

In-Cell Remotely Operated Equipment

“Early Engagement = *Getting It
Right First Time*”

HOTLAB-2015

LEUVEN, BELGIUM

27th Sept. – 1st Oct. 2015



Content of Presentation

1. Introduction to Aquila
2. Early Engagement
3. Project Delivery Process
4. Hot Cell Categories
5. Case Studies
6. Summary and Conclusion



Introduction to Aquila

Markets

- Nuclear & Nuclear Medicines

Focus

- Containment and glove boxes and in-cell processes
- Shielded facilities in concrete, steel and lead including in-cell processes
- Remote Handling including specialist machine systems, grabs and manipulators
- Transport and packaging solutions



Aquila Scope

DESIGN and MANUFACTURE of SYSTEMS
NUCLEAR & NUCLEAR MEDICINES

- Feasibility studies, concept, design & development
- Engineering substantiation
- Preparation of specifications
- Design & detail drawings for manufacture
- Procurement & management of manufacture
- Full assembly and testing
- Installation and commissioning



Aquila Approach and Culture

DESIGN and MANUFACTURE of SYSTEMS

- Strive to be Best In Class
- Structured to Achieve
- Innovate
- Engage and Challenge
- Pro active, Team Working
- Open and Honest
- Win, Win Achievement of Goals



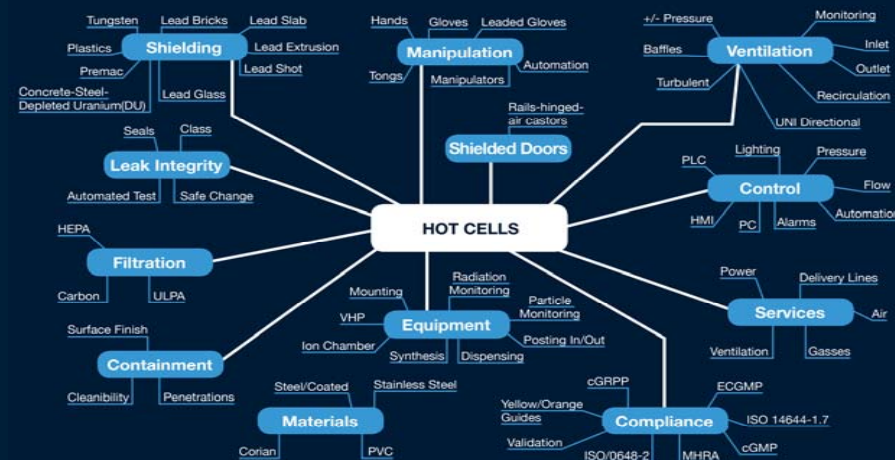
Aquila Approach and Culture

Nuclear Decommissioning Authority (NDA) Award for;
“The Contractor that goes the extra mile”



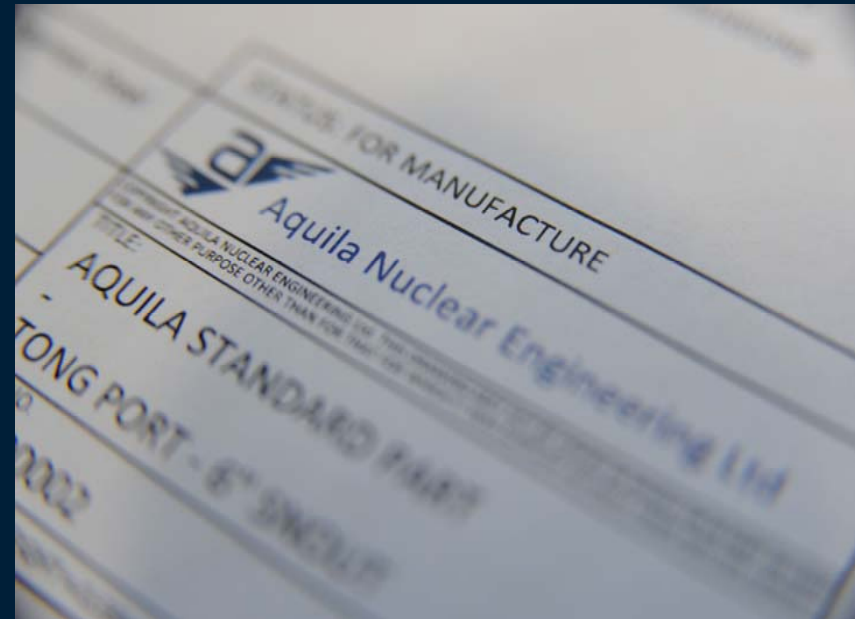
Early Engagement

- 30 Years' Experience
- Probe, Question and Innovate
- Establish Project Baseline
- Client Engagement
- Shared Experience
- Risk Mitigation
- Problem Solving



Project Delivery Process

- Agree Scope of Works
- Structure the Project
- Project Program
- Quality Plans
- Accurate and Timely Reporting
- Communicate; Good and Bad



Aquila's Process

Design Process and Verification

- Verify Functional Requirement Specifications
- Review Technical Risks and Opportunities
- Early Client Engagement, Review and Challenge
- Concept Design, Risk Asses, Review and Present
- 3D Scheme Design, Risk Asses, Substantiate, Review and Present
- Detailed Drawing For Manufacture

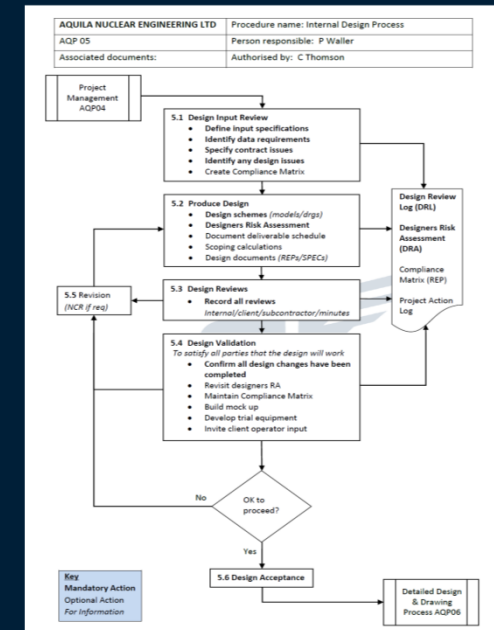


Aquila's Process

Ensure the Design Process is Challenging, Rigorous and Searching

- Involve all Stakeholders
- Multi Disciplined Design Reviews
- Whole System Integration
- Maintainability

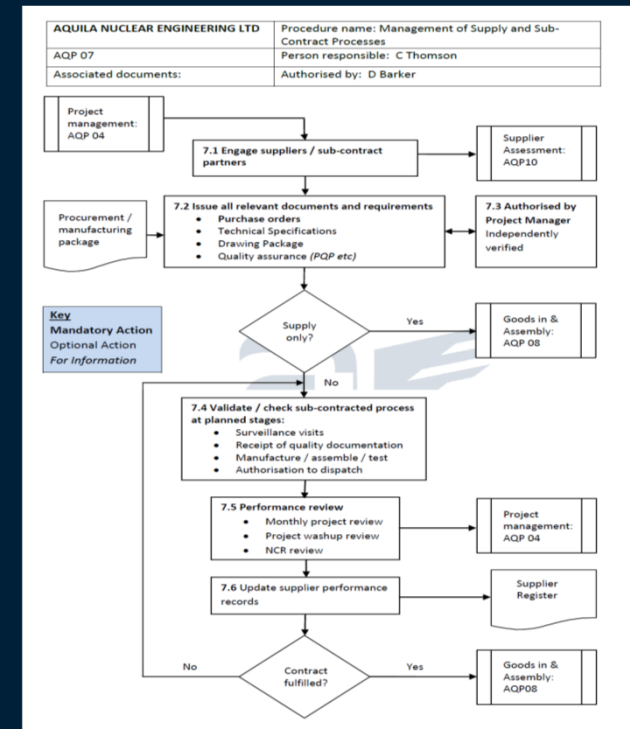
Design can be iterative work through the technical issues at each stage to ensure a reliable “right first time” outcome



Aquila's Process

Equipment Manufacture and Assembly

- Create Manufacture Quality Plans
- Manufacture from Approved Supplier List
- Surveillance and Inspection
- Kit Parts and Compile LTQR's
- Assemble Equipment
- Setting To Work




Aquila's Process

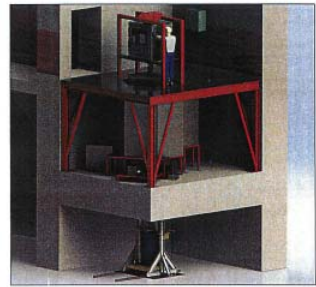
Equipment Testing and Validation

- Test Schedules
- Safety Tests
- Functional Tests
- Factory Acceptance Testing
- Operator and Maintenance Training
- Complete LTQR's

PRJ01030 ASSAY HANDLING EQUIPMENT
 FACTORY ACCEPTANCE TEST SPECIFICATION
 PRJ01030_SPEC_011_REV_1






**PRJ01030 ASSAY HANDLING EQUIPMENT
 FACTORY ACCEPTANCE TEST SPECIFICATION
 PRJ01030_SPEC_011**




Tick as applicable

Shaft FAT Silo FAT

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Generic Hot Cell

The In Cell process equipment has to fit the hot cell with restricted;

- Space Envelope
- Materials Flow
- Access
- Manipulation
- Environmental Control
- Flexibility
- High Level of Compromise



Bespoke Hot Cells

The Hot Cell is designed around the process;

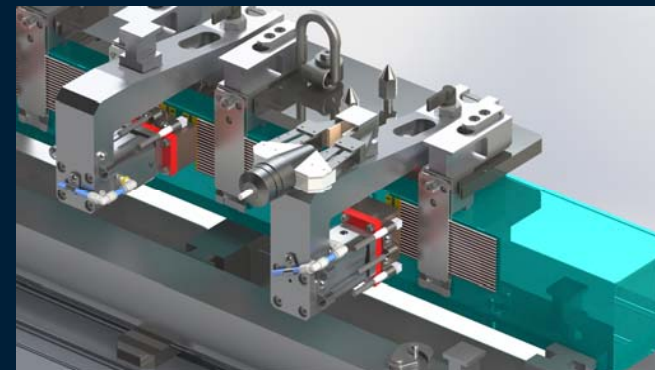
- Optimized in cell equipment
- Ergonomic layouts
- External drives and sensors
- Maintenance provisions
- Integrated service
- Little compromise



Case Study – Residual Stress Rig

Accurate Placement of Strain Gauge Assemblies;

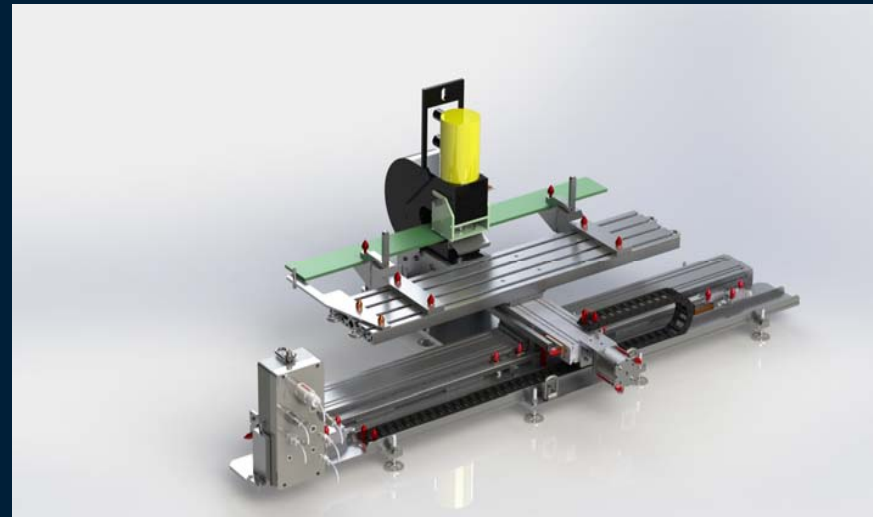
- Repeatable Process
- Accurate Placement
- Component Support & Handling
- Modular Rig
- Placement Saddle
- Strain Gauge Placement Assemblies
- Heater and Clamp Units
- Handling and Manipulation



Case Study – Hydraulic Punch

Sample Removal from Flat Plates;

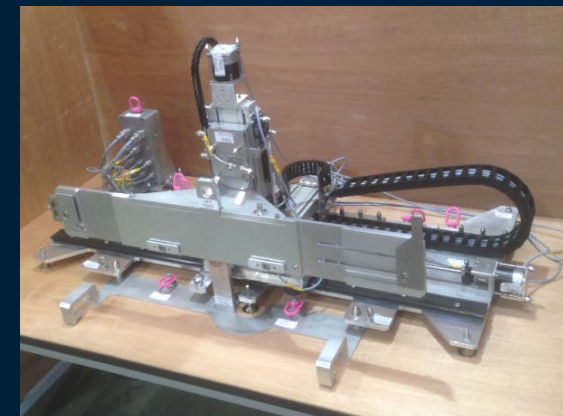
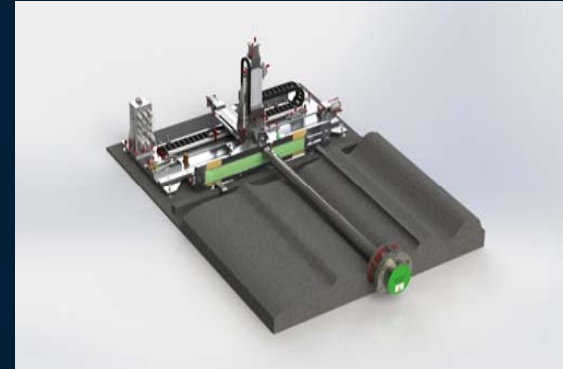
- Accurate Sample Removal
- Sample Recovery
- Adjustable Sample Support
- COTs Hydraulic Press
- COTs drives, switches, etc
- In-Cell Tool Changing
- Maintainable via MSM



Case Study – Gamma Scanner Manipulator

Fixed Head Gamma Scanner of plates;

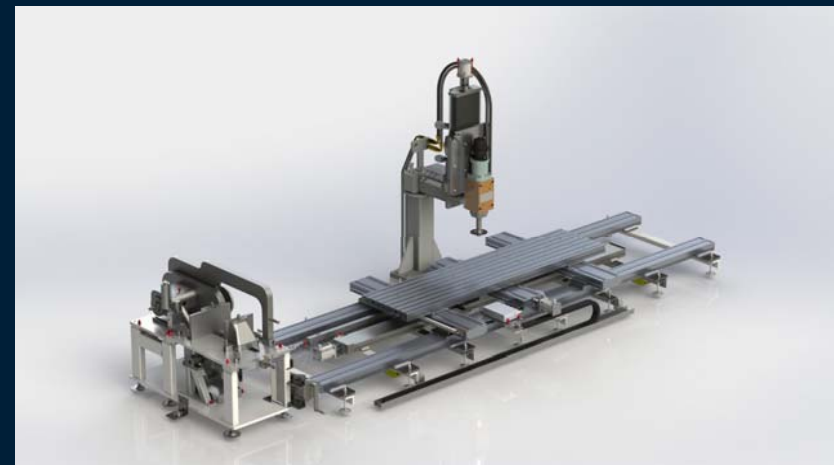
- Accurate Component Restraint
- Accurate Position Readout
- Smooth Motion
- Restricted Posting Arrangements
- Assembly and Maintenance by MSM
- COTs drives, switches, etc



Case Study – Analysis & Breakdown Equipment

XY Gantry Table, Retractable Milling Head, Cut Off Saw, Z Drive and Rotation
Rig & Ancillary Equipment;

- Robust machine table
- Accurate and repeatable positioning
- Variable milling head with Z drive
- MOTs Cut Off Saw
- Restricted posting arrangements
- Maintenance by MSM



Case Study – Analysis & Breakdown Equipment



Summary

- Aquila applies simple effective solutions using 30 years' experience, teasing out Functional Requirements, innovative design, robust challenge and review.
- Getting it Right First Time - is achievable with the correct working relationships, project rigor, design application, assured manufacture, assembly and validation testing.

Thank you for listening

