## FDT 2.0 Adds Features to Enhance Performance in a Full .NET Environment

The FDT Group, AISBL released the draft of its new FDT 2.0 standard to start its membership review process. This major update transitions the FDT standard to a full .NET development environment and provides significant performance enhancements for large installations and adds a wealth of new features requested by the manufacturer and end user communities. While the capabilities of the standard have been greatly enhanced, the number of interfaces has been reduced by nearly 50 percent to make it easier to develop and maintain FDT based applications.

"Our technical development team has done an outstanding job of catapulting the standard forward while ensuring backward compatibility to the installed base," states Glenn Schulz, Managing Director of the FDT Group. "The FDT standard has earned the reputation of being the standard that brings other automation standards to a common, interoperable platform for the benefit of the end user. This tradition will grow with the ability to use the upcoming FDI device package within FDT as a configuration method for process industry devices," continues Schulz.

Will Chin, Research Director, ARC Advisory Group commented, "The remarkable growth of the FDT standard in terms of vendor support and end user adoption is ensuring its continued success. The additional capabilities of FDT 2.0 make it the appropriate platform for process and factory automation applications regardless of network types and device configuration methods."

Tightly coupled to the new FDT 2.0 standard is a richly integrated development environment (IDE) called FDT Express. "When we set out to update the FDT standard, we committed to fully author the standard within the development environment. This allows us to release FDT Express coincident with the release of the standard," notes Ted Takeuchi, VP of Technology for the FDT Group. "FDT Express significantly reduces the development time of FDT applications while ensuring compliance to the standard," concludes Takeuchi. FDT Express will be made available without charge to all members of the FDT Group.

The FDT Group is also preparing its supporting infrastructure for the new standard. Common components, test tools, the style guide, the life cycle policy, and the product certification process will all be brought forward to match the new standard. Immediately after the members who chair the technology leadership positions have concluded their review of the draft standard, the general membership of the FDT Group will formally enter in the review process of the new FDT 2.0 standard prior to its anticipated public release in the first quarter of 2011.

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time constant in the detector and therefore to high measuring precision. "This way, the cesium isotope Cs-137 is adequate in 80 to 90 per cent of all applications", explains Winfried Rauer.

"We use the more strongly radiating cobalt-60 isotopes almost only when baked-on deposits are expected or when very thick vessel walls have to be penetrated." The weaker cesium-137 preparation has two decisive advantages: Firstly, cesium-137 can be shielded much better than cobalt-60 in the radiation protection container. Secondly, the long half-life of a radioactive Cs-137 source makes possible a long service life without source exchanges. In the case of Co-60 radiators, a source exchange is necessary after about seven years due to the shorter half-life. "And every source exchange means additional exposure to radiation", says Rauer.

Nucleonic gauges are being used in more and more areas of process engineering. They are no longer used only for level detection and continuous level measurement under extremely difficult measuring conditions but also for interface, density and concentration measurement in connection with toxic or abrasive liquids, for mass flow measurement, e.g. on dredgers, or as belt weighers for throughput measurement in mines, among other places. This means more and more people are handling these devices. As a result of safety-related improvements, the detector is more sensitive; therefore, the dose rate that operating staff are exposed to in the vicinity of the PROTRAC detector is considerably less than 1 microsievert per hour (µSv/h).

Again, a comparison: every person on earth is exposed to a natural radiation dosage that is far higher. In Germany, the average value of terrestrial radiation exposure is 350 µSv per year. The consumption of 170 liters of mineral water in one year exposes us to, believe it or not, an average of 100 µSv, which is just about as much as a flight from Frankfurt to New York and back. And one single CAT scan in the area of the abdomen exposes us to a dosage of 10,000 to 25,000 microsieverts.

*Under lock and key: The radioactive source sits in a multi-layered radiation protection container which protects the source capsule from damage. The radiation is focussed and directed in a narrow beam to the detector.*

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*VEGA Instruments (SEA) Pte Ltd*


# INTELLIGENT CONNECTIONS

Professional Excellence

A NewsLetter of the Instrumentation & Control Society — October 2010


# ICS Has An Important Role To Play

When it comes to process control and engineering, automation and instrumentation, ask the man in the street what he knows of this industry sector and he is most likely to shrug his shoulders and give you a blank stare.

President-elect of the Instrumentation and Control Society (ICS) of Singapore, Anup Bhargava of GE wants to change all that. "We've kept our light hidden under a bush for too long, it's about time people began to understand what ICS is, and what it can do."

Presently, the ICS has a membership of about 200. Anup hopes to increase that, substantially, to at least 500 members. There is the possibility of many more people joining if the ICS can reach the right people. He has plans for ICS!

This Indian-born engineer is Asia Commercial Director, GE Energy, Power & Water, based in Singapore. He has served on the ICS Council since 2002 and has been Vice-President these past two years.

During a very challenging year for the industry generally, there has been a constant demand for improvements in processes and controls. With the uncertain economic climate and increased accountability to environmental practices, industrial operators are faced with challenges to ensure the robustness of their automation and process controls.

More efficiently designed plants, for long-term operability, also need to be considered.

Anup hopes that ICS will be able to influence the EDB and other agencies involved in manpower planning in Singapore to ensure that the right numbers of people with the right range of skill sets are available to meet the industry's needs over the coming years. Working alongside academic institutions, training companies and research centres to provide relevant courses will also form a valuable part of implementing this step-by-step process. But, he is also aware of the need to bring additional skilled people into Singapore to help the nation to become a regional centre of expertise in this field.

The President-elect is certainly confident that ICS can continue to play an important role, not only through presentations at upcoming conferences, providing the necessary platforms for the industries to meet, network and share ideas on how to handle key challenges and the opportunities available but also encourage dialogue between the various manufacturers and organisations to find better, more efficient solutions..

However, Anup is keen to see future conferences in this field develop a greater emphasis on showcasing present applications and research papers.

"I also hope to see greater participation from smaller countries and to have representatives of small to medium-size companies participating and presenting", he added.

"We want to help, we want ICS to be recognised as a power within the industry. This Newsletter is a first step as we reach out to the industry. Our members are invited to use this platform to further their own educational efforts.

"ICS is reaching out. Grasp this opportunity wholeheartedly. Join a vibrant, energetic new committee in making ICS one of the best such societies in the world."

## What's it all about?

Originally known as the Singapore section of the Instrument Society of America (ISA), on November 1976, the section had its first AGM, after which Mr. Soh Juin Wei of the Singapore Technical Institute was elected President. Since then, the society has been very active, striving to meet its objective:

***"To advance and reinforce the arts and science related to theory, design, manufacturing and use of instruments and control in the various sciences and technologies for the benefit of mankind."***

In May 1984, in accordance with the Constitutions and Bylaws of Singapore, a Special General meeting was held and the motion to change the society was proposed, seconded and voted. The name '***Instrumentation and Control Society***' was adopted and was later approved by the Singapore Registrar of Society (August 1984).

*Secretary B. T. Tee welcomes a visitor to a meeting while assuring him the ICS is more than just beer and bar food*

## *ICS Industry Leaders' Night*

On Friday 30th July, as part of General Electric's corporate sponsorship of the Instrumentation and Control Society I had the honour of being invited to join the ICS Industry Leaders' Night meeting as a guest. On my way to the meeting venue at NUSS Guild House, Kent Ridge I was thinking about what to expect from that evening, as I was not too familiar with this non-profit organization.

Of course I did some research and learnt some basics but still I was a little sceptical if this was really the right forum for my interests. The evening got kicked off with a quick introduction about ICS, who they are, what they do and what they want to achieve.

The guest of honour was Mr. Neil McGregor, CEO of SLNG talking about Singapore's new LNG terminal. He continued to share some ideas about his view of leadership and it was interesting to follow his train of thought as Mr. McGregor warmed to his topic.

A buffet dinner was served and I got the chance to talk to a great variety of people, all from different companies but either directly or indirectly related to the energy sector. Personally, I valued this great opportunity very much: A chance to discuss with leaders from all the various players in the energy sector and getting different opinions on specific topics.

In summary this evening was a great success and I can only encourage interested people to join this great forum. It offers the opportunity to exchange thoughts with leaders of the energy sector in a nice and relaxed atmosphere.

***Michael Roeder, GE Power & Water***


*Anup Bhargava gives a brief introduction to the assembled guests*

*Neil McGregor holds the undivided attention of the guests with his plans for the SLNG*

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For those of you who missed Jonas Berge's presentation on WirelessHART earlier this year this short article from the Web gives basic details of the standard and how it has the capability of changing industry.

## *A Wireless Solution for Process Industries – WirelessHART*

***The HART Protocol was developed in the mid-1980s by Rosemount Inc. for use with a range of smart measuring instruments. Originally proprietary, the protocol was soon published for free use by anyone, and in 1990 the HART User Group was formed. In 1993, the registered trademark and all rights in the protocol were transferred to the HART Communication Foundation (HCF). The protocol remains open and free for all to use without royalties.***

Developed as a multi-vendor, interoperable wireless standard, WirelessHART was defined specifically for the requirements of Process field device networks. WirelessHART is an open-standard wireless networking technology developed by HART Communication Foundation. The protocol utilizes a time synchronized, self-organizing, and self-healing mesh architecture. The protocol currently supports operation in the 2.4 GHz ISM Band using IEEE 802.15.4 standard radios.

The standard was initiated in early 2004 and developed by 37 HART Communications Foundation (HCF) companies that included ***ABB, Endress+Hauser, Emerson, Pepperl+Fuchs, Siemens*** and others. The underlying wireless technology is based on the pioneering work of Dust Networks, and the company's TSMP technology is considered a foundational building block of the WirelessHART standard.

WirelessHART was approved by a vote of the 210 member general HCF membership, ratified by the HCF Board of Directors, and introduced to the market in September 2007. On September 27, 2007, the Fieldbus Foundation, Profibus Nutzerorganisation, and HCF announced a wireless cooperation team to develop a specification for a common interface to a wireless gateway, further protecting users' investments in technology and work practices for leveraging these industry-pervasive networks. Following its completed work on the WirelessHART standard in September 2007, the HCF offered ISA an unrestricted, royalty-free copyright license, allowing the ISA100 committee access to the WirelessHART standard.

Backward compatibility with the HART "user layer" allows transparent adaptation of HART compatible control systems and configuration tools to integrate new wireless networks and their devices, as well as continued use of proven configuration and system-integration work practices. Building on the estimated 25 million HART field devices currently installed, and approximately 3 million new wired HART devices shipping each year, end users are already embracing the industry's first unifying wireless field device standard. In September 2008, Emerson became the first process automation supplier to begin production shipments for its WirelessHART enabled products.

During the Summer of 2009 NAMUR conducted an extensive, multi-vendor field test of WirelessHART to verify alignment with the NAMUR requirements for wireless automation in process applications. NAMUR reported that WirelessHART provides the flexibility, security, robust performance, coexistence with other radio technologies and device interoperability within a WirelessHART network that NAMUR's members should expect.

In April 2010, WirelessHart was approved by the IEC as the first international standard for wireless, IEC 62591.

## *Nucleonic Measurement - Safer and More Reliable Than Ever - an extract*

*By Roland Bonath, Product Management, VEGA Grieshaber KG*

No need for fear of gamma rays: new developments make nucleonic measurement still safer. Nucleonic gauges can be found everywhere where extreme conditions would mean the end for any other measurement technology. That's because nucleonic devices measure contactlessly, which makes the measuring systems wear free and practically maintenance free as well.

However, since this technology uses radioactive radiation, safety is the top priority. New developments provide not only improved radiation protection, but also optimized process reliability.

The use of radioactivity for level, limit level, density or mass flow measurement has many advantages in comparison with other measuring methods, but also two disadvantages: nucleonic instruments are somewhat expensive and their operation requires special permits and safety precautions. That's why nucleonics is only used in measurement engineering when measuring probes that protrude into the vessel are not able to handle the measuring task. Indeed, to this day, some areas of application do not allow any alternative to nucleonic measurement. Because only measurement technology using gamma radiation is completely unaffected by high vessel pressures, corrosive media, extreme temperatures or problematic physical product characteristics and be able to continuously deliver exact and reliable measuring results. Such demanding measurement applications, which require media to be detected without contact and without gauge maintenance, can be found primarily in large processing installations in the chemical and petrochemical industry, but also in the offshore and oil industry and in cement, power generation and sewage treatment plants.

All over the world, the so-called ALARA principle applies to radiation protection: "*As Low As Reasonably Achievable*." This means: radiation exposure has to be kept as low as possible. But what if a malfunction occurs that perhaps at first doesn't have anything to do with the radioactive part of the measuring device? The built-in safety functions must then take over. A sign of the high quality of the safety functions of a device is the SIL mark. "SIL" stands for "Safety Integrity Level" and serves as an evaluation of electronic systems with regard to the reliability of their safety features. Only if the entire system, including the software, provides a maximum degree of safety, not only in normal operation but also in case of failure, will the device receive the SIL certificate. There are two ways to get the SIL certificate: one is through so-called "service-proven technology", i.e., a defined minimum number of devices is already in use over a defined time period, so the device is considered reliable in its function.

The second way is SIL-certified device development. Here, the international norm IEC/EN 61508 precisely defines the strategy in the individual development stages. All devices developed according to SIL operate with the proverbial "belt and braces" approach: security-relevant functions and components are often redundant, so that the device can fall back on the twin function automatically if the first one fails.

**VEGA Grieshaber KG** in Schiltach – widely known as the technology leader in the area of radar level measurement – recently extended its line of products with the "PROTRAC" series of nucleonic gauges. In the process, the company actually improved the established safety standards for nucleonic gauges. This resulted in the first nucleonic devices to be developed in compliance with SIL specifications for continuous level measurement, level detection as well as interface and density measurement.

From a safety-engineering standpoint, the most important element in a nucleonic gauge is of course the radioactive preparation itself. That's why the measurement technology experts have taken a very close look at the different radionuclides that come into question as possible radiation sources. They came to the realization that each measurement application requires an individual decision about which factors are important for the measurement.

"Until now, we always had to do a balancing act with respect to the time constants in the measurement", says Winfried Rauer, project manager for nucleonic sensors at VEGA. "There were either exceedingly precise or exceedingly fast results. Whoever wanted both had to go for a stronger radioactive radiation source." To fulfill both wishes at the same time with low radiation intensity, the measurement technology specialists at VEGA have developed a special adaptive measuring filter that automatically determines the optimal time constant: if the measured medium changes fast, the filter switches over to a short integration time.

Slow measured value changes however lead to a longer

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