



# Malaysian Preparation for Nuclear Power Plant Instrumentation and Control System



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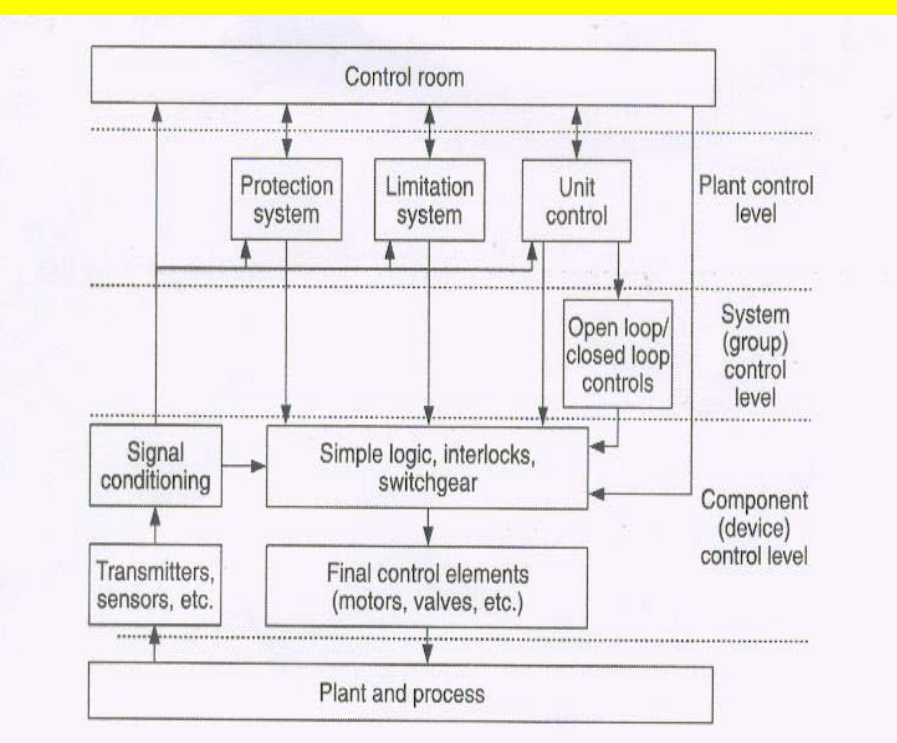
## ABSTRACT

Instrumentation and Control System is required in Nuclear Power Plant for their safe and effective operation. The system is combination and integrated from detectors, actuators, analog system as well as digital system. Current design of system definitely follows of electronic as well as computer technology, with strictly follow regulation and guideline from local regulator as well as International Atomic Energy Agency. Commercial Off-The-Shelf products are extensively used with specific nucleonic instrumentation. Malaysian experiences depend on Reactor TRIGA PUSPATI Instrumentation and Control, Power Plant Instrumentation and Control as well as Process Control System. However Malaysians have capabilities to upgrade themselves from Electronics, Computers, Electrical and Mechanical based. Proposal is presented for Malaysian preparation.

**Key words** -- Instrumentation and Control, Nuclear Power Plant, Commercial Off-The-Shelf, nucleonic instrumentation

## INTRODUCTION

### Structure of NPP I&C



### 3<sup>rd</sup> generation nuclear power plant control room



Implemented by microprocessor-based, PLC-based, digital computers and software systems

Integrating advanced human-system interfaces into main control room and remote shutdown stations

## METHODOLOGY

Table 1: Current situation, Expected Function & Requirement

BASIC EDUCATION	WORKING EXPERIENCE	TRAINING REQUIREMENT	EXPECTED FUNCTION
Education in Electronics, Electrical & Computer Engineering	Technical Specification for New RR I&C Project on RR I&C Operation & Maintenance(O&M) of RR I&C O&M of Nuclear Instruments O&M of Conventional Power Plant I&C	Self-Learning Short-course On-Job Training	Technical Specification Technical Evaluation Assessment and Verification Commissioning Operation & Maintenance

## RESULTS AND DISCUSSIONS

Malaysia have enough manpower in electronic, electrical and computer with experience and expertise in Research Reactor I&C, Nuclear Instrumentation and Process Control. For NPP I&C requirement, Malaysia need to do more in 2012 & 2013 if our country decide final decision to go Nuclear Power. On-job training for specific NPP & C are required.

Integration a poll of staffs from various education and working background are equally important aspect for success in NPP I&C, especially for the first timer.

## CONCLUSION

Generally for NPP I&C, Malaysia is ready, however on-job training for specific NPP I&C are required.