In-Cell Remotely Operated Equipment

“Early Engagement = Getting It Right First Time”

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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
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
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