

PRODUCT DATA MANAGEMENT

INTRODUCTION

During the execution of any complex or non-complex Babcock Engineering Project, there are many processes in the back-ground that controls and captures the information produced through the engineering process. Product Data Management support the Engineering process by capturing the product data throughout the entire Life Cycle from Concept, Design, Construction, As-Built and Maintenance Phases. Data management is ensuring data integrity, availability and security of project data utilising the PLM Tool, Siemens Teamcenter.

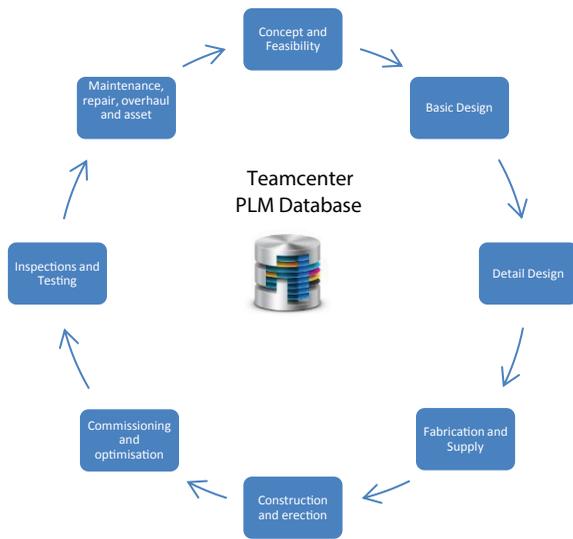


FIGURE 1: TYPICAL PRODUCT LIFECYCLE PHASES

Through Teamcenter the Configuration of a Plant is being controlled by creating a breakdown structure that represents the hardware of the Plant, System, Sub-system or components in a hierarchial structure.

This structure is the basis for controlling the configuration of hardware and to establish baselines. Teamcenter capabilities and processes are tailored to Babcock requirements to maintain configuration of our plants.

a“Siemens PLM Software helps companies of all sizes around the world to transform their business and develop innovative products and services. Our customers are better equipped to respond successfully to the challenges of digitalization. Our solutions optimize their processes from planning and development through manufacturing and lifecycle support to realize innovation.”

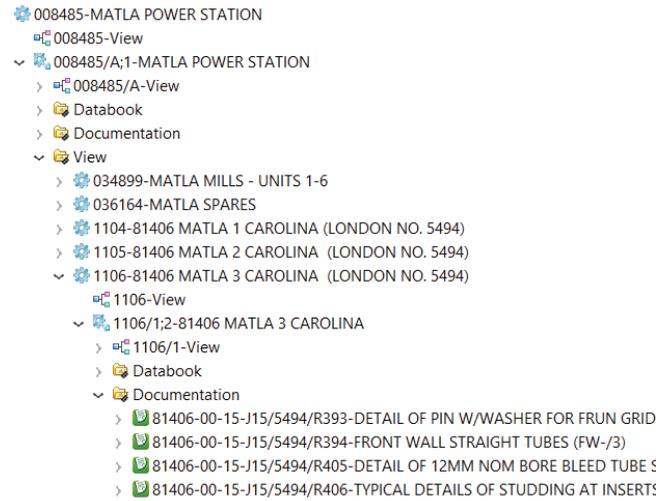


FIGURE 2: HBS WITH LINKED DOCUMENTS

CHANGE MANAGEMENT

Change Management is required to ensure that changes to designs are documented, evaluated and approved prior to implementation and closure. The change management process in Teamcenter is developed the capturing of this information and the approval through a Work Flow process.

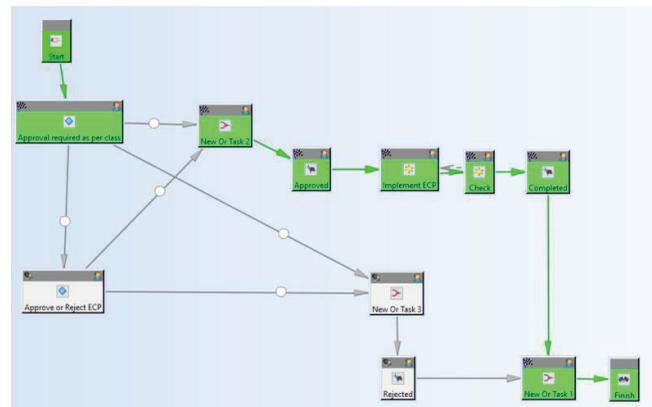


FIGURE 3: CHANGE CONTROL WORKFLOW

BASELINE ESTABLISHMENT

Baselines are established at intervals in the project Lifecycle to make a snap-shot of the current configuration. Baselines are used as reference points of past work and as a basis for change for future projects or changes.

BOM Line	Item Rev Status
039454-81729/1;1-BOTSWANA POWERPLANT (View)	Design Baseline, As Built Baseline
039456/1;1-BOILER COMMON PLANT (View)	Design Baseline, As Built Baseline
039463/1;1-FEEDWATER SYSTEM (View)	Design Baseline, As Built Baseline
039468/1;1-FEEDWATER HEADER	Design Baseline, As Built Baseline
039469/1;1-PIPING (View)	Design Baseline, As Built Baseline
042289/1;1-SUPPORTS	Design Baseline, As Built Baseline
042290/1;1-ORIFICE PLATE	Design Baseline, As Built Baseline
039464/1;1-STEAM SYSTEM (View)	Design Baseline, As Built Baseline
039465/1;1-PIPING	Design Baseline, As Built Baseline
039466/2;1-SUPPORTS	As Built Baseline
039467/1;1-VALVES	Design Baseline, As Built Baseline
042288/1;1-STEAM TRAP	Design Baseline, As Built Baseline
042284/1;1-STRUCTURES AND PLATFORMS (View)	Design Baseline, As Built Baseline
042285/2;1-PIPING SUPPORTS	As Built Baseline
042287/2;1-ACCESS PLATFORM	As Built Baseline

FIGURE 4: BASELINE STRUCTURE

Baselines are created by approving the hardware configuration items with its defining documentation to establish the current configuration.

DOCUMENT MANAGEMENT

Linked to the Hardware Breakdown Structure of a recent complex project executed by Babcock Engineering, the 604 drawings and documents were controlled through Teamcenter PLM Tool. The creation, review and approval, change control and distribution to Clients and Sub-Contractors are captured on Teamcenter.

Teamcenter keeps track of all the revisions, native files and approved .pdf files of drawings and documents. Changes and reviews are also captured to ensure data integrity and traceability. Documents and Drawings are channeled through Teamcenter keeping track of what was distributed, to which persons and companies, and what was returned, with the 390 transmittals issued on this project.

- ✓ TR-007271-UNIT 1 STRUCTURAL INSPECTION REPORT
- Company Contacts
 - P00698-JOHN, MAKULEKA
 - Data to Send
 - 81406-01-99-RE050169/A-MATLA UNIT 1 BOILER STRUCTUR
 - Receipt
 - TR - 007271 - John Makuleka.pdf
 - Transmittal Submitted

FIGURE 4: TRANSMITTAL EXAMPLE

Approved construction drawings and Method Statements are available through the Teamcenter to our Fabrication division for manufacturing and to the Site where construction takes place. A seamless process that keeps the correct information flowing to the point of use. Working from the same Teamcenter database ensures that all stakeholders are using the latest and correct

revisions of the drawings and engineers have access to supporting technical information and change history.

During construction and commissioning the important quality and legal documents are fed into the system to ensure proof of all our engineering processes, designs and compliance to legislation. The completion of a successful project is accomplished through genius Engineers and Construction teams, Project Managers and Quality Inspectors, and the well-oiled data management process to capture the story, the progress, the mistakes, the changes, the concessions, the final as-built, start up state of the plant in the 229 As-Built Databooks.

PROJECT DELIVERABLES

Teamcenter PLM Software not only enables the Configuration Management of the Plant, but also the Project Management view of Project Deliverables by assigning documents to Projects.

Project Managers can view and monitor the completion and approval of project deliverables by the team.

- AL94-01 KENDAL 6-AL94-01 HP ELEV & HANGER SURV
- > ECP's
- TRANSMITTALS
- PREFIX
- DOCUMENT TYPE
- DOCUMENTS
 - 00-06-90-WPAL94-01-KENDAL UNIT 6 HP PIPING ELEVATION AND HANGER SURVEYS
 - ND82-06-90-DB026788-KENDAL UNIT 6 PIPING SURVEY DATABOOK
 - ND82-06-90-DS026433-KENDAL UNIT 6 POST HOT SUPPORT SURVEY
 - ND82-06-90-RE025883-KENDAL UNIT 6 PRE-OUTAGE ELEVATION SURVEY
 - ND82-06-90-RE026332-POST-HOT ELEVATION AND SUPPORTS SURVEY REPORT
 - ND82-06-90-RE026779-KENDAL UNIT 6 HP PIPING SURVEY CLOSE OUT REPORT
 - ND82-06-90-RE026781-KENDAL UNIT 6 HOT WALKDOWN CERTIFICATE
 - ND82-06-90-RE026783-KENDAL UNIT 6-POST OUTAGE SITE INSPECTION
 - ND82-06-90-RE026961-KENDAL UNIT 6 COLD WALKDOWN CERTIFICATE

FIGURE 5: DOCUMENTS LINKED AS PROJECT DELIVERABLES

Engineering Data Management and Product Lifecycle Management are the processes that keeps record of engineering work and the configuration of the plants where Babcock executed work. The efficiency of these processes and the protection of our Intellectual Property are greatly enhanced with the abilities of Teamcenter PLM software as implemented at Babcock Engineering.