

# <u>connec</u>

## CHEMICALS









Prabhu Ramachandran Sr. Manager Digital Transformation Chiru Botre Process Data Scientist Digital Transformation



## Enhancing Polymer Reactor Productivity Using Seeq Analytics

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Process Data Scientist – Digital Transformation

**Chiru Botre** 

Kaneka Americas Holding Kaneka North America





### Prabhu Ramachandran

Sr. Manager, Digital Transformation



#### **Chiru Botre**

Sr. Process Data Scientist, Digital Transformation

#### Kaneka Manufacturing Analytics:

- Lead business transformation with digitalization efforts at Kaneka North America
- Drives initiatives in process monitoring, anomaly detection, improve reliability & efficiency
- Focuses on boosting efficiency and reducing manual tasks through data
- Collaborates to automate processes and foster continuous improvement

### Introduction : About

## K9U6K9





- We are a Japanese multinational manufacturing company established in 1949 with a global revenues of \$5 billion. We manufacture chemical products including resins, pharmaceutical intermediaries, food supplements, synthetic fibers, fine chemicals, polymers, fermentation, biotechnology and electronics, and other fields.
- Our 8,400 employees are meeting our customer needs on all continents; Our company has operations in Japan, United States, Belgium, Germany, Singapore, Malaysia, Australia, China, Vietnam, India, Taiwan and South Korea.
- We started operations in the United States in 1984, our manufacturing facilities are located Pasadena, Texas; Benicia, California; & Cincinnati, Ohio.

### Digital Transformation Strategy – Vision & Approach





proactive action

### Manufacturing Data Analytics – Scaling with Seeq





#### Carried out Proof of Value (POV)









#### Challenges

- Limited real-time polymer data
- Complex Process (Reactors, Grades, Phases)
- Manual data and Excel analysis

#### Solution

- Seeq + PI/LIMS Integration: real-time data
- Automate cycle/phase time calculations
- Automated reports & notifications

Data Preparation:

- Data Source: Real-time PI System
- Data Structure: Asset Groups (Reactors, Grades - Quality data)
- Automation Enabled: Utilized swap scale addon for automated processes



#### **Seeq Functionality**

**Filtering:** Condition with Properties (Grades/Phases) **SPC:** Seeq SPC Accelerator + Custom Functions **Golden Profiles:** Reference Profile + fine tuned

**Complexity Handling:** Custom Functions (Reactors/Grades/Phases/Individual Limits

### Seeq Solution: Real time Monitoring





Tree Map:- Real-time visualization of Reactor & Grade

Monitor Batch & Phase Times (All Grades)

Alerts for Slow Batches/Phases



Kaneka Make your dreams happen-

Goal: Early detection of slow batches.

Utilizing Golden Batch Profiles for Key Reactor/grade Phase Monitoring & Automated Deviation Alerts



## Seeq Solution: Planning next Campaign



Automated SEEQ Analysis: Reviews (& SPC) past campaign BCT and phase times

Identify Trends for Better Campaign Planning

Enable Process/Recipe Changes to Reduce Cycle Time



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### Seeq Solution: Quality Data Analysis and Reporting





Asset group created for all grades to analyze quality data

Notifications for off spec data

#### **Reporting**:

Automated Weekly Production Summary Reports (PDF) with embedded LIVE Seeq links.

Includes Deviation Tables & Charts for Anomaly Detection.

Highlights Weekly Production Performance and Deviations

### Conclusion



CHALLENGES

- Limited Real-Time Data & Manual Processes.
- Complexities in Tracking Batch, Phase Data Across Multiple Reactors and Grade

- SOLUTION
- Automated monitoring and analysis using golden batch profiles
- Real-time notifications and automated reporting for proactive action

- Improved visualization, auto reports, and eliminated manual work

#### RESULTS

- Expected 10% improved productivity in key sold out grades
  - Ongoing implementation



#### Key Take Aways – Business Transformation



Seeq solution fully supports and equips end user to achieve above

## Key Take Aways–Continuously Improve, Change, Adapt an Sustain



THINK HOW TO CREATE VALUE FOR THE END USER

People are ready to change and adapt when they see VALUE! with Seeq we are creating good value

#### EMPOWER YOUR PEOPLE WITH GOOD SOLUTIONS & TOOLS TO ANALYZE DATA, BE PROACTIVE AND TO MAKE BETTER QUICK INFORMED DECISIONS TO TRANSFORM YOUR BUSINESS



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## Thank you!



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# Connect Thank You