Implementation of ERP module for the key processes of hull production in shipbuilding industry

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Abstract

Enterprise Resource Planning (ERP) is the strong tool in the hands of management for taking timely and accurate decisions during the execution of projects. It also enables organization competitively for value addition, cost reduction and improvement. At present context, ERP has become common requirement of any organizational excellence model.

ERP has several modules like Customer requirement module, finance and accounts, materials, projects, manufacturing, quality, welding and services.

All modules are integrated for end-to-end process and it is imperative to understand ERP process from start to end and implement.

L&T being hardcore industry, operational modules like Projects, Manufacturing and Quality of immense importance.

Around 40% job in Shipbuilding is for welding and nature of welding process is complex to understand and configure. It therefore was challenging task to identify total process requirement, gaps and configure the system in ERP, test it for scenarios and implement.

This shall enhance production efficiency, reduce documentation and rework time and shall give strong monitoring hand for production as well as welding supervisor. It shall also enable for welding sub-processes and analysis of data over the period of time.

Keywords—ERP, Implementation, Welding, Key processes.

Introduction

The interceptor boats features aluminium-alloy hull construction with water jet propulsion to enable quick response which is vital for such applications. The interceptors will also be able to operate effectively in shallow water that will be critical for near shore action. These boats will be expected to significantly enhance coastal security.

In 1990, Gartner Group first used the acronym ERP as an extension of material requirements planning (MRP), later manufacturing resource planning and computer-integrated manufacturing. Without replacing these terms, ERP came to represent a larger whole that reflects the evolution of application integration beyond manufacturing.

Definition of ERP: A true Enterprise Resource Planning (ERP) system integrates both internal and external information flows used by the organization within a single, comprehensive solution.

Data collection for key processes of hull production

- Material flow processes
- Shop floor planning
- Welding
  - Air pressure testing
  - Liquid penetrant testing
  - Radiography testing
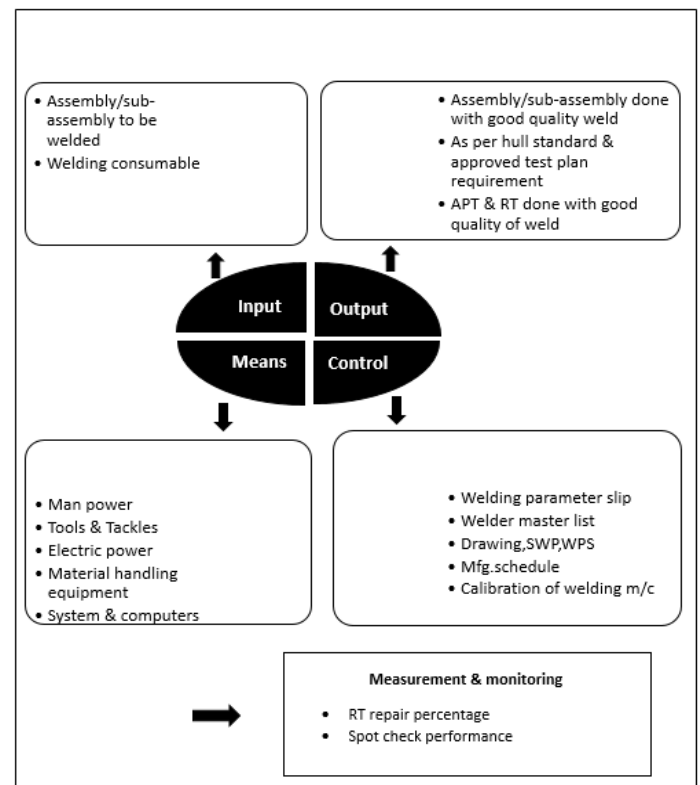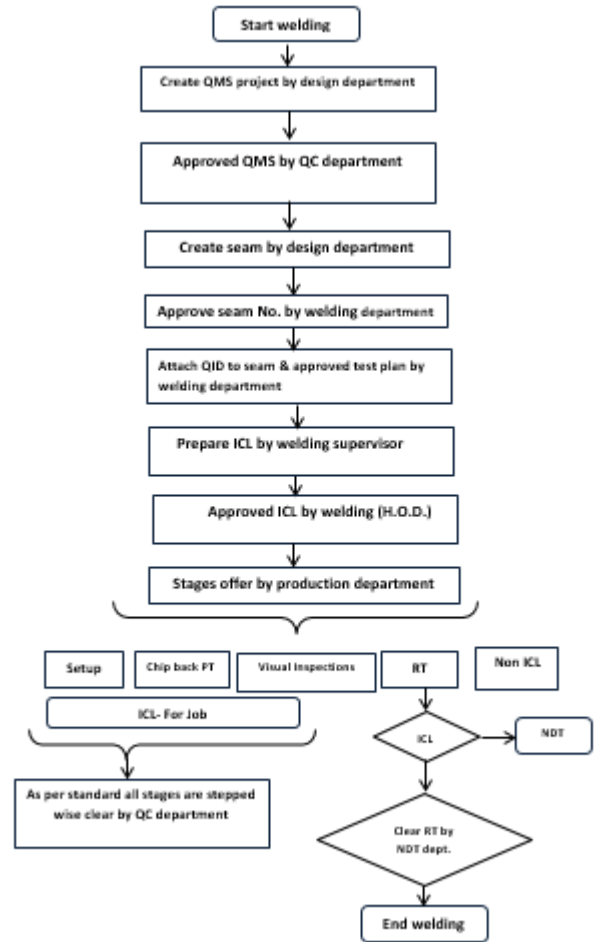
Flow chart of welding module

Fig. indicates requirement of parameters of input, output, means and control in welding. All compartment's welding can be done as per hull standard an approve test plan. It used to identify percentage of RT repairs are not check performance easily. This flow chart is used to implement in welding module in ERP SAP.

Problem faced before ERP implementation

	Standalone system	Integrated system
Information system	Standalone system	Integrated system
Coordination	Lack of coordination among business function (e.g. manufacturing & sales)	Supports coordination across business function
Database	Non-integrated data	Integrated data
Maintenance	It is costly to maintain separate legacy systems	Uniform maintenance; Changes affect multiple systems
Interfaces	Difficult to manage interfaces between systems	Common interfaces across systems
Information	Redundant, inconsistent information	Consistence real time information (e.g., about customers, vendors)
System architecture	May not be state of the art	Relies on a client server model
Processes	Incompatible processes	Consistent business processes which are based upon an information level
Application	Disparate application (e.g., many different purchasing systems)	Single application (e.g., a common purchasing systems)

Primary sequence of welding module without its session number
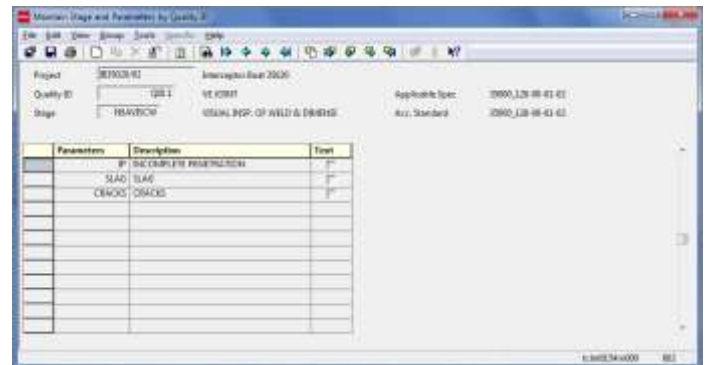

Development of welding module in ERP SAP

Fig. shows the stage wise information about welding defects with its parameters during inspection which is important for production department. Production department repair all the defects and re-offer to quality department and non-destructive department for stage wise inspection as per standard. All the welding defects can easily viewable like crack, porosity, incomplete penetration etc. in ERP SAP screen to compare as ERP BAAN. So this welding update is more important to fulfilled production department requirements for welding.

Conclusion

Key processes of hull production is studied.

Welding sequence of the hull production is identified studying the actual production on the shop floor.

Base on the welding sequence identified, ERP module for welding is developed for hull production.

Testing of the ERP software is also carried out and found to be ok.

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