

AUTRONICA FIRE AND SECURITY

Protecting life, environment and property



AUTRONICA – THE SELECTION PROCESS OF A PLM SYSTEM

Autronica and UTC



Our global businesses power the aerospace and building system industries



**UTC Building &
Industrial Systems**



UTC Aerospace
Systems



Pratt & Whitney



The worlds greatest provider of building technologies.

Elevator systems | Climate systems | **Fire systems** | Security systems



Our divisions



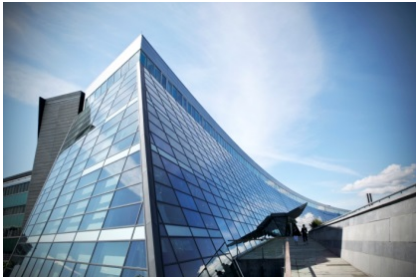
Division onshore global



Division maritime



Division petrochemical, oil and gas



Division onshore Norway



Autronica Denmark



Uncompromising technology



EN 54 | SOLAS | NFPA 72 | IEC 61508 SIL2



AUTRONICA SYSTEM OFFERING



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Autronica PLM project specification

PROJECT OVERVIEW

Objective:

Autronica will grow. The range of products increases, product lifecycles get shorter, added requirements become more extensive (IEC61508 (SIL), EX/ATEX) and new markets demands additional regulations. All this information increases complexity, i.e. cost and effort to maintain data coherent and correct.

Scope:

Implement a Product Lifecycle System as a common database for information related to products and installations. Lifecycle here covers all vital info from product idea via design to production, change management, maintenance, phase-out/in and as designed, as built and as maintained.

Key Benefits

- Critical for business growth
- Need PLM system with full IEC61508 (SIL) support
- Capacity Utilization
- Compliance management (EX/ATEX/SIL/CPD/RoHS)
- Improves phase-out/phase-in of revised products
- Single source for product documentation
- Flexibility in supporting distribution channels
- Improved product - and process quality

BUSINESS DRIVERS

Problem – New regulations	Solution
<p>IEC61508/SIL: Develop products according to IEC61508/SIL. The standard is expected to be stricter on requirement management such that it can only be fulfilled by a tool (SIL2/3/4)</p>	<p>Tool for recording, change management and tracking requirements up to verification</p>
<p>ROHS/REACH: Requires collection and maintenance of detailed component info for product compliance (July 2014). Today: Collected and saved in Excel sheets, rarely updated. Complexity of requirements will also increase by time. Need for external consultants to update.</p>	<p>Tool for RoHS II compliance (“automatic” data collection and automatic report generator)</p>
<p>EX/ATEX:</p> <ul style="list-style-type: none"> ➤ Assessors are getting more picky than previous ➤ Multiple manual systems (Excel) for cross-referencing & certificate updates (ECO, MDL...) ➤ Related and “Included In” data found by manual search ➤ Critical components & drawings manually checked ➤ Expansion to new markets, more documentation 	<p>Tool for EX products</p> <ul style="list-style-type: none"> ➤ MDL inherent in PLM-tool ➤ Relations inherent in PLM-tool ➤ Critical components tagged in PLM-tool
<p>General regulations (CPD, MED, FM etc)</p> <ul style="list-style-type: none"> ➤ Increased focus on acceptance before change ➤ We have poor tracking of modifications per product per approval (Approvals & certifications take place at various revisions) 	<ul style="list-style-type: none"> ➤ Full tracking of modifications & revisions ➤ Defined process for modification could include certification accept process

VALUE PROPOSITION

Program Statement	
The goal is to have a system that can handle all product and installation related data/documentation and processes for development, manufacturing and maintenance of Autronica products and projects. Scalable, easy to understand, user friendly	
Current State	Desired State
<p>Data stored on different drives and servers</p> <p>Multiple sources for same information</p> <p>Suboptimal Legacy Systems</p> <p>Inefficient and/or manual processes</p> <p>Multiple system touch points and manual integration</p> <p>Manual revision on product documentation. Spread locations allows inconsistencies</p> <p>Manual system for Phase-in/Phase-out</p>	<p>Increased ease of use and information access for employees</p> <p>Single source for documentation</p> <p>Coordination of: Issues, Non-conformities, Change Management & Revision control on products & documents, synchronous.</p> <p>Second source (component) management</p> <p>Requirements data base linked to product</p> <p>Full IEC61508 compliance</p>
Customer Requirements	Measures
<p>Focus on processes, especially for SIL/Ex/RoHS/Development</p> <p>Product Lifecycle information in one system, not spread to individual subsystems</p> <p>Customer feedback, non-conformities and improvement tracking,</p> <p>Production processes and control plans</p> <p>System that can handle embedded products – SW, Electronics and mechanics in one system</p>	<p>+ Capacity Utilization</p> <p>+ Shorter Lead Times</p> <p>+ Meeting Customer Requirements</p> <p>+ Inventory Turns</p> <p>+ Shorter Transit Times</p> <p>+ Less Turnbacks and Nonconformities</p>
Winning Solution	Program Management
<p>Implement a PLM solution</p> <p>Use proven implementation methodology throughout project</p>	<p>Apply Internal Passport aka Stage Gate (Business proposition, Requirements, Design, Validation, Production)</p> <p>Increase governance by establishing Quality Review Board and Passport Review board</p>



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PLM tool selection

TOOLS SELECTION

PLM Tools from five different suppliers was initially evaluated

Three PLM tools were shortlisted after an value proposition fit assessment



Used by Sikorsky



Used by Autronica ?

Siemens PLM Software

SIEMENS

Used by Pratt & Whitney

PTC®
Windchill

Used by Corporate

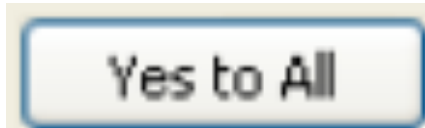
Shortlisted PLM tools were

- Corporate PTC Windchill solution
- PTC Windchill solution from PTC Sweden (Custom solution)
- Aras Innovator from Minerva (Custom solution)

DISCOVERY WORKSHOPS AND VALUE ASSESSMENTS

- Discovery workshop with Minerva
- Value assessment with PTC
- Value assessment with Carrier (PTC)

Do the solutions comply with our requirements?



The devil is in the detail!

DETAILED GAP ANALYSIS DISTINGUISHING SOLUTIONS

- Verify supplier's experience with the required functionality
- Do gap analysis of requirements and functionality for each supplier
- Do risk analysis for each supplier
- Verify the suppliers' functionality feature road map

GAP ANALYSIS, FUNCTIONAL REQUIREMENTS

#Req	Req.	Description	Solution 1	Solution 2	Solution 3
Req 1	IEC61508/SIL	IEC61508/SIL: Requirement management is mandatory	Can support SIL processes. Not integrated	Can support SIL processes. Not integrated	Support SIL. Integrated solution
Req 2	EX/ATEX	EX product support. Xreferencing docs vs certificates. Sched drw & Critical compo	Response not received in time despite numerous requests	Yes, need customization	Already implemented
Req 3	RoHS/REACH	Component compliance (ROHS/REACH)	WPA. not integrated yet. Static, Works bad for EHT	WPA integrated. Possibility for GDX DB connection. Static	Integration to IHS DB. Data harvesting. Dynamic process with warnings on components
Req 4	Regulations	General Regulations. As designed, as built, as installed vs certificates	Response not received in time despite numerous requests	Yes, need customization	Already implemented
Req 5	Change Mngmnt	Product Change Management	Yes	Yes	Yes
Req 6	ECAD experience	Supplier readiness/experience with electronic high tech business (EHT)	No, have no implementations yet, Might have in Q3 2015	Do not meet requirements	Yes, core functionality
Req 7	Process modifications	Modifications in tool of processes and functionality (maintenance)	Yes, But it is time consuming, must be discussed before implementation, need system shutdown	Yes, Time consuming process	Yes, Made for fast iterations, live system update, Can make changes our self
Req 8	One system for all	All Information in one system (eases X-referencing, synchronous revision)	No, different systems, different user interfaces, Information sored in different systems. Planned integration in the future	No, different systems, different user interfaces, Information sored in different systems . Planned to have all integrated	Yes, One system, one interface
Req 9	Second source	Component second source (Alternative parts)	Response not received in time despite numerous requests	AML support, manual data collection & update	AML support interfaced to IHS DB for fast updates
Req 10	Comp life cycle	Shorter component life cycle, more change management (Short product revision life)	No automated functionality, manual process	WPA integration to GDX DB. Static process	Integration to IHS DB. Real time integration. Component EOL pre warning
Req 11	JDE integration	JDE integration	No. Will need customization. Cost? Time? Integration late in project	Yes. Need cusbmization. Cost ! Late in project plan	XML interface in place. AFS does JDE integration
Req 12	Cost of upgrade	Tool upgrade involves modification of configuration	Response not received in time despite numerous requests	Unknown	Aras guarantees forward compatibility of configurations

VENDOR SELECTION

We have selected **Aras Innovator** as our PLM solution
Our integration of Aras is done by **Minerva**



Rationale for selecting vendor (the short version)

- Comply with our requirements and needed functionality
- All needed EHT (Electronic High Tech) functionality is supported
- Short time for implementation
- Best fit with AFS business in terms of features (EHT, EX, SIL- Functional Safety, Compliance)
- Architecture is made for easy integration and modification when needed
- Can easily change functionality when needed

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Pitfalls to avoid, risk handling

RISKS HANDLING: DO'S AND DON'TS

Do's

- Be aware of enterprise IT policy's and infrastructure obstacles
- Build the PLM system stone by stone. Small incremental steps that are easy to verify
- Stick to the scope of each phase
- Data transfer to ERP systems is time consuming
- Data migration is time consuming

Don'ts

- Avoid being too ambitious for the implementation first phase

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Status of the PLM implementation

STATUS OF THE PLM IMPLEMENTATION

Preparing to Go live with first phase before Christmas

- Configuration done
- Doing data migration
- Setting up clients
- Internal training
- Preparing organization for the change
- Go live!

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PLM plans for the future



CURRENT AND FUTURE PLANS

Phase 1: Currently configured and ready for to go live

- Electronic PLM, Product Data, Change Management, Component Engineering

Phase 2: Requirements Management

Phase 3: Quality Management

Phase 4: MRO – Maintenance, Repair & Overhaul

Phase 5: Project Management

The only thing that we know for sure is that the plan will be modified!

PROTECTING LIFE,
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