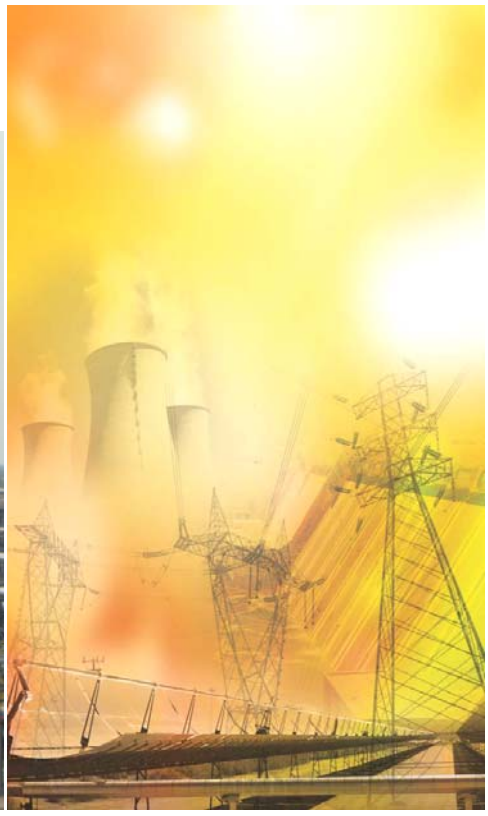
ISA Delhi Section

The International Society of Automation

ISA(D) NEWSLETTER

July – September-2011, Volume 1-Issue II



Instrumentation Development:

3 – 15 psi ⟶ 4 – 20mA ⟶ HART ⟶ Fieldbus ⟶ Wireless ⟶ ?????

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The International Society of Automation

ASIA PACIFIC DISTRICT 14

ISA(D) NEWSLETTER

July – September - 2011 Volume 1-Issue II

From the Desk of President:

I am glad to present before the members, the second issue of this News letter of ISA Delhi Section after a grand success of Mega Technical Event, PNID – 2011, one day Conference and Exhibition on Petroleum and Natural Gas Industries Domain in Hotel "The TAJ PALACE", Sardar Patel Marg , New Delhi on 26th September 2011(Monday)

I thank once again all the dignitaries, participants, High Power Technical Committee members, executive committee members and all others who supported ISA-D to make this mega event a grand success.

On behalf of executive committee, I would like to thank all sponsors, exhibitors, speakers and also compliment them for sharing their valuable technical knowhow with all our participants from various oil and gas industries.

I certainly wish that with the support of our active members, our next mega event POWAT-2012 (Power Automation Technology Event) on 13th & 14th January'2012 at Hotel "The Grand" in Vasant Kunj-Phase-II, New Delhi, will also be a grand success.

I would like to complement Mr. Manish Kumar for his sincere efforts in bringing the second issue for the members."

I take this opportunity to wish each one of you a very happy and prosperous New Year.

With best wishes,

Alok Shrivastava
(Hon President - ISA Delhi Section)

UPCOMING MEGA EVENT

POWAT – 2012, two days **Power Automation Technology Event (Conference and Exhibition)** at **Hotel "The Grand"**, Vasant Kunj-Phase-II, Nelson Mandela Road, New Delhi on **13th & 14th January 2012.**

PNID – 2011, Conference and Exhibition on Petroleum and Natural Gas Industries Domain by ISA-Delhi Section

A mega Technical event, **PNID – 2011**, one day Conference and Exhibition on Petroleum and Natural Gas Industries Domain was organized by ISA-Delhi Section in Hotel "The TAJ PALACE", Sardar Patel Marg , New Delhi on 26th September 2011(Monday). The event was graced by chief guest **Shri A.K. Purwaha, C&MD, Engineers India Ltd**., Guest of Honour **Dr. M Ravi Kanth – C&MD-Projects & Development India Ltd.**, Guest of Honour **Shri RC Kaul – Jt. Chief Controller of Explosives**, **Chief Patron PNID-2011 - Shri Mukesh Rohatgi**, **Shri B. R. Mehta- Sr. VP, Reliance Industries** and all ISA members and esteemed guests from various industries. Event started in our socio-cultural way by welcoming the esteemed dignitaries and lighting of lamps.

ISA-D president, Mr. Alok Shrivastava in his welcome address thanked all senior advisors, paper presenters, High Power Technical Committee members, sponsors, participants and all others who supported to make this mega event a happening from beginning. He also thanked all the dignitaries for being part of this event and giving precious time from their busy schedule.

Mr. Mukesh Rohatgi, Chief Patron for PNID-2011 expressed his gladness in his speech for being part of this mega event. He discussed how Oil & Gas sector are in demand of development in Automation & Plant intelligent solutions because of high demand in productivity, improved plant efficiency, increased safety & security meeting regulatory requirements.

Shri Alok Shrivastava – President – ISA-D

Shri Mukesh Rohatgi - Chief Patron, PNID

Mr. B. R. Mehta emphasized in his key note address how this kind of symposium help end users, consultants, professionals, EPC companies, vendors and a platform for sharing knowledge to meet the future challenges.
Our Guest of Honours, **Dr. M. Ravi Kanth** and **Shri R.C. Kaul**, in their speech expressed their pleasure about this one day symposium on Petroleum and Natural Gas Industries Domain. They discussed how steady state development is required in the field of Automation services to drive the Industry in a safe and efficient manner enhancing the productivity.

Dr. M. Ravi Kanth – C&MD, PDIL

Shri B. R. Mehta – Senior VP, Reliance Industries

Our chief guest **Shri A. K. Purwaha** talked about the importance of Oil & Gas sector as an energy provider to the Nation and challenges faced by Oil & Gas sector for increasing demand, high productivity, improved plant efficiency, increased safety & security meeting regulatory requirements. He expressed his happiness about this symposium organized by ISA-D, being dedicated to petroleum and natural gas sector with a vision and mission to take the Indian Instrumentation & Automation sector to global heights and bring in the state of art technology in this sector.

Shri A. K. Purwaha, C&MD, EIL

Dignitaries inaugurating the Exhibition

Shri S. K. Dhawan, convener of PNID-2011 congratulated ISA-D for the mega event and gave vote of thanks to all dignitaries and participants for gracing this occasion and knowledge sharing platform.
Our chief guest **Shri A. K. Purwaha** inaugurated the live demo exhibition stalls of Instruments and Control Systems put up by various Instrument & Control Systems companies and our sponsors.

Shri S. K. Dhawan, Convener- PNID-2011

Esteemed Audience – PNID-2011

Technical session started with most talked topic on **"Safety & Security"** by eminent speakers from reputed industries which consisted of

- High Integrity Pressure Protection System (HIPPS),
- Considerations for Safety Instrumented Function,
- Safety Instrumented system, and
- Functional Safety perspective to Field Instruments

Mr. I. S. Malhotra from Tyco explained HIPPS as an independent and reliable system and discussed about the selection of of critical components for HIPPS, its functional tests requirements, manufacturer's experiences and capability to meet demanding requirements of sensors, valves and controls.

Mr. Paolo Landrini of M/s GM International appraised all the participants about "Considerations for calculating a SIL3 Safety Instrumented Function (SIF)". Methodologies for SIL calculation was discussed considering the complete loop instead of taking the SIL certification of individual instruments or components of the loop. How individual SIL-2 certified components (instruments) when put in a complete loop makes a loop SIL-1 was also explained by him in detail. He also elaborated the importance of communication loops running through SIF such as HART, importance of functional tests and also interval of tests in SIL loop calculations.

"Non-violence is not a quality to be evolved or expressed to order. It is an inward growth depending for sustenance upon intense individual effort".
- Mahatma Gandhi

Mr. I.S. Malhotra, MD, Tyco

Mr. Paolo Landrini of M/s GM International

Shri Amit Aglave, a TUV certified Safety consultant from Honeywell Automation India Limited, detailed out the methods of achieving process safety while improvements in efficiency and eliminating unsafe manual operations with a fail safe installations. Some key concepts related to IEC 61508 e.g. Risk Reduction, Safety Integrity Level, Safety Life Cycle, competence of people, Functional Safety Management, documentation were explained in detail for achieving the Process Safety.

Shri Hemal Desai from E&H enlightened all the participants with his lecture on the Functional Safety from Field Device Perspective. He explained SIS failure and where do they occur in SIS loops, how Iterative process is used for selection of sensors used in SIS, the typical approach manufacturer's use to comply with IEC 61508 for designing sensors as per IEC-61508 Section 2 and Section 3, relationship between IEC 61508 and IEC 61511, Sensors selection and Hardware Fault Tolerance.

Shri Amit Aglave of Honeywell

Shri Hemal Desai of E&H

"What lies behind us and what lies before us are tiny matters compared to what lies within us".

- Ralph Waldo Emerson

"Cutting Edge Technologies" was the technical sessions after the lunch break were discussed which consisted of following:

- Pipeline Intrusion detection using C-OTDR,
- ISA100-Field Wireless solutions,
- Advancement FF Technologies, and
- Combining EFM control.

Mr. Upendra H. Manyam from Comtel Networks detailed out the use of Coherent Optical Time Domain Reflectometry (C-OTDR) to Detect Intrusions along Oil and Gas Pipelines. Limitations of intensity based methods and how these limitations are overcome by interferometric techniques with recent advancement in optical technologies, components such as frequency stabilized narrow line-width tunable lasers were elaborated. The different techniques were examined and elucidated the major attributes due to which C-OTDR has emerged as a successful method for Intrusion Detection Systems.

An industrial Wireless solutions for field devices are the latest art of technology, presented by **Mr. Bejoy Jose** from Yokogawa India. In this session participants were explained, how wireless devices cater to number of industrial needs, from mobile worker applications to local area Ethernet networks and to remote monitoring. Significant potential in cost savings exist for plant managers who are considering implementing wireless solutions for expansion of projects and new installations were elaborated.

Mr. Upendra H. Manyam from Comtel Networks

Mr. Bejoy Jose from Yokogawa India

Under the cutting edge technology session, basics and advancements in Foundation Fieldbus and its design tool called DesignMATE were discussed by **Mr. Sameer Shravge** from Flour Daniel (India). Utility of DesignMATE tool for planning, validation, and documentation of any Fieldbus H1 infrastructure and also limitations of DesignMATE like its inability to validate, explosion protection, bus cycle time calculation were explained. Electronic Device Description Language (EDDL), High Speed Ethernet (HSE) and

enhancement to Fieldbus specifications, Fieldbus Intrinsically Safe Concept (FISCO) and Fieldbus Non-Incendive Concept (FNICO) were also elaborated detailing how these developments in Fieldbus are providing platforms for cost competitive projects.

Mr. Matthew A. Diese from Thermofisher appraised all the participants regarding the development of Electronic Flow Measurement and its importance in Custody Transfer measurement. Development of embedded PID algorithm in EFM and low power Controllers (Solar Power based) and its integration dramatically reduced the cost of Pipeline and Well Head Control capabilities, Compressor Control, Plunge Lift in Natural Gas production were presented.

Mr. Sameer Shravge from Flour Daniel (India)

Mr. Matthew A. Diese from Thermofisher

Under **"Asset Management"** session, eminent specialists from industries shared their vast experiences and expertise in their own fields.

- Case study-TAS integration with ERP
- Online Analyser System, and
- Integrated Automation Solutions to Safeguard Health of Plant Assets

A detail case study of Terminal Automations Systems (TAS) and its integration with Enterprise Resource Planning (ERP) were presented by **Mr. Sudhanshu Shekhar**, Sr. Instrumentation Manager and **Mr. Vikrant Kumar**, DMIT from IOCL who also explained how this integration has paved the path for information flow from field like Custody Metering System, Truck / Wagon loading, selection of products, invoice / billing, payment details, delivery receipt information and inventory management to higher management level. This system has brought all the information at one platform maintaining the complete asset information at single point source.

"If you want to accomplish something in the world, idealism, is not enough. You need to choose a method that works to achieve the goal".
- Richard Stallman

Mr. Sudhanshu Shekhar, Sr. Inst. Mgr.-IOCL

Mr. Vikrant Kumar, DMIT-IOCL

Membrane Interface Mass Spectrometry (MIMS) provides significant advantages over traditional online measurement of volatile organic compounds (VOCs) in ambient air were explained by **Mr. Jochen Geiger** from M/s AMETEK. On-line Mass Spectrometry bring a level of confidence and ease of use because of its high sensitivity, monitoring multiple locations with one analyser, multi-component analysis, detection of abnormal conditions, monitoring different compounds at each locations, scan for unknowns were discussed in detail with all the participants.

Integrated Automation Solutions to Safeguard Health of Plant Assets elaborated by **Mr. Manoj Chandrasekran** from GE energy. Increasing importance of plant asset management to maximize the business, efficiency through application of smart, differentiated and integrated technology that safeguard mechanical and thermodynamic health of industrial machinery and other critical assets were also explained. Integration of information from sensing elements, asset condition monitoring, controls and instrumentation set the best practices today for asset management.

Mr. Jochen Geiger from M/s AMETEK

Mr. Manoj Chandrasekran from GE energy

After so much brainstorming technical session **"Panel discussion on Statutory Requirements for installation in Hazardous Areas"** among technocrats and experts in this field **Mr. R.C. Kaul,** Jt. Chief controller of explosives, **Mr. Nand Kumar**, C&MD-Chemtrols, **Mr. S. K. Bardhan**, DGM IOCL, **Mr. Ramani Iyer**, Director, Forbes Marshal, **Mr. Rejith J. Thomas**, Group Leader (I), Technip, turned out to be subject of interests for all the participants. Various queries and curiosity of participants were explained by these panel members.

Mr. R.C. Kaul Jt. Chief controller of Explosives

Technical Experts Panel Members

Efforts of all the participants, sponsors, exhibitors, speakers were analyzed by High Power Technical Committee and best participants in each category like Best Stall and Best Paper were rewarded with token memento by ISA-D.

Mr. Bejoy Jose receiving memento

Mr. Matthew A. Diese receiving memento

"Building Technical Systems involves a lot of hard work and specialized knowledge, languages & protocols, coding & debugging, testing & refactoring".

- Jesse James Garret

Yokogawa India Team receiving memento

Phoenix Contact India team receiving memento

This mega event concluded with gala networking dinner with all esteemed guests and members and heartfelt memorable moments.

Participants Visiting Technical Exhibition

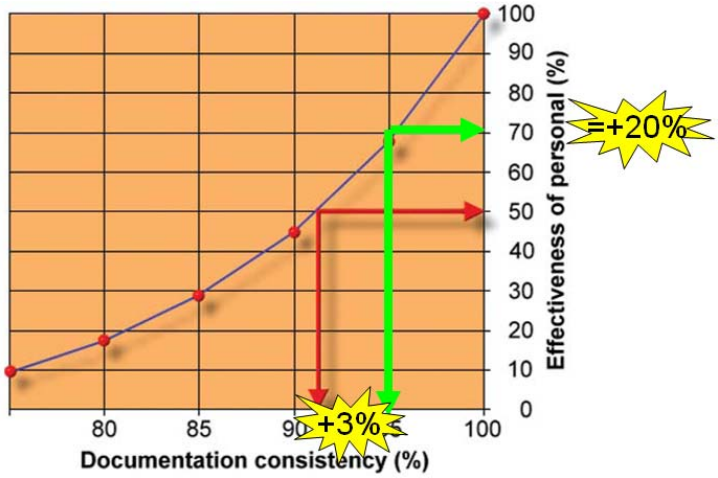
PNID-2011 Organiser Members

TECHNICAL ARTICLE

Benefits of an Instrumentation and Control Planning System

In order to operate a plant safely and reliably, the first prerequisite is to know exactly what shape it is in. Thus for smooth, efficient operation it is essential for the plant documentation to reflect plant reality as accurately as possible. Here, instrumentation and control planning systems (I&C-CAE systems) provide the necessary support. In the classic process industry the plants involved are usually large production plants consisting of individual plant components which are mostly non-centrally organized. These individual components are often built up gradually. Depending on their date of construction, an I&C-CAE system may often not have been planned in originally. It would then have to be integrated into an already-existing IT environment.

A study conducted and presented at PELC Conference – The Hague by Lyn Fernie, Director, Aker Kvaerner Engineering Services revealed that 92% consistency in documentation leads to 50% effectiveness of the operator.



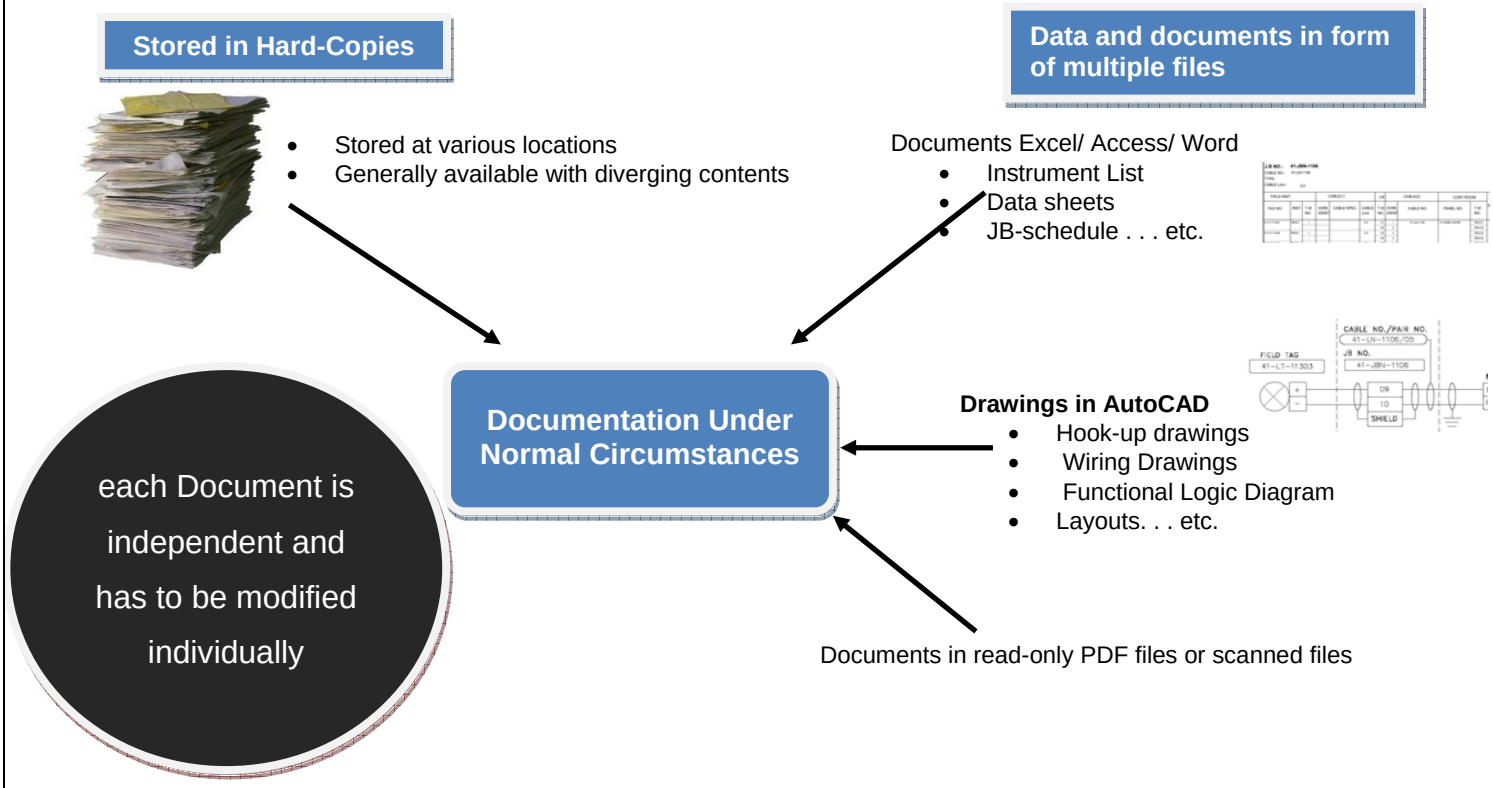
Among all the streams of engineering documents, perhaps **I&C documentation is the most diverse**, **complex and inter-related one**. Achieving such a high consistency (rather - even higher) looks to be a tall order for I&C documentation.

Here, Instrumentation and Control planning systems (I&C CAE systems) provide the necessary support.

"A scientist in his laboratory is not a mere technician; he is also a child confronting natural phenomena that impress him though they were fairy tales".

- Marie Curie

Normal Scenarios:



Common Problems

- It is not unusual that several files must be examined when carrying out engineering and when searching for particular information.
- Several files need to be updated manually for any modification.
- Efficient and intelligent search method is missing with paper documentation.
- Documents are removed from files, modified and not or incorrectly replaced.

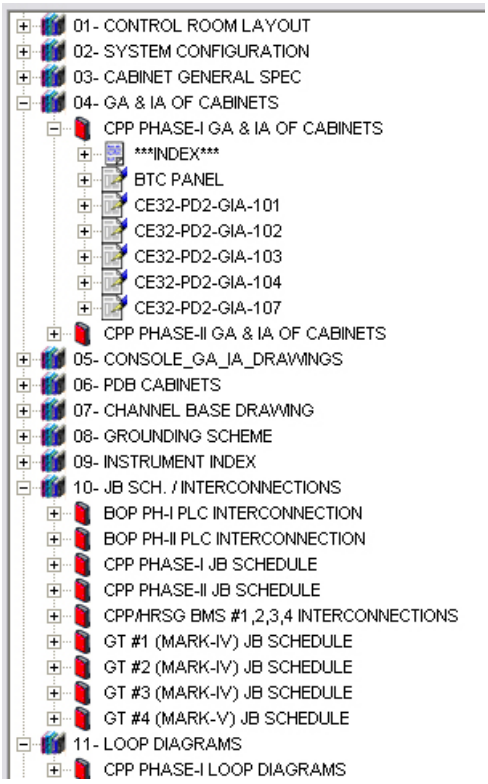
The Solution: I&C CAE System – the Data-Centric Application

Solution is to have a I&C CAE system which provides 'efficient & thorough' Project Engineering, Consistent Documentation of 'Process Instruments & Control Equipments' and Standardization of the Engineering Process. It should also have comprehensive Engineering Database management software platform for a particular project so that after commissioning of the plant, maintenance of the plant engineering documentation becomes easier for the healthy maintenance of the plant. I&C CAE system should integrate all I&C technical data and drawings like loop diagrams,

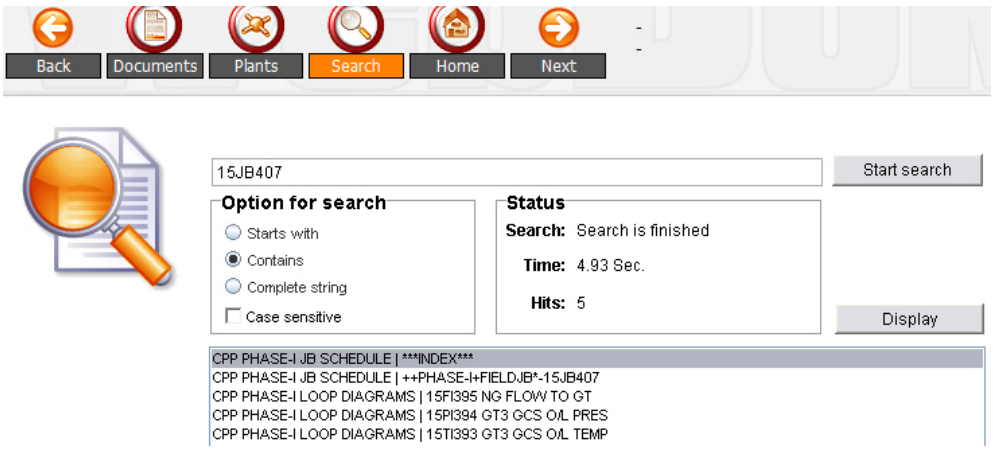
interconnecting wiring diagrams, instruments specifications etc. in to a single database so that time and efforts in collecting the desired data during maintenance can be saved.

An efficient and productive I&C CAE system should have the following functionality:

1. It must have a systematic and flexible document management structure.

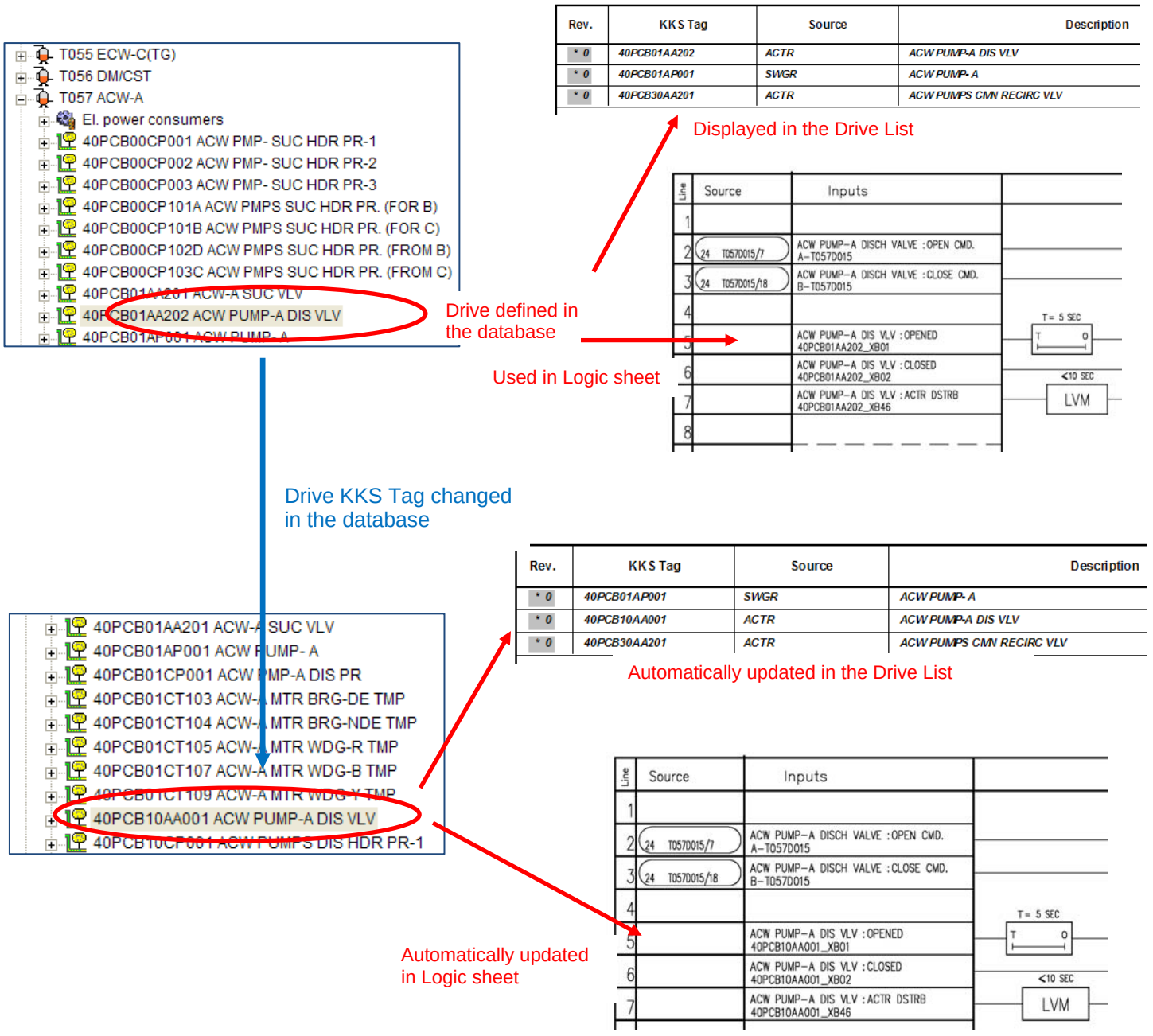


2. It should have a powerful Search feature which should be capable of searching not only keywords but also within the contents of the documents and drawings such as Tag names, JB numbers, Cable numbers, Instrument Make & Model etc. It must present the search results in a simplified manner.



3. It should follow the concept of "**Change Once – Update All**". Any change / editing must be based on the database rather than modifying individual documents and drawings.

   For example –



"We must become the change we want to see".

- Mahatma Gandhi

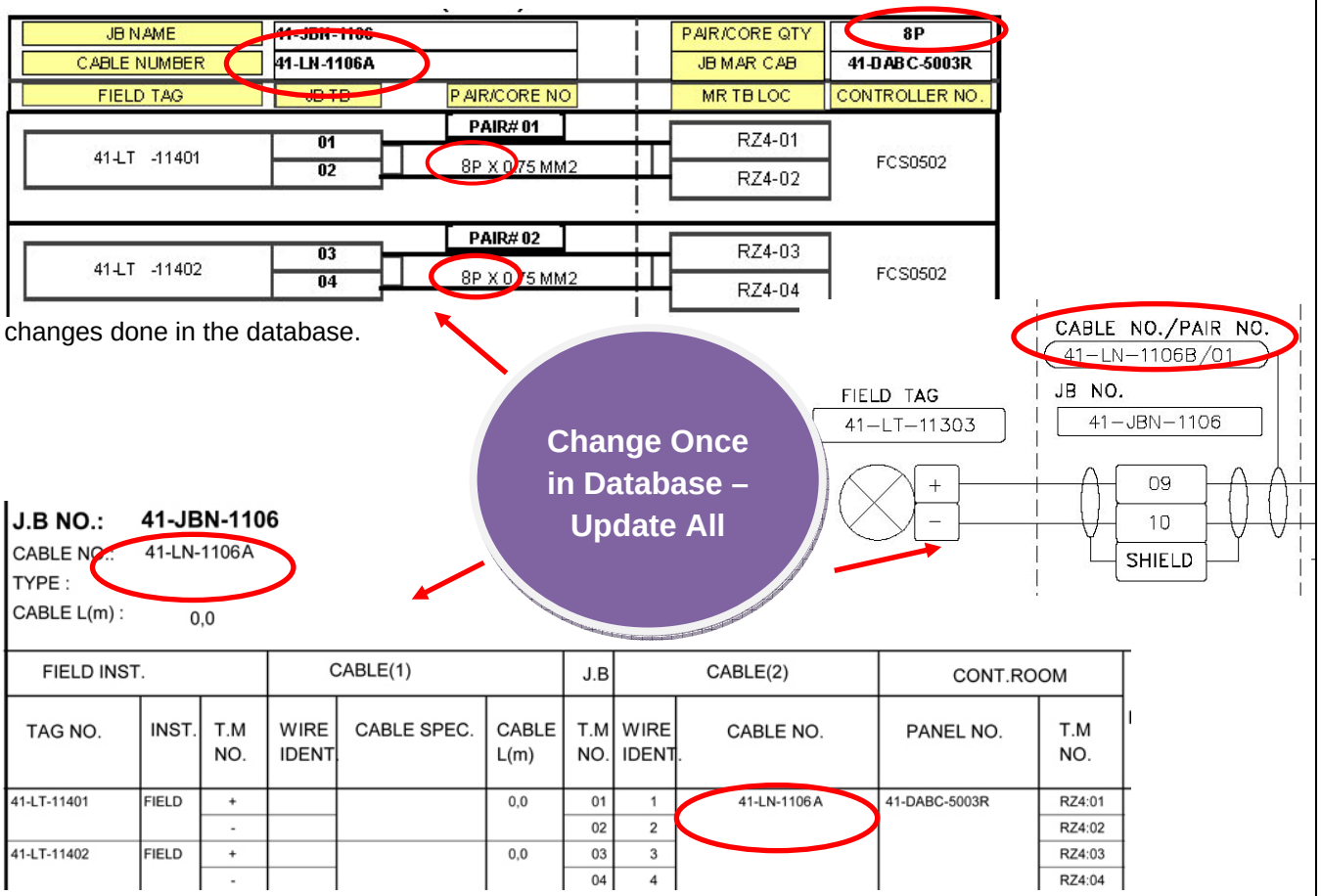
Another example - A 12 pair cable **41-LN-1106** connecting a JB (with 7 field devices) to Marshalling cabinet is damaged. It is to be replaced by two new 8 pair cables **41-LN-1106A** and **41-LN-1106B**.

Search for the cable in the CAE system should result in at least following documents –

- Cable Schedule
- JB Schedule
- Loop Drawings – 7 numbers (1 for each field device)

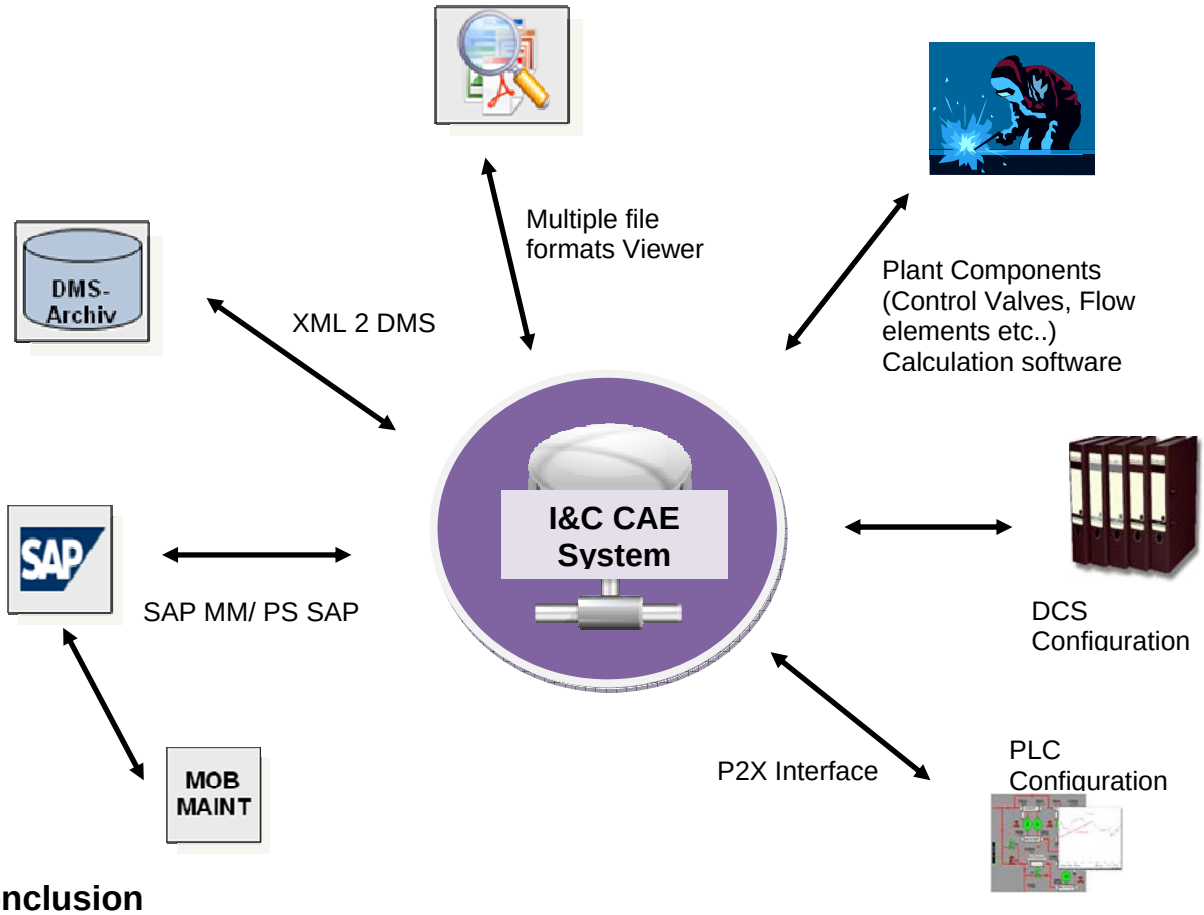
For editing, the maintenance engineer should *change the existing cable number to 41-LN-1106A, add a new cable 41-LN-1106B and then adjust the wiring. This should lead to automatic updation of all the documents.*

With this the Cable Schedule, the JB Schedule and all the Loop Diagrams should get updated as per the changes done in the database.



FIELD INST.			CABLE(1)			J.B	CABLE(2)		CONT.ROOM	
TAG NO.	INST.	T.M NO.	WIRE IDENT.	CABLE SPEC.	CABLE L(m)	T.M NO.	WIRE IDENT.	CABLE NO.	PANEL NO.	T.M NO.
41-LT-11401	FIELD	+			0,0	01	1	41-LN-1106A	41-DABC-5003R	RZ4:01
		-				02	2			RZ4:02
41-LT-11402	FIELD	+			0,0	03	3			RZ4:03
		-				04	4			RZ4:04

Desired Interfaces with other applications



Conclusion

The philosophy of I&C CAE system matches with the general practice during engineering phase as well as during plant operation and maintenance. Easy access / availability of the I&C documents and it's "**change once – update all**" concept makes updating process not only very fast but ensures that all the documents are latest and consistent. Other benefits include:

- Easy to use queries to get extracts from database
- Support of master libraries to enforce engineering/customer standards
- Easy input of as-built data and documentation
- Electronic documentation enables access to all users
- Interface to SAP MM and PM

Ishwinder Singh Dua
Expert : I&C CAE Systems
CADtech Consultants (P) Limited, New Delhi

GLIMPSES OF PNID-2011

A Pre-Symposium for PNID-2011 was organized at Hotel Lalit on 26.08.2011. Shri S. K. Dhawan, a veteran in Instrumentation & Control and convener PNID-2011, who conceptualized, and put his best efforts to form a strong High Power Technical Committee (HPTC) for the grand success of this one day Conference and Exhibition on Petroleum and Natural Gas Industries Domain. He invited technical experts mainly Head of Departments, Group Leaders in Instrumentation & Control from various organizations for selection of best speakers, latest topic of discussion and technical papers in the field of Instrumentation & Control Automation. Following technocrats were nominated as HPTC members:

- Shri H. C. Jain, GM – Instrumentation, SK Engineering
- Ms R. Piyamvada, HOD-Instrumentation, EIL
- Shri Rajiv Gupta, DGM-Instrumentation, EIL
- Shri Raja Shekhar Gudipaty, Project Manager, IOCL
- Shri Rejith J. Thomas, Group Leader-Instrumentation, Technip(I)
- Shri Dharmendra Singhal, GM (TP & Instrumentation), Haldor Topsoe
- Mr. Shahrul Izat, Lead – Instrumentation, Cairn India
- Shri Debendra Mohanty, Chief Engineer-Instrumentation, Bechtel (I)
- Shri T.K. Midha, Dept. Manager-Instrumentation, Flour (I)
- Shri S. Mahesh Kumar, Dy. Manager-Instrumentation, EIL (Technical Coordinator, PNID-2011)

HPTC members conducted various meetings for finalizing the speakers and technical papers for technical sessions of PNID-2011 at Holiday Club, Panchsheel Enclave, New Delhi. All the HPTC members with their best efforts ensured that this technical mega event is much more than technical knowledge sharing platform and think tank for NEXTGEN Instrumentation & Control.

High Power Technical Committee members

Ms. R. Priyamvada, receiving memento

Shri Rajiv Gupta receiving memento

Shri Anil Mishra presenting memento to Shri Ravi Kanth

Dignitaries unveiling PNID-2011 souvenir

Shri A. K. Purwaha visiting exhibition

Shri S. Mahesh Kumar, Technical Coordinator

Esteemed Guests from various industries

TECHNICAL MEET: AUGUST'11

ISA, Delhi Section organized monthly Technical Meet on **Process optimization using intelligent process instrumentation & Analytics technologies** in association with M/s **Siemens Ltd** on 26th August 2011(Friday) at Mirza Galib Chamber, Scope Convention Center, SCOPE complex, Lodhi Road, New Delhi.

Speaker :- Mr. Rolf Panzke, Director Marketing Sensors and Communication for Chemical, Paper, Refinery / Petrochemical, Oil & Gas and Shipbuilding Processing Industries for Siemens Process Instrumentation, Analytics, Industrial Communication, Factory Sensors and Wireless Communication.

He explained about specially designed Sensor Technology keyboard software. He discussed how this software shall be used in the perfect selection of field sensor / transmitter for process instrumentation like Pressure Transmitter, Temperature Transmitter, Level (Ultrasonic & Radar) Transmitter, Flow Transmitter (Electromagnetic Flowmeter, Ultrasonic Flowmeter & Coriolis Flow Transmitter), Smart Valve Positioner & Gas Analytical technologies in process improvement for various industries. Various cases were considered for each type of field instruments sensors to find out its best suitability e.g. Ultrasonic Level Transmitters, Antenna Type Radar Level Transmitters and Guided Wave Radar Level Transmitters.

PHOTOGRAPHS OF TECHNICAL MEET-AUGUST'11

"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less".

- Marie Curie

TECHNICAL MEET: JULY'11

A Technical Meet was arranged by ISA, Delhi Section in association with M/s Phoenix Contact India Pvt Ltd on 29th'July 2011(Friday) at Tagore Chamber, SCOPE Convention Chamber, SCOPE Complex, Lodhi Road, New Delhi. The Topics covered were:

- **Easy Interfacing**
- **Innovations on Power and Signal Quality from Phoenix Contact.**

The Technical Topic was presented by **Mr Ashish Manchanda, Vice President**, Phoenix Contact India Pvt Ltd.

The topic of seminar focused on the Innovative Solutions offered by M/s Phoenix Contact highlighting the concept of adopting Easy and efficient Interfacing Techniques from field transmitters to control room. The seminar also elaborated the importance of reliability of Interfacing Devices which crucially influences the availability in complex systems. The seminar provided excellent opportunities for users, manufacturers, consultants and system integrators to know about the available products.

Mr Manchanda explained in brief the concept of Industrial Connection Technology highlighting the ease in connection through Innovative Solutions by Phoenix Contact. The quick and cost effective methods are no doubt a boon to all the industries. He also highlighted the concept of Innovative Technology useful for various industry segments.

The Power Solutions offered by Phoenix Contact provides excellent preventive function monitoring conditions which enables the users to improve the overall plant reliability, availability and efficiency. He also gave a descriptive picture on technical know-how of Surge Protection Devices to protect the sensitive industrial control systems from direct and indirect effects of lightning, thereby leading to overall improvement in Power and Signal Quality in the plant.

The occasion was graced by audiences from consultants, Oil & Gas, Power, Cement, Paper & Pulp, Fertilizers & Chemicals. Phoenix Contact also arranged a display of their various products which gave audiences opportunity to know about the latest development and their usage in Instrumentation & Control.

PHOTOGRAPHS OF TECHNICAL MEET-JULY'11

TECHNICAL QUIZ – 02

1. What is the internal impedance of an ideal current source?
2. Which bridge is used for measurement of inductance?
3. What is the figure called used for measuring frequency in CRO?
4. What is the name of instrument with which term "Wake Up frequency" is linked with?
5. Is SCADA in built in DCS?

ANSWERS TO TECHNICAL QUIZ – 01

1. Who sent the first email and in which year?
   Answer: Ray Tomlinson sent the first email in 1971.
2. Which Indian is called "The father of Fiber Optics?
   Answer: Narinder Singh Kapany
3. What is an Orsat Analyser?
   Answer: An Orsat Analyser measures the content of CO2 and O2 by the decrease in gas volume when they are dissolved in the solutions of chemicals with which they react. (fossil fuel gas sample).
4. What was the original APPLE COMPUTER logo?
   Answer: Sir Isaac Newton sitting under the apple tree.
5. What is SMTP?
   Answer: Simple Mail Transfer Protocol.

Correct Answers by (will be awarded during POWAT-2012 on 14.01.2012):

a. Mr. Ritesh Kumar Jaiswal, Dy. Manager, BHEL.
b. Ms. Aditi Bhatia, Student, Institue of Instrumentation Engineering, Kurukshetra University

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