orano

DEROSA

Semi-automatic robotic cutting system

8

COMPATIBLE TOOLS

230 mm circular saw
Band saw
Reciprocating saw
125 mm grinder
230 mm grinder
300 mm grinder
Laser
Plasma torch

10

TO 30 MINUTES TO REARRANGE THE TOOL BETWEEN SUCCESSIVE OPERATIONS

1

MILLIMETER ACCURACY

0

RISK OF HARM TO THE OPERATOR

DEROSA is a semi-automatic robotic cutting solution developed for volume reduction operations in a shielded nuclear environment.

Four-step operating principle

1. Gather information
3D scanning is used for precise modeling of the working environment.

- 3D scanning of the material to be cut and its environment
- Reproduction of the environment as it exists in real time in a precise point cloud

2. Set parameters
Precise configuration of cutting sequence is set by the operator.

- Selection of the appropriate cutting tool
- Definition of cutting paths directly in the point cloud, taking the parameters of the selected tool into account

3. Simulate
Risk-free simulation of cutting sequence is executed using the human/machine interface (HMI).

- Simulation of robot cutting trajectory to confirm accessibility of both the equipment to be cut and the built-in tool
- Detection and management of interferences with the robot's movement

4. Execute
Automatic optimized cutting is performed after the trajectory has been validated.

- Cutting in automatic mode following the trajectory set by the operator and confirmed by the anti-collision and accessibility calculation
- Motor feedback is used as a control for cutting operations
- A new 3D scan is done after cutting to retrieve the resulting as-built total quality control (TQC) environment

The DEROSA cutting system has a user-friendly HMI

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Model-based qualification before operational deployment

Reproduction of worksite conditions

Cutting operations are performed on representative models of containers made of stainless steel.

DEROSA operating on a representative model drum in a shielded containment area

Benefits realized during actual cutting

- Simple, user-friendly HMI requires minimal learning curve for increased efficiency
- No risk of harm to operators
- Extension of the operating lifetime of the cutting equipment
- Cutting with a proven industrial robotic arm
- Anti-collision management

Watch our video to see DEROSA in action

Advantages

Standardization. Uses robust, reliable and low-cost industrial robotic arms

Performance. Determines optimal operational parameters, leading to around 50% savings on consumables and a direct impact on operating times

Adaptability. Can be adapted to different working configurations, different robotic arms and cutting tools, and different operations (e.g., unpacking from bulk, packing of waste, etc.)

Simplicity. Easy to understand and user-friendly HMI that does not require robotics training
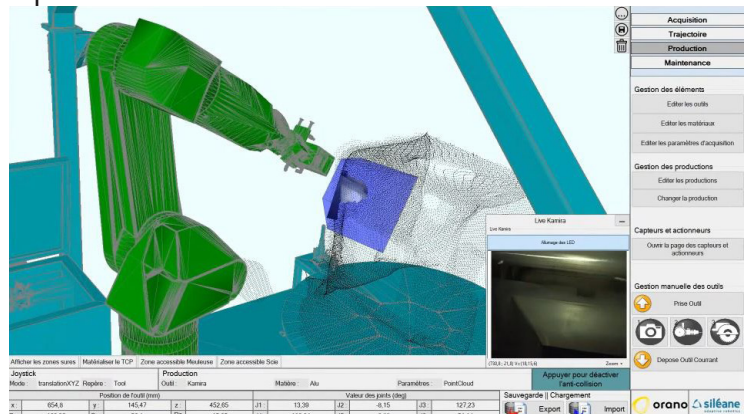
Real-time working point cloud superimposed on initial point cloud as seen in the user interface

DEROSA was developed by both Orano and Siléane. The solution is covered by a joint application filed for patent protection.