

Experiences/Challenges of Supplying to Customers in the Nuclear Sector

CQI NucSIG Event 26th March 2014



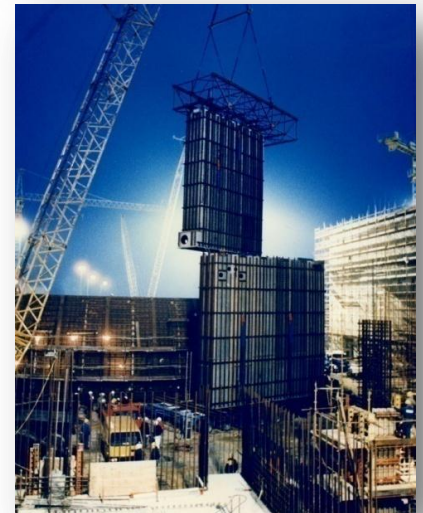
Welcome to Darchem Engineering

Presenter : Gary Jobling -Technical Services Director

- 16 years with Darchem Engineering in varying compliance roles
- Responsible for QHSE and Export /ITAR compliance for our two facilities at Stillington and Gloucester
- Previous Background:- 16 years experience within Inspection, Quality / Improvement Engineering and Management roles within Automotive, Bearing and Commercial Lighting Industries
- Experienced in implementing Management Systems for varied industry market sectors

Darchem's History in supplying Nuclear Industry

- Major player in 70's and 80's with very large contracts for lining interior of AGR pressure vessel
- 45 Years in Nuclear Industry in high end thermal insulation and precision fabrications
- 170 Reactors (plus nuclear processing plant)
- 18 Countries
- Magnox, AGR, THTR, PFR, BWR, PWR reactors
- New build and fast track repair/replacement projects



Overview of Darchem's QMS requirements

Minimum Customer Requirements – ISO 9000:2008

<p style="text-align: center;">Aerospace</p> <p>AS 9100 rev C EASA 21 G EASA 145 NADCAP</p>	<p style="text-align: center;">Automotive</p> <p>TS 16949</p>
<p style="text-align: center;">Nuclear</p> <p>AMSE NQA-1 10CFR 50 App B ASME U ASME N</p>	<p style="text-align: center;">Offshore/ Marine</p> <p>Achilles FPAL Burnhill Compliance</p>

Desirable Customer Requirements

ISO 14001 / OHSAS 18001 / ISO50001/ ISO17025

Darchems Approvals and Accreditations

Internationally Recognised Industry Approvals

BS EN ISO 9001	Quality Management System
AS 9100 Rev C	Aerospace Quality Management System
ISO 14001	Environmental Management System
OHSAS 18001	Safety Management System
ISO 50001	Energy Management System
TS 16949	Automotive Quality Management System
ISO 17025	Test House Approval for Fire Testing

Aviation Regulatory Approvals

Production Organisation – EASA 21 G
Maintenance Organisation – EASA 145

NADCAP Special Process Approvals

Non Conventional Machining
Non Destructive Testing
Welding (Resistance and Fusion)
Chemical Processing

Customer Approvals / Approved Supplier Status

40 Customer Specific Approvals including:-

* Rolls Royce * Airbus * Spirit Aerospace * Boeing * MTU
 * Meggitt ABS * GKN Aerospace * Augusta Westland * Volvo
 * Lockheed Martin * Pratt & Whitney (Canada & USA) * ITP
 * Bombardier * BAE Systems * Aircelle * Goodrich * KNHP
 * BVT * Cummins * Siemens * Aktiv Nuclear * Shaw Group

Supplying into the Nuclear Sector

- **QMS requirements**
 - Normally ISO 9001 Minimum for UK and EU contracts
 - US contracts tend to ask for a QMS in accordance with ASME NQA-1 or 10 CFR 50 Appendix B
- **Customer or Contract Specific requirements**
 - ASME codes U and N stamp may be requested
 - ISO 3834 Welding Quality Management System
 - Supplier QMS requirements eg EDF GQAS, Westinghouse AP1000 Quality Assurance Program

Experience of Supplying into the Nuclear Sector

- **Customer interpretation of requirements**
 - Acceptance of the process approach to ISO 9001 and use of flow charts varies from market sector to sector – Nuclear customer preference tends to be more traditional BS5750 type documented procedure.
 - In addition to the recognised industry standards and accreditations many customers have own specific QMS requirements eg cleanliness and material segregation.
 - Expectation for detailed documentation, records and traceability

Nuclear Safety Culture

- **Expectation of a Zero Harm Culture**
 - Safety Performance – “Raising the Bar”
 - Safe Systems of work
 - Safety Shares and Communication
 - Training / Understanding of Nuclear Safety Culture
- **Product Safety**
 - Rework and repair involving key processes eg Welding requires approved repair procedures and customer sign off
 - Suitably Qualified and Experienced Persons “SQEP”
 - Documentation and Traceability

Experience of Supplying into the Nuclear Sector

- **Pre Contract Stage**
 - Enquiry & Pre Qualification Questionnaire's
 - Be concise and clear in your PQQ – answer the question being asked !!!!
 - Spend time to review the specifications in detail and understand fully the customer expectations
 - Do not under estimate the resource required and time taken to manage the project

Experience of Supplying into the Nuclear Sector

- **Manufacturing and Inspection**
 - High degree of interpretation of Customer Specifications
 - Subjectivity must be removed with common agreement on acceptance standards by everyone
 - Expectations tend to require “top end” of specification
 - Continuity in long running projects
 - Resource changes results in extended learning periods, different approach and opinion
 - Working Environment
 - Cleanliness and Safe working environment
 - Material Organisation, segregation and Identification

Experience of Supplying into the Nuclear Sector

- **Manufacturing and Inspection**
 - Huge challenge with unique one off projects V runner and repeat projects
 - Managing project variations
 - Inspection and Test Plan are key to project with hold points and milestones
 - Ensure sufficient time is planned in for Independent customer inspection and sign-off
 - Rework must be against defined and approved procedures

Experience of Supplying into the Nuclear Sector

- **Record Management**
 - Document and Record management is as an important deliverable as the product.
 - Do not under estimate the time to collate Life Time Quality Record Packs (LTQR)
 - Work closely with the customer at the outset of the project to agree the LTQR contents and format
 - Build the packs as you go
 - Define roles and responsibilities for collation and have robust process and procedure in place

Experience of Supplying into the Nuclear Sector

- **Procurement and Sub Tier Control**
 - Managing the supply chain
 - Flow down of customer specifications – the requirements placed on us are equally relevant to supply chain eg cleanliness, material segregation, documentation, SQEP, etc
 - Plan in product acceptance and inspection requirements
 - Use of customer nominated approved suppliers which results in us having to increase our supply base

Experience of Supplying into the Nuclear Sector

- **Resource Management**
 - Specific Industry requirement for Suitably Qualified and Experience Persons (SQEP)
 - Evidence of Individual Resumes, Qualifications & Experience
 - Ensure you have suitable qualified staff for specific roles eg coded welder qualifications / weld inspectors etc
 - Developing our workforce for the future
 - Apprentices completing Nuclear specific training course in final year of apprenticeship

Key Elements of Supplying into the Nuclear Sector

- A Culture of Product and Personal Safety is paramount at all times
- Expect the highest standard of Workmanship and Quality
- Equal importance must be given to the quality and completeness of records and documentation
- Full traceability for materials, testing, welding, inspections etc.
- Do not under estimate the resources requirements to manage and support a nuclear project

PREPARATION – PREPARATION – PREPARATION!