

# INDUSTRIAL WIRELESS & ETHERNET CONFERENCE 2009

**1st – 3rd  
December 2009**  
**De Vere Daresbury Park**  
**Cheshire England**

## PRE-CONFERENCE WORKSHOP:

**Ethernet and Industrial-Strength  
Wireless – The Logical Intersection**

**Presented by Dr. Peter L. Fuhr  
and Wayne W. Manges**

## BENEFITS OF ATTENDING:

- Understand current wireless networking offerings on the market
- Apply today's wireless technology to industrial automation
- Receive advice on successful implementation of your own wireless LAN and interface it to Ethernet
- Implement effective security on your wireless and Ethernet networks
- Learn the strengths and weaknesses of the different wireless technologies
- Find out the operation of standards such as IEEE 802.11
- Learn how to conduct a site survey in preparation for a wireless implementation
- Understand the basic terminology and jargon used in this area
- Network with your peers

## WHO SHOULD ATTEND:

Engineers and Technicians involved with:

- Control and Instrumentation
- Industrial Automation
- Consulting
- IT Personnel
- Process Control
- SCADA and Telemetry Systems
- Design
- Electrical Installations
- Process Development
- Control Systems
- Maintenance Supervisors
- Project Management
- Equipment Manufacturing
- Regulatory and Legal Issues
- **Anyone involved in the installation, design and support of communications systems**

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#### **WAYNE W. MANGES**

**P.E. UNITED STATES OF AMERICA**  
Program Manager, Industrial Wireless  
Technologies at Oak Ridge  
National Laboratory  
Co-chair, ISA100, Standard for  
Wireless Industrial Automation  
Board Member; Wireless Industrial  
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#### **PETER L. FUHR**

**PH.D. UNITED STATES OF AMERICA**  
Chairperson, Wireless Industrial  
Networking Alliance  
Co-Chair, ISA100 WG5, Wireless  
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# INTRODUCTION TO INDUSTRIAL WIRELESS & ETHERNET

The use of wireless, mesh networks and Ethernet in industrial and plant floor environments has grown dramatically in the past few years. Industrial users face a wide range of options when designing and implementing plant level wireless and Ethernet networks. Great success is being achieved using wireless, provided certain ground rules are applied such as ensuring a robust physical link, correct integration with the wired communications system and defence-in-depth data security.

Arguably, the most important objectives of wireless communication networks must be to achieve similar capacities, bandwidths, responsiveness, integrity, reliability and responsiveness to that of structured wired based communications with an emphasis on the unique needs and challenges faced by industrial networks.

Attention will also be focused on the integration of communications protocols, standards, and SCADA systems into your everyday business processes. Now more than ever before, industry

## CONFERENCE DAY 1 - Wednesday 2nd December 2009

8.00am	<b>Registration</b>
8.30am	<b>Opening Address</b> Dr. Peter Fuhr - Chair, Consulting Associates for Wireless, Security and Sensors
8.45am Session 1	<b>ISA100 - THE Standard for Wireless Industrial Automation</b> Wayne W. Manges - Program Manager, Industrial Wireless Technologies, Oak Ridge National Laboratory  <b>KEY NOTE</b> ISA100 represents a family of standards being developed under the consensus driven collaborative process established by the American National Standards Institute (ANSI). The International Society of Automation (ISA) was asked by its membership to begin the process in 2005 and is releasing the first of the family in August 2009. The release of ISA100.11a, focuses primarily on wireless automation of process systems, establishes the basis for security and technical robustness. Delegates will learn how to apply ISA100, ISA100.11a and subsequent standards emerging from the ISA100 committee. The presentation will describe the technological underpinnings of the family and its intended application domains.
9.45am Session 2	<b>Ethernet Transmission Over Legacy Cables Using SHDSL Technology</b> Tony Samm - Sales Development Manager, Westermo Data Communications Ltd  This presentation will cover how Ethernet can be deployed in legacy environments without the need to install new cabling. Where nothing more than a twisted pair of wires between nodes is available, delegates will learn how SHDSL is a technology to solve this issue. Modern communications technologies are now required in areas of industrial communications to enable greater flexibility and functionality. Delegates will learn how this is achievable with the latest in industrial communication equipment. Delegates will leave with an understanding of a path available to enable them to take advantage of the latest generation of IP based equipment without the need of installing new and expensive network cabling.
10.30am	<b>Morning Tea</b>
11.00am Session 3	<b>Wirelessly Reading Manual Dial Gauges &amp; Monitoring Steam Traps</b> Harry Sim - CEO, Cypress Envirosystems  <b>CASE STUDY</b> For sites with older equipment requiring manual monitoring data is not easy to gather, trend or alarm and cannot easily be integrated into energy monitoring, predictive condition based maintenance, or process improvement efforts. Automation of these readings would be ideal, but the cost and disruption to install transducers are prohibitive. Wireless based instrumentation such as Gauge Readers and Steam Trap Monitor are non-invasive devices which clamp-on existing gauges and steam traps in minutes, and cost 80% less than conventional retrofits. A case study will show how Genetech were able to improve their asset management strategy, find energy savings and improve uptime. This session will also have an interactive demonstration of Wireless Gauge reading. Delegates will hear how to apply wireless, battery operated solutions to older instrumentation not otherwise included within site SCADA, DSC, Control system or BMS. They will learn how to solve costly integration of legacy instrumentation and will hear new ways to increase battery life of wireless based instrumentation and save energy in steam trap applications.
11.45am Session 4	<b>10 Commandments of Wireless Communications</b> Paul O'Shaughnessy - Business Development Manager, B&B Electronics Manufacturing Company  The wireless communications age is upon us. Old technologies have evolved and improved. New technologies have eclipsed their predecessors in speed, power and reliability. Prices have declined to the point where wireless solutions are always less expensive than pulling new wire. Automation applications should be adopting wireless at a staggering pace, but they're not. One of the biggest hurdles to wireless adoption has been because wireless doesn't work. Delegates will leave with a toolbox of knowledge, the Ten Commandments of Wireless Communications, enabling them to address the crucial issues; path loss, fade margin, antenna installation, frequency selection, receive sensitivity, cable loss, and other topics that the must be considered when specifying and installing a successful wireless automation system.
12.30pm	<b>Lunch</b>
1.15pm Session 5	<b>Can WiFi Deliver a Secure &amp; Reliable Solution for the Electric Power Industry?</b> Lee Lipes - Product Manager, Radio Products, RuggedCom Inc  802.11 or WiFi technology has delivered on the application promise of extending LAN services across residential and enterprise networks of varying sizes. Despite

<b>CASE STUDY</b>	overwhelming success there is apprehension from certain market segments, such electric power, towards leveraging this technology for mission critical applications in harsh environments. This paper addresses the main concerns and objections of deploying 802.11 in the electrical substation, including concerns about security, jamming, interference, and performance in the presence of electrical noise. Through examination of case studies and practical examples delegates will gain an appreciation whether WiFi can provide a solution for mission critical applications such as those found in sub-station environments.
2.00pm Session 6	<b>Industrial Wireless Ethernet Systems: Implications &amp; Applications for the Smart Grid</b> Dr. Peter Fuhr - Chair, Consulting Associates for Wireless, Security and Sensors  Electrical systems worldwide are being upgraded and/or expanded by the introduction of demand-response systems, alternative energy sources (wind, solar, etc), and home metering. The net result is a wide cross-section of technologies that are intertwined into what is being called the Smart Grid. Potential applications for industrial wireless Ethernet systems in this arena abound. Delegates will hear how industrial wireless Ethernet systems can (and will) be used in the Smart Grid effort. System implications that the electricity generation facilities are facing as a result of the Smart Grid push will be discussed. Delegates will learn how industrial wireless Ethernet systems can be secured for Smart Grid rollout.
2.45pm	<b>Afternoon Tea</b>
3.15pm Session 7	<b>Go Wireless! Why and How Industrial Wireless Works for Industrial Automation Engineers?</b> Bruno Forge - Marketing Manager - Europe / Middle East / Africa, ProSoft Technology  Installation time, cost reduction, flexibility... new options for connecting remote or moving devices... operation costs reduction... improvement of machine performances... This presentation will explore several wireless case studies and testimonies from the factory automation, oil & gas, steel, food and beverage, cranes and material handling, and water/wastewater industries. It will highlight the various benefits of industrial wireless within various networking strategies. Four applications will be reviewed in detail focusing on the wireless project approach methodology and benefits experienced by users: Metal press application at Gestamp Automoción, wastewater treatment plant in Lapuan (Finland), bottling rotating carousel at Procter & Gamble, and a hoist crane on the production floor at Capral Aluminum. Delegates will gain a valuable tool box of solutions and applications to apply to each situation, and will be able to understand the benefits from user's point of view.
4.00pm Session 8	<b>Your Requirements Fulfilled with Wireless Based Solutions</b> Philippe Goutaudier - Program Manager, Schneider Electric  Wireless based solutions can meet many requirements of the industrial automation market today. These requirements are driven by the desire to increase mobility and flexibility, improve accessibility to remote or hard-to-reach locations and to reduce cost by reducing or eliminating cable installations. In recent years the explosion of wireless based products, as well as the arrival of new generation decision makers familiar and comfortable with these high-tech products, has resulted in a growing acceptance. Delegates will learn which wireless based solutions are best used, in order to improve mobility, connectivity and to reduce cabling, for various requirements and cases.
4.45pm Session 9	<b>Efficient Hazardous Area Maintenance Using Wireless Mobile Computing and RFID</b> Kevin Boyd - General Manager, Arnlea Systems Limited  <b>CASE STUDY</b> Budgets are being cut and profit margins squeezed. Yet, plant and maintenance management must continue to ensure that equipment is regularly inspected to maintain safety, integrity and reliability. But, the old ways of working are generally inefficient and ineffective - a new way of working is required. Delegates will hear case studies that describe how a new way of working has been introduced to improve the integrity of electrical and mechanical equipment located in hazardous areas, and the benefits achieved. Delegates will gain an understanding how today's technologies are being applied, which in turn has the potential to deliver significant operational performance improvements and reduce the risk to the plant.
5.30pm	<b>Close</b>



and utilities rely on their communication systems to improve their quality, reliability, efficiency and of course their bottom line. In order to have a competitive advantage you need to be armed with up-to-date, practical and competent advice to make informed and profitable decisions. Proven tactics far outweigh theoretical decisions and the key to success when working with wireless, Ethernet and industrial automation systems is taking advantage of the latest concepts and approaches.

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*All conference papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of data communications and networking.*

## CONFERENCE DAY 2 - Thursday 3rd December 2009





8.30am	<b>Network Architectures and Backhaul Technologies for Industrial Wireless Ethernet Systems</b>		of the wide range of emerging applications for Ethernet in hazardous area applications.
Session	Dr. Peter Fuhr - Chair, Consulting Associates for Wireless, Security and Sensors		
10	Ethernet communications, be it wired or wireless, require an infrastructure in place for transport. In the industrial wireless world this implies that an IP-based network comprised of elements of Wi-Fi, WiMax and other transport means are used. Delegates will gain an understanding of applicable network architectures and associated security models. Architectures consistent with SP99 and ISA100 principles of trustworthiness and security will be demonstrated. Delegates will hear case studies on the architectures used in IP networks for organizations such as BP, ExxonMobil, Shell and Chevron.		
9.30am	<b>Is Consumer Wireless Broadband Technology a Suitable Communication Medium for the Utility?</b>		
Session	Lee Lipes - Product Manager, Radio Products, RuggedCom Inc		
11	The development and deployment of mobile broadband wireless technology is being driven by large service providers delivering consumer services. There is a growing interest within certain vertical markets to leverage mobile broadband technology for their internal applications requiring metro area connectivity including SCADA, video surveillance and so called "smart grid" initiatives. This paper will examine broadband wireless technology alternatives including cellular or 3G based, WIMAX or 802.16 based and proprietary implementations, and maps their strengths and weaknesses against various applications. Delegates will gain a broad appreciation of the emerging wireless broadband technologies by examining if technology designed for the consumer market place is suitable for industrial applications.		
10.15am	<b>Morning Tea</b>		
10.45am	<b>Interfacing Wireless Sensor Networks Through Labview</b>		
Session	Kenneth Armstrong - KTP Associate, Booth Welsh Automation Ltd		
12	As wireless technologies are beginning to be implemented for factory and process control applications it is still somewhat unclear how such systems can be integrated within monitoring and control systems. Delegates will learn how a wireless sensor network can be integrated with Labview using OPC and Modbus to monitor wireless pressure devices on a pneumatic conveying rig. The session will further highlight the purpose of the wireless monitoring system on the pneumatic conveying rig, and the future implementation of a fully automated wireless monitoring and control system for conveying an assortment of materials.		
11.30am	<b>Wireless Technologies take Personnel Safety in the Process Industries to a New Level</b>		
Session	John Hartley - Managing Director, Extronics Ltd		
13	This presentation will present the main location tracking technologies and look at the pros and cons of applying them in real world applications. One application is very accurate, but very expensive and the other is low cost but suffers from multipath problems. After this sessions delegates will have develop an understanding of how they can apply the latest wireless technologies to improve the safety of personnel in industrial facilities.		
12.15pm	<b>Lunch</b>		
1.15pm	<b>Taking Ethernet into Hazardous Areas</b>		
Session	Roger Highton - Senior Product Manager, MTL Instruments		
14	In recent years the 'open connectivity' offered by Ethernet has benefited industrial applications in factory and process automation with improvements in specification and reductions in cost. The deployment of Ethernet in process automation has been hindered by the frequent requirement for installations in a hazardous area where flammable materials may be present. This presentation will describe how intrinsically safe Ethernet capable of providing IS power to suitably certified end devices has overcome these limitations.  A case study on a major European chemical manufacturer's application will show how intrinsically safe Power over Ethernet (PoE) WLAN infrastructure delivers full engineering workstation capability for the mobile operator for batch operation set up. Delegates will leave this presentation with knowledge		
2.00pm	<b>Wireless Control - Has the Time Finally Arrived?</b>		
Session	Wayne W. Manges - Program Manager, Industrial Wireless Technologies, Oak Ridge National Laboratory		
15	This presentation focuses on the issues associated with using industrial wireless technology for control applications. For example, would you use wireless for an emergency stop operation? Unlikely or possibly illegal. The issues of latency and jitter, and their potential impact on control stability are introduced and investigated. Some early successes for control are used as examples with appropriate cautions for extending to other domains. Delegates will learn how to apply industrial wireless technology to control applications and understand its inherent limitations.		
2.45pm	<b>Afternoon Tea</b>		
3.15pm	<b>Wireless Technology for Remote Access of Unmanned Sites</b>		
Session	Peter Jefferson - General Manager, MAC Solutions (UK) Ltd		
16	This presentation addresses some of the techniques available today, that can provide secure data transfer between central locations and multiple remote sites. Delegates will learn new ways to interact with their remote machines, sites and assets by utilising modern, fast and secure Industrial-strength VPN technologies. They will gain an understanding of how such installations can save them time, money and aggravation by reducing expensive and time-consuming site visits. Additionally they will be shown how such remote systems can be set to automatically send "Help Me" messages and operational data back to base in order that customer intervention can take place, before downtime actually occurs. Delegates will hear about real-world case studies, and will be shown how to access free-to-use interactive demonstrations which allow them to try the systems for themselves from the comfort of their own office.		
	<b>CASE STUDY</b>		
4.00pm	<b>3G Communications in Industrial Systems</b>		
Session	David Evans - Product Development Manager, Amplicon		
17	This presentation looks at the evolution of cellular networks over the last 20 years and how they are currently being used to provide cost-effective communication links for remote sites, moving vehicles and for instant internet access in rapid deployment systems. This talk aims to remove the complexities behind cellular systems and highlight in plain English what a company would need to do to achieve a complete working solution. Delegates will understand how the cellular networks are currently set up and how they can use them in their own systems. The presentation will provide information on the pitfalls of cellular communication and how to work around them. A live demonstration will show exactly how a 3G router must be set up to achieve internet access anywhere that a mobile phone signal can be received.		
4.45pm	<b>Close</b>		

## Sponsorship Opportunities

Representing your business at the 2009 Industrial Wireless & Ethernet Conference will provide you the opportunity to reach key decision makers from a multitude of industries.

For more information on our cost effective sponsorship and exhibition opportunities please contact Jasmin Hazelton via email [jasmin@idc-online.com](mailto:jasmin@idc-online.com)



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