DESIGNING A SYNTHESIS REACTOR FACILITY

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DPS

THE PROJECT

FRAMING THE DESIGN

- A qualified, commercial scale fully automated Synthesis Facility

- The facility is based on using a modified Neutsche Filter / Dryer as a chemical synthesis reactor

- This project has delivered a successful novel approach for commercial scale manufacture of the product in a safe, fully automated multiproduct facility

Project Drivers

EXISTING FACILITY

EHS

INDUSTRIALISE

THE SAFETY DRIVER

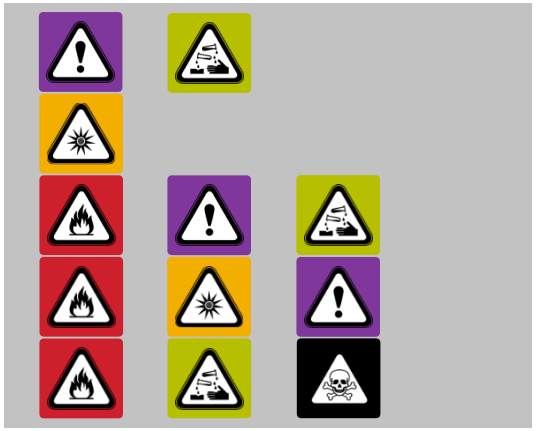
NEW SYNTHESIS PLANT

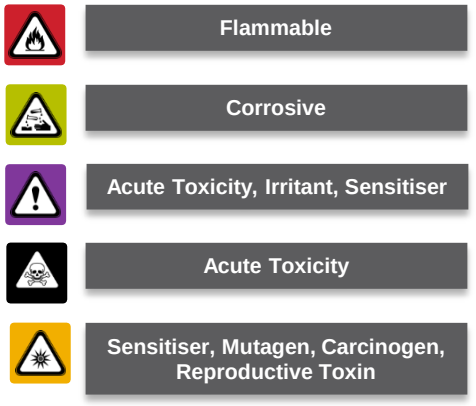
Facility Safety

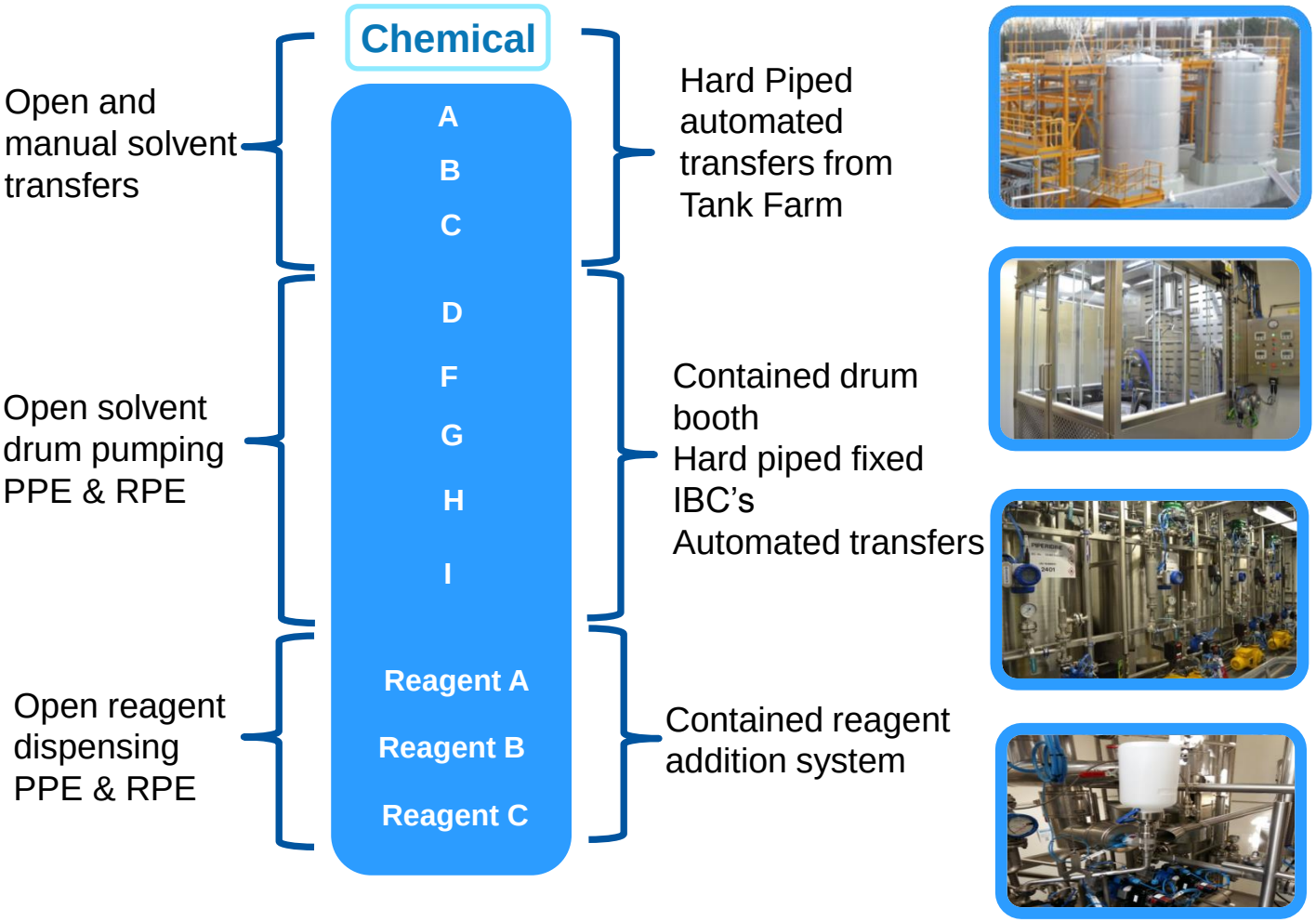
A Basis Of Safety Approach
Having safety as a design driver

- Preliminary Hazard Analysis (PHA)
- HAZOP
- Containment
- Ergonomics
- ATEX Report and Drawings
- LOPA
- SIL

Basis of Safety

	CHEMICAL	HAZARD
Step 1	A B C D E	
Step 2	Reagent A Reagent B Reagent C	
Step 3	F G	



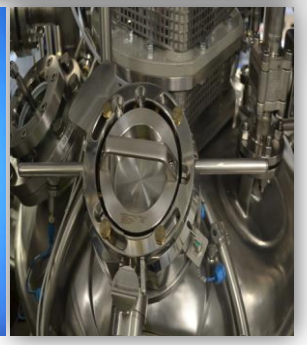

Chemical
A
B
C
D
F
G
H
I
Reagent A
Reagent B
Reagent C
Open and manual solvent transfers
Open solvent drum pumping PPE & RPE
Open reagent dispensing PPE & RPE
Hard Piped automated transfers from Tank Farm
Contained drum booth
Hard piped fixed IBC's
Automated transfers
Contained reagent addition system

Powder Sampling & Liquid Handling

New Synthesis

Automated & contained vessel sampler

Contained powder transfers



New Synthesis

- Automated solvent transfer system
- Sophisticated instrumentation for accurate & repeatable transfers
- Fully contained charging

Facility Safety

A Basis Of Safety Approach
Having safety as a design driver

- Fully Contained Charging, Bulk solvent and Liquid Waste Handling, Vent Header Design
- Recipe Controlled Vacuum swing Inertion and Collected, Abated Venting.
- Contained Potent Dispensing and Charging
- Fully contained, long term technically sealed solvent transfer and collection systems.
- Fully ATEX, PED and FM Global Compliance
- Relief Sizing to API520/521

THE INDUSTRIALISATION DRIVER

NEW SYNTHESIS PLANT

Basis of Design

Design of a Synthesis Facility

Safe Process

280l batch reactor

1 week batch cycle time

Multiproduct and Fully Automated functionality

Consistent and increased yield

Early Design

PDF's, Mass Balance and Batch Cycle calculation

Engagement with Facility team

Tech Transfer and Vendor Trials

Proof of Concept – Key process scale-up parameters

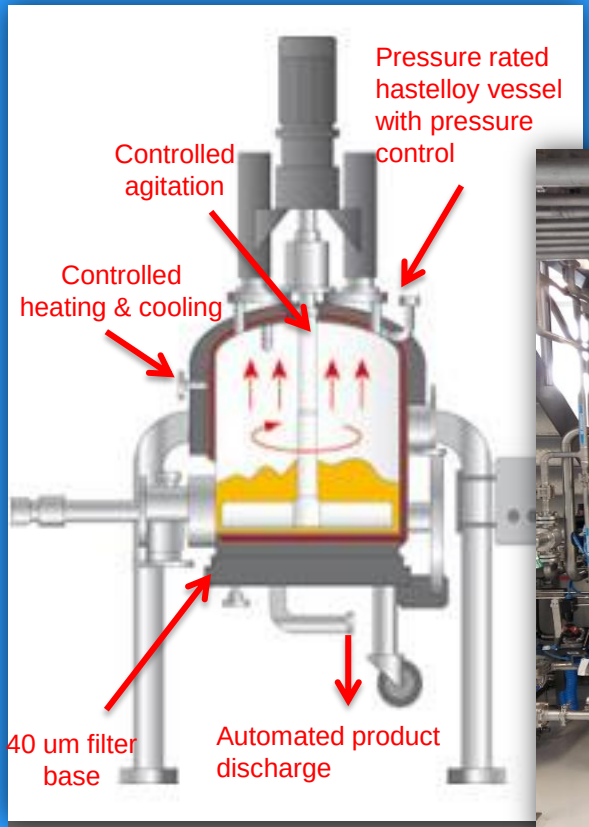
Equipment Selection -Neutsche Filter

THE REACTOR

NEW SYNTHESIS PLANT

Existing Synthesis

New Synthesis



- Operations take place in single vessel
- Automated CIP cycle
- Automated filter base lowering
- No lifting or manual handling required

Reactor Requirements

PRODUCT

SCALE

PROCESS

Reactor Selection

EQUIPMENT

DESIGN PARAMETERS

FLEXIBILITY

INNOVATION

THE NEW FACILITY

Thank You

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www.dpsgroupglobal.com