



“Telemanipulation of a Robotics arm
TX2-60 stericlean+ with Haptic Device”

Stäubli Robotics

RAYA 2023 Finalist Event



Telemanipulation of a TX2-60 Stericlean+

Why it's required?

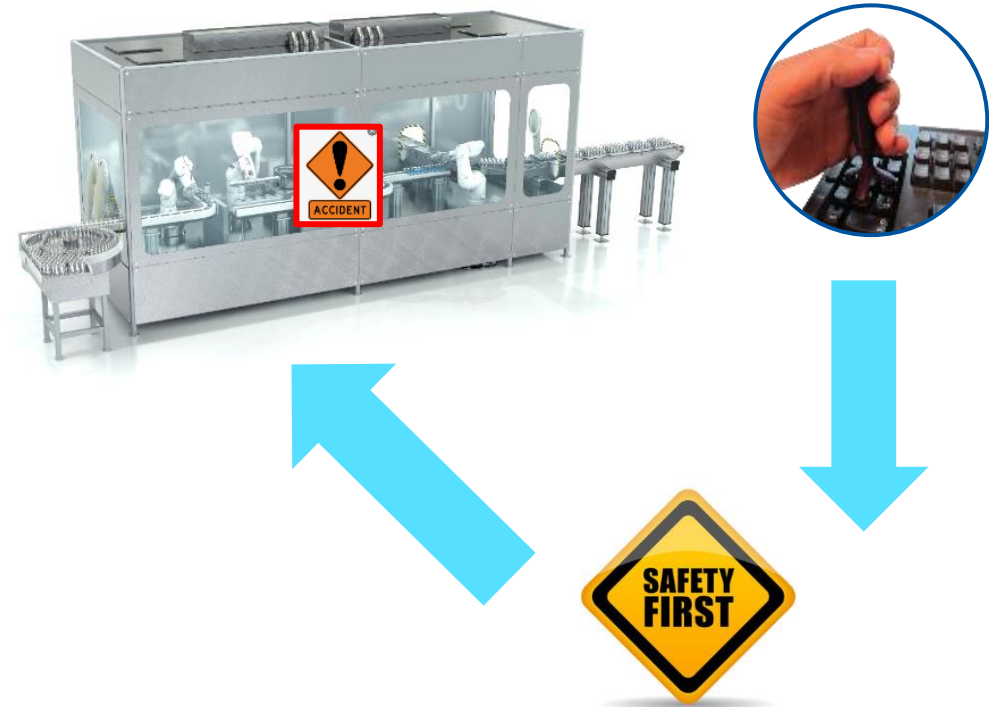
- Small batch & Gloveless Isolator trends
- Robor Arm place at the center of the cell
- Arm already used for repetitive task
- **Solution** for operating tasks performed manually through glove is required
- All this in a safe, intuitive and GMP compliant way because that will be still performed by operators



Telemanipulation of a TX2-60 Stericlean+

Unexpected and recurrent troubleshooting

- Recurrent troubleshooting can be listed and anticipated. Therefore, we can assist and secure the telemannipulation sequences in order to be more reactive
- But we should be ready for complete unexpected tasks and offer flexibility on the telemannipulation movement without risk of damage



Intuitive Joystick

Anticolision

Force Feedback

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Step 1 – Validate Haptic & Robot combinaison

The first demonstrator shows the robot combined with the **Haptic device** from Force Dimension is an easy-to-use manipulator which the operator can really feel what the finger of the gripper is touching, and then **protecting the handled product**.

Anticollision is performed thanks to the **digital twin**.



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Step 2 – bring anticollision in a real environment

The second demonstrator shows the integration of the anti-collision inside an isolator. The telemanipulation is done through a simple PlayStation joystick. This concept demonstrates what real trouble shooting in a real isolator would look like, unexpected & recurrent ones.



Step 3 – bring both benefits of the two concepts in one modular solution

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Recurent troubleshooting

1. Select and move to Pick the most suitable tool
2. Select a preprogrammed movement according task to perform
3. Move to area
4. Troubleshoot
5. Select the move back pre-programmed movement



Virtual predefined area

Non expected troubleshooting

1. Select and move to Pick the most suitable tool
2. Telemanipulate slowly to the trouble area
3. Troubleshoot
4. Select the move back pre-programmed movement



Anticolision

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#1 Ready to start



#2.1 Take tool



#2.2 Position in expected area



#3. Pick vial



#4. Place vial



#5 Place vial on rotary table



#6. Move home



#7.1 Pick the "fallen" cap



#7.2 Replace the cap



#8 tool back to station



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Scenario



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Pending:

Tool design for multifunctional task

Visibility of the operator



Thanks for your attention

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