



INNOVATIVE DRUM HANDLING ROBOT AT THE NEW BAYER SOL-1 PRODUCTION FACILITY IN LEVERKUSEN

2023-09-24 / STEFAN KURZ

REPRESENTING FOR



RAYA 2023 Finalist Event



Agenda



1. Introduction Package Unit Tablet Coater
2. Lacquer Suspension Preparation with Video
3. Cooperation of Bayer, Glatt, Hof, Stäubli
4. Attractivity / Drivers
5. Cost Effectiveness – Explanantion of ROI
6. Area of Application / Flexibility
7. Easyness to integrate
8. Final Message, why this application should get the Audience Award

Package Unit Tablet Coater

with Drum Handling Robot at the related Lacquer Suspension Preparation



Tablet Coater
Glatt GCC 500
Load capacity:
40 – 400 kg



Lacquer Suspension Preparation
with Discharging Station for drums
Load capacity: 50 – 250 l

Stäubli TX 200 Stericlean
Load capacity: 130 kg
with
specially designed gripping tool
and safety integration by **Hof**

Pallet with 4 drums
(10l, 30l, 50l, 100l)

Lacquer Suspension Preparation

How does it work ?



Innovative
Drum Handling Robot

@ Bayer SOL-1 production facility in Leverkusen

Realized by a cooperation of experts from:



Cooperation of Bayer, Glatt, Hof and Stäubli



The objective of this robot application is to achieve a full automation of typically manual supported pharmaceutical production processes by combining common process equipment with robot arms!

To realize this a cooperation of 4 companies was arranged:

Bayer as customer and source of the idea as well as supporter for the engineering and implementation process by reviewing and evaluating all proposed solutions and documents.

Glatt as main contractor of Bayer for the manufacturing of the equipment who delivers the package units including the supervisory control system as well as engineering partner for the project planning and designer of the entire package units.

Hof as robot integrator for Glatt who designed the gripping tool and the prism as well as the robot integration into the control system of the package unit, the integration of the necessary safety equipment and the teaching of the motion sequences.

Stäubli as manufacturer of the robot arms itself as well as supporter for the robot integration by Hof.

Attractivity / Drivers



Main aspects are:

- Increasing efficiency by decoupling of automated pharmaceutical production processes from manual operations
- Replacing of ergonomic inconvenient and difficult manual operations (due to construction constraints) by reliable automated operations
- Suitability to handle OEB 5 products
- Increasing human protection by avoiding contact between operators and product with high potent API resulting from a potential malfunction

Cost Effectiveness – Explanation of ROI

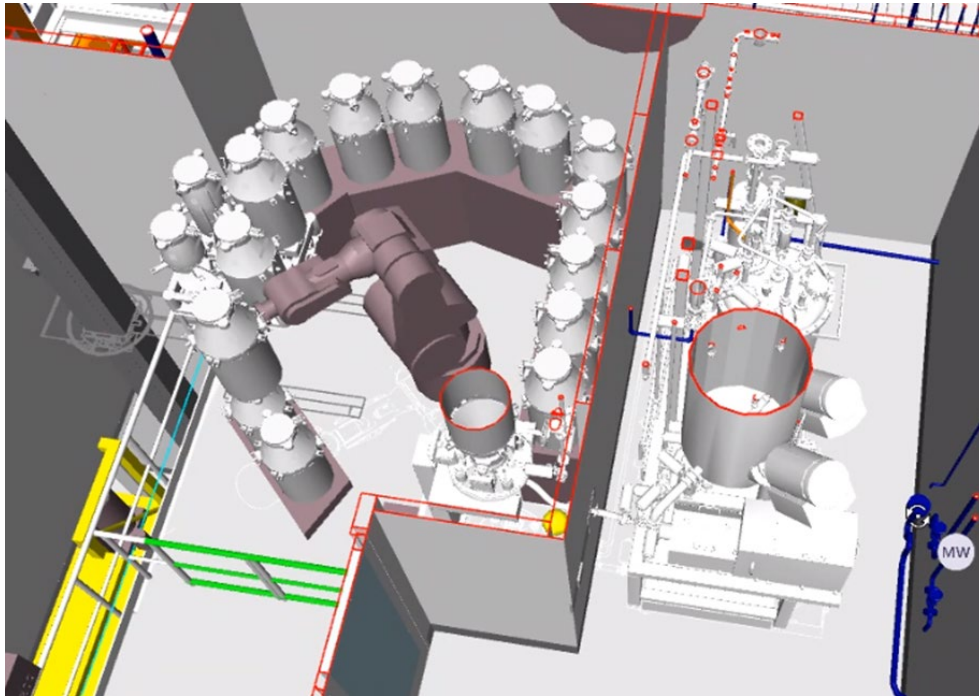


Main driver is not a quick “Return of investment”

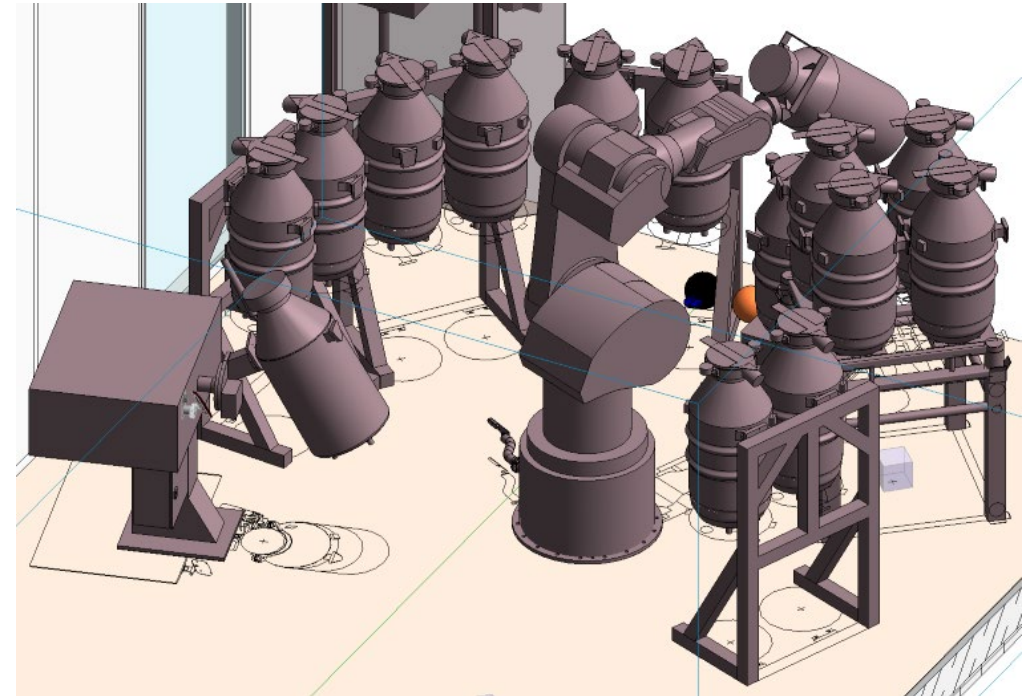
Main aspects regarding cost effectiveness are:

- **Avoiding costly damage on equipment due to operating errors**
 - Containment flap system allows only a few millimeters of deviation between the active and passive components. The robot will be able to do this operation very reliable and with repetitive accuracy.
- **Increasing overall asset effectiveness (OEB)**
 - No waiting times for an operator for manual transfer operations between automated production sequences.
- **Availability 24/7**

Further applications within the new Bayer SOL-1 production facility



Granule Suspension Preparation
with Drum Handling Robot



Mixing and Weighing
with Drum Handling Robot

Easyness to integrate

- Adjustment of the gripping tool to the handled objects
- Considering the limited total load of the robot arm
(in this case: 130 kg)
- Providing a specific safety risk assessment for every use case to investigate which safety devices have to be installed and integrated into the robot control.
- Specific teaching of the motion sequences of the robot.



No qualification necessary! → Robot is a substitute for manual operator handling

Why this application should get the Audience Award ?

- **Courage for Pioneering Work**

One of the first applications that introduces heavy load robots into Pharmaceutical Solida Production and hopefully pave the way for others to follow.

- **Cooperation beats Solo Run by merging company-specific Know-How**

Very good example for the cooperation of several companies to achieve one goal that could not have been reached by one company alone.