

Challenges in designing hot cells – How to avoid future difficulties in the use of telemanipulators

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Planning a hot cell implies taking into account different professions working together in a single place: from the building-shell to the in-cell equipment, like lights or media. Also new challenges in the nuclear industry influence the complexity of tasks performed in hot cells, e.g. regulations and technical developments. In the same manner, remote handling technology has been improved in the last decades. All these factors impact the complexity of designing a hot cell. Considering this complexity, small mistakes can have a major impact at the end. From the point of view of a manufacturer and in most cases as subcontractor, this paper will concentrate on giving feedback about experience and technical developments Wälischmiller Engineering made in the last decade in order to highlight some “traps” that can be avoided: By using some examples (part 1) the presentation will highlight how important it is to choose the suppliers at an early stage of the project for special requirements (part 2) and what can be the role of specialised companies in the success of a project (part 3).

Feedback examples

Even if the planning is good, things can be forgotten: e.g. installation or maintenance aspects.

In this example, the difficult installation of the manipulators will be highlighted. Cable traces blocked the access of installation equipment. As a result, it has been found that the maintenance according to the maintenance plan cannot be performed. Solutions were found with the customer.

The importance of a good construction site coordination. The second example will highlight the importance of coordination at construction site. The installation of the manipulators has been advanced, despite the fact, that neither the cells nor the building shell were ready. Avoid damage to the manipulators due to welding and concreting works was a real challenge. In addition the work conditions at minus temperatures were more than difficult and brought our staff to their limits.

From these two examples it can be concluded that specialised suppliers should be involved at an early stage of the project to avoid planning mistakes, or at least reduce risk and at the end reduce costs or schedule issues.

Supplier selection at an early stage of the project

Why should the suppliers be selected at the beginning of the project? The selection of the suppliers at the early stage of the project provides a security in the planning through continuity. Both examples highlighted, that the knowledge of Wälischmiller Engineering would have avoided some difficulties during the installation of the remote handling equipment. Involving the experience of suppliers and other stakeholders contributes to the success of projects and reduce the risk of planning mistakes.

To get a better approach of the challenges of each project, it is important to involve specialised companies to identify bottlenecks and to find solutions to solve problems.

Selection criteria. Different criteria have to be taken into consideration to select the supplier: experience, references, solutions oriented and technical capacities.

Role of specialised companies

Experience and expertise. Suppliers with long experience will help to succeed in the project and avoid a lot of problems at the end especially during the installation at site. Companies like Wälischmiller Engineering with many years of experience in the nuclear industry will help to lead to the success of the project. As specialist, Wälischmiller knows the requirements of the nuclear industry and the expectations given to remote handling equipment (narrow spaces, high contamination...).

Since decades we strive to develop customisable solutions for different needs. No project is like the other because each facility is different. Trust and solution oriented relationship is in our opinion the key of the success of many projects. For that reason, we develop our products by keeping in mind the needs of our customers and see it with their eyes.

Reliability in the execution. The planning can be excellent, but sometimes solutions have to be found to solve issues. In this case it is important, that the supplier shows enough flexibility and is solution oriented to overcome difficulties at site during the installation.

A short time frame of the installation procedure is a challenge for companies. The supplier should be able to install equipment within the given time as shut-down of nuclear installation is expensive. Those challenges can be overcome by a continuous, solution oriented and trust based cooperation between customer and supplier.

About Wälischmiller: Wälischmiller Engineering has been providing safe, smart and cost-effective remote handling solutions with the famed German quality and reliability for over 60 years worldwide. Our handling systems offer various mechanical telemanipulators for a wide range of applications. Our models A100 and A200 series were successfully employed in Sellafield, Cadarache and Chernobyl. Other products including remote controlled power manipulators from the A1000 series for handling heavy loads; intervention systems with servo-manipulators for repair and maintenance tasks in hazardous and inaccessible zones as well as remote-controlled and automatic equipment for positioning, transport and sampling tasks.