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INTEGRATION, INSTRUMENTATION AND CONTROL SYSTEMS





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INTRODUCTION

FAAB is a privat company that deals with Electrical and Instrumentation (E&I) and Mechanical for Oil and Gas industry providing a range of services to the industry, ranging from Engineering, Integration, Programming and Project Management for Onshore and Offshore Oil Rigs such as; Jack-up, Semi-Submersible, Drill Ships, Fixed Platform, and Land Rigs. It also provides support for FPSO, FSO, Marine, Support Vessel, others.

Our mission is to provide the best quality of services that is based on a strong knowledge and specialization in various fields of the Oil and Gas sector and to provide package equipment to fully satisfy our customers to develop integrity so as to build a strong and long term relationship / partnership by creating profound empowering, training, values and ethics to our personnel. FAAB management system has developed highest quality of work standard in oil and gas industry. In support of this, we have a strong and experienced management team to provide you with proficiency in power generation, maximum efficiency in production and cost effectiveness in manufacture.



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SERVICES

- ❖ Systems Integration
- ❖ Electrical & Instrumentation, Mechanical & Hydraulic System for Onshore/Offshore/ Land Drilling Services
- ❖ Electrical System Services
- ❖ Supply/Manufacture Electrical and Integration units and equipments
- ❖ Project Management
- ❖ Site Management
- ❖ Commissioning & Start Ups
- ❖ Maintenance & Support
- ❖ Project Engineering
- ❖ Application Engineering
- ❖ Engineering Documentation
- ❖ Risk, Safety & Reliability Assessment





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SYSTEMS INTEGRATION & TESTING

The major components that are used in the Integration are:

- ❖ Field Devices: Switches, Transmitters, Valves, Pumps and Motors
- ❖ PLC: Programmable Logic Controller
- ❖ HMI: Human Machine Interface, Graphical User interface used to get results and control the system
- ❖ SCADA: Supervisory Control and Data Acquisition networking and Superstructure
- ❖ Data Storage: For record storage and retrieval



Our qualified systems integrator team thus integrates all of the above in a manner to suit specific client needs to make them work sophisticatedly.

The following 6-step plan is thus applied and is based on an outline provided by the Instrumentation Society of America (ISA).

I. Feasibility Study

II. Definition - Identify customer requirements:

- ❖ Determine operational strategies.
- ❖ Determine automation strategy.
- ❖ Establish detailed requirements:
 - network architecture
 - communication strategy
 - safety strategy
 - instrument and equipment data sheets



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- reporting and data historian needs
- security requirements

- ❖ Generate preliminary cost estimate.
- ❖ Summarize project requirements:
 - basis-of-design document
 - user-requirements document

III. **System Design** - conceptual design of control and information strategy:

- ❖ Perform safety and/or hazard analysis, security analysis, and regulatory compliance assessment.
- ❖ Establish standards and guidelines, based on customer preferences, to be used in the system design.
- ❖ Create detailed equipment and instrument data sheets.
- ❖ Select physical communication media, network architecture and protocols.
- ❖ Functional description of proposed automation using guidelines from Definition stage:
 - control scheme
 - alarms and shutdowns
 - HMI
 - data logging
 - reports
- ❖ Design the Test Plan to be used for acceptance testing.
- ❖ Perform detailed design of system including:
 - material requisitions
 - drawings
 - panel design
 - installation details

IV. **Development** - software development and coding:

- ❖ Develop Human Machine Interface (HMI).
- ❖ Develop database and reporting functions.
- ❖ Develop control configuration and PLC programming.
- ❖ Implement system security.



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- ❖ Test all software functions using the Test Plan.
- ❖ Assemble all required documentation and user manuals created during the development process to provide to the customer.

V. **Deployment** - field installation, checkout, and startup:

- ❖ Perform receipt verification of all field devices as they are delivered.
- ❖ Perform physical inspection of installed equipment against construction drawings.
- ❖ Install configuration and programs by loading them onto customer devices in order to prepare for testing.
- ❖ Solve unforeseen problems identified during installation using troubleshooting skills in order to correct deficiencies.
- ❖ Test the configuration and programming in accordance with the Test Plan.
- ❖ Test communication systems and field devices.
- ❖ Test all safety devices and systems.
- ❖ Test all security features.
- ❖ Provide initial training for facility personnel.
- ❖ Troubleshoot problems identified during testing.
- ❖ Make any necessary adjustments as determined through testing.

VI. **Operation and Maintenance** - long-term support:

- ❖ Verify system performance and records periodically.
- ❖ Provide technical support for facility personnel.
- ❖ Perform additional training as needed.
- ❖ Monitor performance using software and hardware diagnostic tools.
- ❖ Perform periodic inspections and tests in order to verify system performance.
- ❖ Work with customer to continuously improve system capacity, reliability, and efficiency.
- ❖ Document lessons learned by reviewing the project with customer in order to improve future projects.
- ❖ Maintain licenses, updates, and service contracts for software and equipment.



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- ❖ Determine the need for spare parts based on consequences and probability of failure.
- ❖ Provide a system management plan by performing preventive maintenance, implementing backups, and designing recovery plans in order to avoid and/or recover from system failures.
- ❖ Follow a process for authorization and implementation of changes in order to safeguard system and documentation integrity.