



**FREE LogixPro  
and Process  
Control  
Software!**



**Instrumentation  
& Control**



**FOUR INTENSE DAYS OF TRAINING**



**Who Should Attend**

This Master Series course is for you if you are from a control and instrumentation background. It has been developed for those whose time is limited and who work in a critical role or situations where a lengthy time away for study is impossible.

**Why You Should Attend?**

- To gain a clear picture of the latest developments and future directions in control and instrumentation from experts in the field
- Learn how to make reliable, well grounded and commercially viable technical, financial and management decisions in the control and instrumentation business
- An understanding of how successful control and instrumentation engineers communicate their vision and values to build up a super effective team

Don't miss this great training opportunity - presented by some of the worlds leading instrumentation and control engineers.

**Sessions will cover the following key areas:**

- Industrial data communications and wireless
- Safety instrumentation and machinery safety
- Process control
- HAZOPs
- Industrial network security
- Hazardous areas
- SCADA and PLC systems
- Project management of I & C projects
- On-going case study of a real process plant



*Technology Training that Works*

AUSTRALIA • CANADA • INDIA  
IRELAND • MALAYSIA • NEW ZEALAND  
POLAND • SINGAPORE • SOUTH AFRICA  
UNITED KINGDOM • UNITED STATES • VIETNAM

**2009 DATES**

**MANCHESTER, UK**  
3, 4, 5 & 6 March

**JOHANNESBURG, SA**  
18, 19, 20 & 21 May

**HOUSTON, USA**  
22, 23, 24 & 25 June

**BRISBANE, AU**  
13, 14, 15 & 16 July

**KUALA LUMPUR, MA**  
24, 25, 26 & 27 Aug

**CALGARY, CA**  
14, 15, 16 & 17 Sept

**BALI, ID**  
12, 13, 14 & 15 Oct

**For enquiries, e-mail [idc@idc-online.com](mailto:idc@idc-online.com)**

## About the Master Series

The Instrumentation and Control Master Series delivers a critical blend of knowledge and skills, covering technology in control and instrumentation, industry analysis and forecasts, leadership and management - everything that is relevant to a modern control and instrumentation engineer. You will be exposed to four high impact days where you will not only hear from outstanding experts in each of the key areas but undertake practical hands-on sessions and exercises.

## Three Areas of Focus

The I&C Master Series is split into three focused areas of learning which are all linked together through the case study of Hi-Tech Inc's plant:

### 1. Market and Industry Intelligence

A review of where control and instrumentation engineering is heading with forecasts on trends in equipment, technologies employed and personnel.

### 2. Management and Business

Good management, financial and business skills are provided in these modules. These highly practical interactive sessions provide you with solid skills in this often neglected area for control and instrumentation engineers.

### 3. Technology and Engineering

A solid overview of the latest trends in instrumentation and control technology and what you need to do to take advantage of these.

## Case Study

### Deciding on the overall strategy: Hi-Tech Inc.

This unique case study is a common thread throughout the four days, you will have the opportunity to test out your ideas and make decisions based on the materials studied.

The case study pitches the delegates, in teams, against each other in the design costing of a state-of-the-art plant. The case study is exciting, intense, useful and fun.

## Hear from international experts via live web conference!

Bring your laptop/notebook computer to take full advantage of this IDC Technologies first. The 2009 Master Series will be combining in-classroom instructors with international instructors live via our web conferencing software, iQuokka.

## Expert Speaker Faculty

Your team of presenters and facilitators are all experts in their fields - technical specialists, management consultants and practicing consultants. The facilitators will work with you to ensure understanding throughout the four days. Experts will also guide you via web conference to give you an international perspective.

## Day One

### Module 1 Setting the Scene

issues, timing, instructors and protocols to be followed during the exercises. Participants will be introduced to each other and their assigned team.

### Module 2 I&C Standards, Drawings and Documentation

- Introduction to plant design
- Process diagrams
- Instrumentation documentation
- Electrical documentation
- Vendor packages
- Change control

### Module 3 Process Control

- Basic control concepts
- Principles of control systems
- Stability and control modes
- Tuning of closed loop control
- Cascade control
- Feed-forward control
- Long dead time in closed loop systems

### Module 4 Advanced Process Control

- Economic justification of advanced control
- An overview of control problems
- Internal model control
- Model Predictive Control (MPC)
  - Model representations
  - Model identification
  - Observers
  - Control
- Control formulation problem
- MPC steady state optimisation
- Application to the control of two different units on a process simulator

## Book Your Place NOW

Email your interest to:  
[register@idc-online.com](mailto:register@idc-online.com)



## Day Two

### Module 5 Industrial Data Communications and Wireless

- Introduction
- Fundamentals
- Copper/fibre
- Physical layer standards - RS-232/RS-485/IEC 61158-2
- Industrial networks - industrial Ethernet; ASi; Foundation Fieldbus; HART; ProfiNet; HSE
- Industrial protocols - TCP/IP, Modbus, Modbus/TCP
- Wireless fundamentals
- Radio telemetry
- Selection methodologies
- Installation methodologies
- Commissioning/testing and troubleshooting
- Industrial network security

### Module 6 Safety Instrumentation and Machinery Safety

This session will provide an essential grounding in these safety standards.

- Overview of safety instrumented systems
- Introduction to IEC 61508
- Overview of IEC 61511
- Principles of risk reduction and safety allocation
- Practical SIS configurations
- Selection of sensors and actuators for safety duties
- Reliability analysis
- Selection of safety controllers
- System integration and application software
- Machinery safety principles
- Guide to regulations with machinery safety

### Module 7 HAZOPs

- Preparations for and conduct of a HAZOP workshop
- Team member responsibilities
- Good HAZOP workshop records
- Hazard identification and risk management
- Quality HAZOP reports and action files
- Cost considerations
- Alternatives to HAZOPs

### Module 8 Budgeting, ROI and Finance of I&C Projects

- Introduction
- Basic accounting concepts
- Budget preparation and control
- Understanding cash flow
- Estimation and costing
- Time value of money and discount rates
- Investment appraisal methods
  - DCF
  - Payback
  - NPV
  - IRR
- Capital budgeting
- Decision making
- Tax
- Risk and uncertainty

## EARLY BIRD BOOKING OFFER

Register by the early bird date  
for your 5% discount off  
the standard fee!  
(See Registration Form for details)

## Day Three

### Module 9

#### Hazardous Areas and Intrinsic Safety

- Background to hazardous areas
- Zones and definitions
- Flameproof concept Ex D
- Intrinsic safety concept Ex I
- Increased safety concept Ex E
- Non sparking concept Ex N
- Purge and pressurisation
- Concept Ex P
- Combined and other methods of protection
- Electrical hazards, earthing and bonding
- Standards and codes of practice
- Maintenance, fault finding and repairs

### Module 10

#### SCADA, PLC and DCS Systems

- Fundamentals
- SCADA software
- Distributed Control Systems
- Distributed vs localised I/O
- PLCs and PACs - the battle of acronyms
- OPC a bridge between PLCs, DCSs and SCADA systems
- Optimal alarm management
- Integration with business systems

### Module 11

#### Project Management of I&C Projects

- Fundamentals of project management
- Time management
- Cost management
- Integrated cost and time management
- Construction contracts
- Management of the project team
- Risk management
- Contract law
- Project planning
- Application to instrumentation and control

### Module 12

#### Preparation for Presentations

Each team will prepare for the presentations on the next day. The instructors will spend time with each group to ensure that their materials are presented as effectively and practically as possible.

## Day Four

### Module 13

#### Real-time Management Information and other Value-adding Systems

- Systems Hierarchy models
- Components within the Systems Hierarchies
- Models used to design higher-level systems
- Standards applied in the design of higher-level systems
- Higher-level systems functionality

### Module 14

#### Delegate Presentations

Throughout the technical modules, participants operating in small teams, complete a series of exercises based on constructing a new plant. Time will be set aside to collate the exercises into a presentation. During this session, each team will present its plans to the other teams.

### Module 15

#### Review of Exercises and Case Study

A review will be made on the exercises and submissions and builds on previous sessions. The instructors will participate here.

### Module 16

#### Forecasts and Predictions

- Main technology trends
- Conflicting data
- How to resolve
- Technical skills squeeze
- Outsourcing
- The China Challenge
- Market predictions

**Book Your Place NOW**

Email your interest to:  
[register@idc-online.com](mailto:register@idc-online.com)

## What You Take Away

Not only do you take away detailed notes for all the modules covered but you will also receive a comprehensive collection of three instrumentation and control manuals with over 1500 pages, covering such subjects as industrial data communications, process control and safety instrumentation. Valuable PLC software, 'LogixPro' and advanced process control software is also included!



## Continuing Professional Development (CPD) Hours

This program is designed to meet your continuing professional development requirements.

Please contact your workshop coordinator for CPD details in your country.



## SUMMARY OF THE 4-DAY COURSE

Day 1	Day 2	Day 3	Day 4
Setting the Scene	Industrial Data Communications	Hazardous Areas and Intrinsic Safety	Real Time Management Information
Best Practice C&I Standards and Drawings	Safety Instrumentation and Machinery Safety	SCADA, PLC and DCS Systems	Delegate Presentations
Lunch	Lunch	Lunch	Lunch
Process Control	HAZOPs	Project Management and Management of C&I Projects	Review of Exercises and Plant Design
Advanced Process Control	Budgeting, ROI and Finance of C&I Projects	Preparation for Presentations	Forecast and Predictions

## How to Register

Book your place on the Instrumentation and Control Master Series by completing the Registration Form attached.

Places are limited - don't miss out - book your place today.

## Want to Know More?

To find out more about the I&C Master Series visit:  
[www.idc-online.com](http://www.idc-online.com)

# Expert Speaker Faculty

Your team of presenters and facilitators are drawn from experts in their fields. They will work closely with you to ensure your full understanding throughout the four days.

## Programme Director & Presenter

### Dr. Rodney Jacobs

NH Dip, M Dip Tech, BA (Hons), D Tech

Rodney has over 20 years experience in the gold mining industry, both underground, as well as specialising in Metallurgical operations in the Gold Plants. He has worked predominately in the instrumentation, process control and automation field, and is responsible for hardware and software designs associated with instrumentation. Areas of special interest include PLCs, SCADA systems, process control and programming. Having spent many years on the shop-floor, Rodney has built up a vast amount of hands-on practical experience.

Rodney is currently active as a Consulting Engineer in the field of instrumentation, both to the mining industry as well as to other general engineering companies, which require specialised solutions and is also a part-time university lecturer, presenting Electronics and Digital Systems.

Rodney feels that people are the most important asset of any organisation and has a qualification in Psychology, to complement his Engineering knowledge and experience.



## Programme Designer

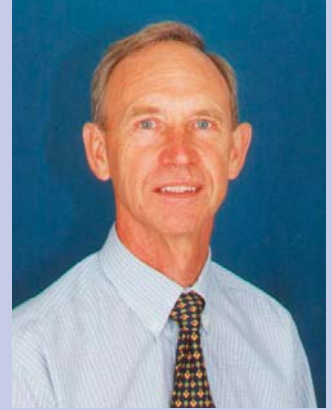
### Dave Macdonald

BSc (Hons) Inst. Eng.

Throughout his career Dave has been involved in the application of instrumentation and control technology to industrial and chemical processes. As senior instrument engineer with AECI Ltd he specialised in managing the complete design cycle for process control systems from conceptual design to commissioning. He has also developed and lectured a post-graduate course in Industrial Control Systems.

Dave has been closely involved in hazard studies for new chemical plants and in the implementation of safety instrumented systems. His expertise ranging from field instrumentation to software quality assurance is particularly relevant to this subject. This Master Series has been developed by IDC Technologies to reflect recent developments in international practices in instrumentation and control.

His positive and enthusiastic approach combined with his broad knowledge of the subject makes this workshop a not-to-be-missed learning experience. In the past few years, Dave has lectured on this and related topics to over a thousand Engineers and Technicians in the USA, Canada, the United Kingdom, Australia and South Africa.



## Expert Instructors LIVE via webcast!

In addition to your classroom team!

This year, IDC Technologies is pleased to announce a mix of instructors as part of your in-classroom team and international instructors in a live web conference!

Bring your laptop computer to take full advantage of this great opportunity to learn from world experts in instrumentation and control. There will be a projector and speakers for those that cannot bring one; everyone gets to participate.

Your workshop coordinator will confirm your webcast instructors closer to the date.



*Technology Training  
that Works*

## About IDC Technologies

IDC Technologies is internationally recognised as the premier provider of practical, technical training for engineers and technicians.

We specialise in the fields of instrumentation, automation and process control, data communications and networking, electrical and mechanical engineering, project and financial management, and are continually adding to our portfolio of over 300 different workshops.

Our instructors are highly respected in their fields of expertise and in the last 16 years have trained over 200,000 engineers, scientists and technicians worldwide.

Visit [www.idc-online.com](http://www.idc-online.com)

# REGISTRATION FORM

## Master Series: Instrumentation and Control

## EARLY BIRD BOOKING OFFER\*

If you register by **28 August 2009** you will receive a **5% discount** off the standard fee. All you have to do is complete the registration form and fax or mail it to IDC Technologies today!

### 1. Delegate Details

CONTACT: \_\_\_\_\_

COMPANY NAME: \_\_\_\_\_

COMPANY ADDRESS: \_\_\_\_\_

SUBURB: \_\_\_\_\_

PROVINCE: \_\_\_\_\_

P/CODE: \_\_\_\_\_

PHONE: (    ) \_\_\_\_\_

FAX: (    ) \_\_\_\_\_

E-MAIL: \_\_\_\_\_

ATTENDEES:	MR/MS: _____	JOB TITLE: _____
	MR/MS: _____	JOB TITLE: _____
	MR/MS: _____	JOB TITLE: _____
	MR/MS: _____	JOB TITLE: _____

AREAS OF INTEREST (please check)

<input type="checkbox"/> Data Communications & Networking	<input type="checkbox"/> Electrical	<input type="checkbox"/> Electronics
<input type="checkbox"/> Instrumentation, Automation & Process Control	<input type="checkbox"/> Information Technology	<input type="checkbox"/> Project & Financial Management
<input type="checkbox"/> Mechanical Engineering	<input type="checkbox"/> Chemical Engineering	<input type="checkbox"/> Civil Engineering

Should you have more people interested in attending this workshop, please contact us on  
Toll Free 1800 324 4244 or e-mail: [idc@idc-online.com](mailto:idc@idc-online.com)

### 2. Workshop Details

YES, I (WE) WOULD LIKE TO ATTEND THE I&C MASTER SERIES

CALGARY on 14, 15, 16 & 17 September 2009

### 3. Payment Details

PLEASE NOTE: Prices shown are EXCLUSIVE of GST or HST

I&C MASTER SERIES FEE **\$2600.00** x \_\_\_\_\_ delegates = \$ \_\_\_\_\_

EARLY BIRD BOOKING OFFER (If booking on or before 28 August 2009)  
YES, I qualify for **5% OFF the standard Master Series fee** **\$2470.00** x \_\_\_\_\_ delegates = \$ \_\_\_\_\_

+ 5% GST (or 13% HST) = \$ \_\_\_\_\_

I wish to pay by:  CHEQUE, made payable to **IDC Technologies** **TOTAL DUE = \$ \_\_\_\_\_**  
 COMPANY ORDER NUMBER: \_\_\_\_\_

Please charge my:

MASTERCARD  VISA  AMEX

CARDHOLDER'S  
NAME: \_\_\_\_\_

CARDHOLDER'S  
SIGNATURE: \_\_\_\_\_

EXPIRY  
DATE: / \_\_\_\_\_

On the reverse of your card, above the signature, is a 7 digit security number.  
In order to authorise your card transaction, we require the last 3 digits:

If the Cardholder's address is not the same  
as shown above please check this box:

**Please Note: Full payment is required prior to the commencement of the program.**

### 4. On-site Training & Consultation

YES, I would like to find out more about **IDC Technologies** on-site training and consultation services:

Master Series: Instrumentation and Control  
 Other IDC Technologies workshops  IDC Engineering Consultancy Services

### 5. More Information

I am unable to attend this workshop but please rush me an IDC Technologies workshop directory.

BOOKING CODE: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

### Master Series Details

- The program starts at 8:30am and finishes at 5:00pm daily.
- Registration is from 8:00am on the first day.
- The program fees are per delegate and include 3 reference manuals, software, handouts, lunches and all refreshments.
- Full payment is required prior to the commencement of the Master Series.

### EARLY BIRD BOOKING OFFER\*

Please note that the Early Bird Booking Offer is only available to those registrations received by **28 August 2009** and paid prior to the commencement of the Master Series.

\*This offer cannot be used in conjunction with any other discount or offer.

### CANCELLATION

A fee of 20% will apply for written cancellations received 7-14 days prior to the commencement of the Master Series.

Cancellations received less than 7 days prior to the program are not refundable however substitutes are welcome.

### CONFIRMATION

Full confirmation details and program instructions will be sent to you upon receipt of booking.

### PLEASE NOTE

Venues to be confirmed upon registration. Instructors may change without notice.

IDC Technologies has no affiliation with suppliers or manufacturers and therefore presents a completely unbiased factual view of the industry.

### PRIVACY INFORMATION

If your address details are incorrect, or you wish to remove your name from our mailing list, please contact us by phone, fax or e-mail (see below).

At times we make use of lists that cannot be cross-checked against our own database and you may receive a duplicate. If so, please pass this on to an interested colleague.

### ENQUIRIES

Phone: Toll Free 1800 324 4244

### How to Register



By Fax:  
Toll Free 1800 434 4045



By Mail:  
IDC Technologies  
Suite 402, 814 Richards Street  
Vancouver BC V6B 3A7



By E-mail:  
[idc@idc-online.com](mailto:idc@idc-online.com)



On our Web Site:  
[www.idc-online.com](http://www.idc-online.com)