturer into a global technology solutions powerhouse. Emerson has many subsidiaries including Emerson Automation Solutions which was founded in 2015.



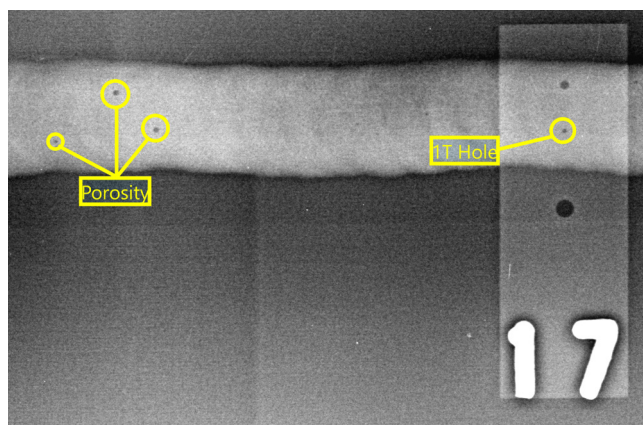
FR Tecnologías de Flujo (TF) Emerson, based in Chihuahua Mexico, is part of Emerson Automation Solutions. TF manufactures measurement instruments that are used in a wide range of industries, some of which are flow measurement instruments, density and viscosity instruments. Some of the critical industries they serve include food & beverage, life sciences, oil & gas and refining.

Welding is a core competency at Emerson and nearly all the measurement instruments Tecnologías de Flujo manufactures have pressure retaining welds that require non-destructive testing. The diameter of the welds range from 3 mm (.120") to 914 mm (36") with wall thicknesses ranging from 0.2 mm (0.008") to 38.4 mm (1.5"). In the past FR Tecnologías de Flujo utilized analog film to perform their radiographic inspection. In 2010 Emerson Automation Solutions started to investigate alternatives to film radiography and, during their investigation, they came across the versatile HD-CR 35 from Dürr NDT.

The HD-CR 35 is the most flexible and advanced CR scanner on the market today, with the ability to provide the highest resolution images in the industrial radiography industry. In addition, because of its unique TreFoc technology which offers an adjustable laser spot size, it can also provide high-contrast images when necessary. On top of this, the HD-CR 35 boasts

the smallest footprint of any CR scanner currently available on the market, which makes it completely portable.

A demonstration of its capabilities was requested, and it was found that digital radiographs acquired on the Dürr HD-CR 35, using the powerful image acquisition software D-Tect, produced images with better contrast sensitivity, which allowed to see greater variances in material thickness because digital radiography has a much higher dynamic range as compared to film. They also noticed that exposure times decreased, and it took much less time to scan an imaging plate than it took to process film. Based on the results of the demonstration and input from other Emerson locations, who had already been using the HD-CR 35, FR Tecnologías de Flujo decided to purchase a scanner and software. Since making the transition from film to CR, FR Tecnologías de Flujo noticed immediate improvements to throughput times and the evaluation process.

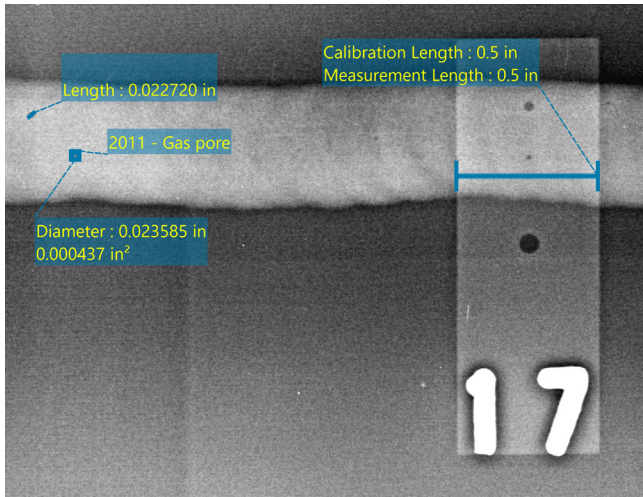


One example of how digital imaging has helped them with the evaluation process can be seen in the image above. In the past, while using film, the 1T hole in the IQI along with the three small pores in the groove weld may not have been detected. Now, however, they can increase the probability of detection by using digital imaging filters built into the D-Tect X software along with adjusting the brightness and contrast.

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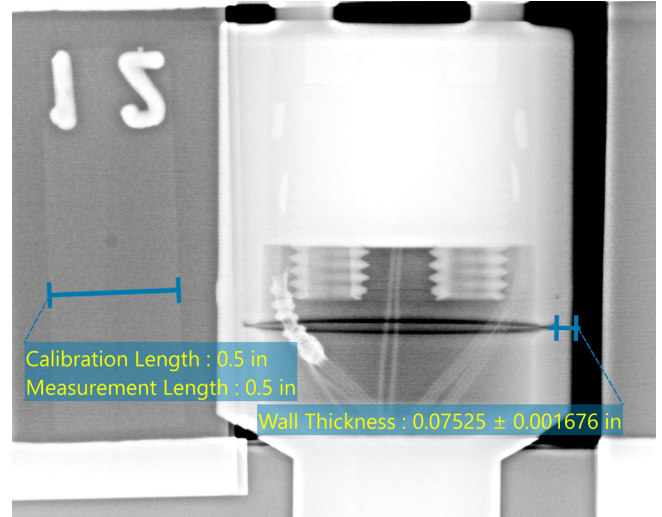


Then by using the powerful image measurement tools built into the software, it is much easier to measure and evaluate indications. With conventional radiography, inspectors needed to use magnifying glasses, or inspection loupes, and a light box in order to evaluate discontinuities. If the contrast sensitivity was poor an indication might be missed or misinterpreted. In the image above, the Inspector was able to use measurement tools in the software to precisely measure and evaluate the size of the discontinuities to determine whether the indications were acceptable.



Another example of how the improved contrast and superior measurement capabilities of the D-Tect X software has improved their inspection process can be seen with the inspection of their Fork Density Meter, which is shown in the image above. There is a small weld that is made to join the fork to the rest of the

assembly. The amount of penetration is critical on these welds; if there is too much, then there is a possibility of damage to the sensitive electronics just behind the weld joint. If there is not enough penetration, the weld does not meet design requirements. When using film measuring the amount of penetration in a profile shot using a magnifying glass or inspection loupes was a tedious process.



As it can be seen in the image above, the user can just zoom into a region of interest using the zoom magnifying function in the D-Tect X software. Then, they can then use either the wall thickness measurement tool or the line measurement tool to precisely measure the amount of joint penetration.

Since 2010, FR Tecnologías de Flujo has built three new cabinets and have purchased 6 more HD-CR 35 scanners along with D-Tect X software. FR Tecnologías de Flujo continues to grow and they are in the process of building a new X-ray bunker to help with backlog and to handle some of the largest instruments they manufacture. They are very happy with the quality of the digital images they acquire from their HD-CR 35 scanners but on top of that they have high praise for the customer support they always receive when they face difficulties.

