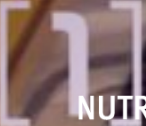


# Advanced Analytics

Supporting Plant Support

 Tom Ploeger  
December 12, Köln

 NUTRITION · HEALTH · SUSTAINABLE LIVING



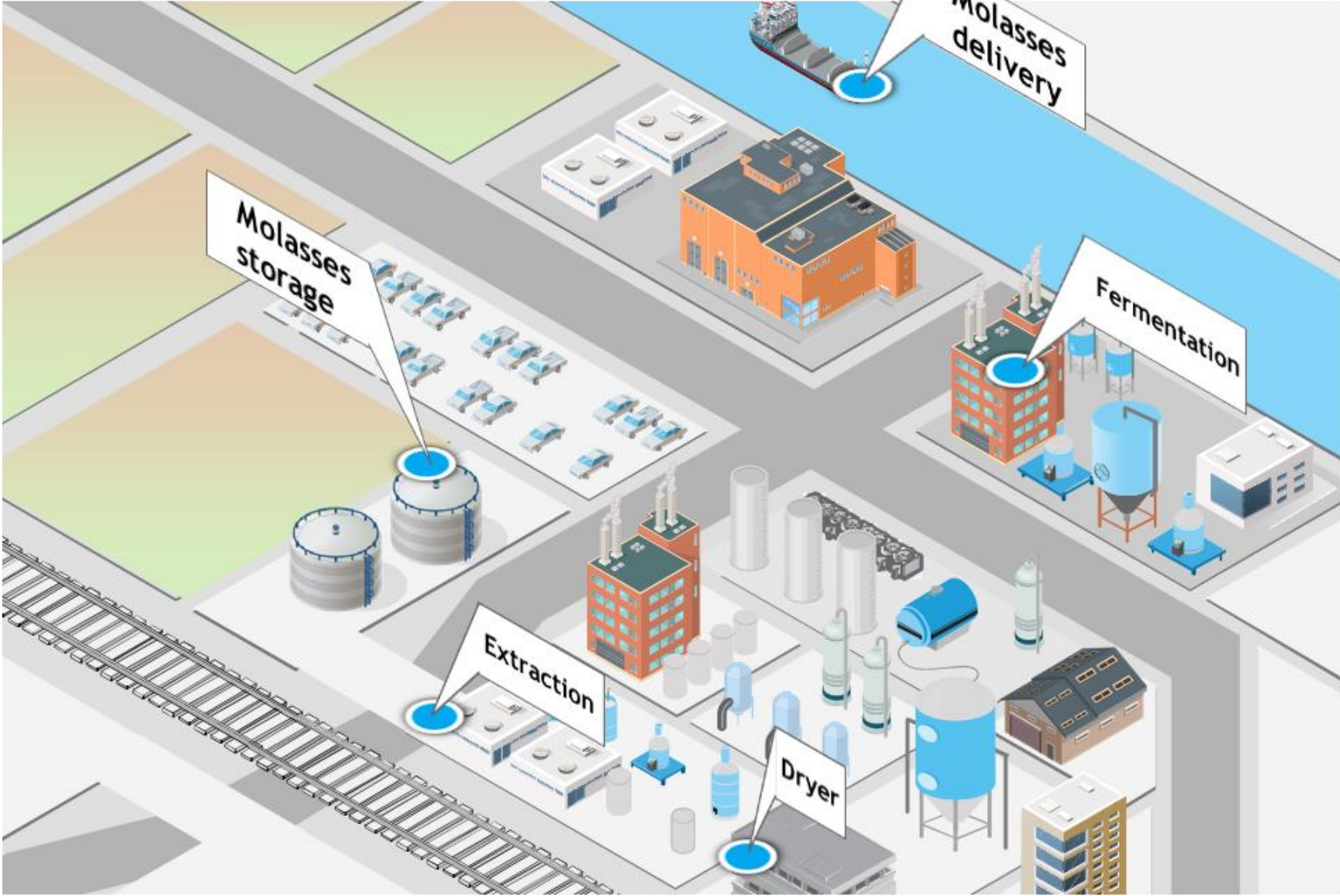
**DSM**

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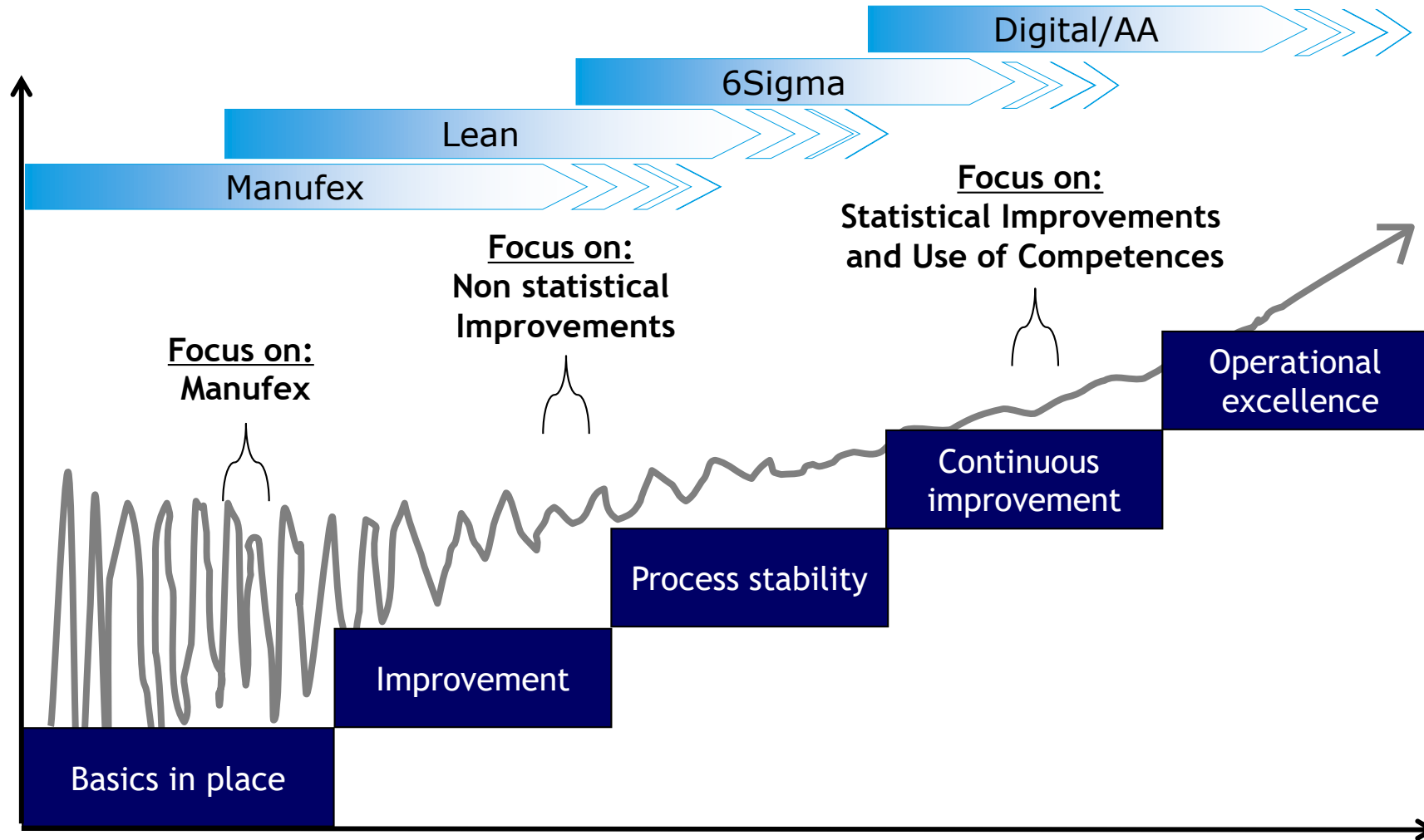


<https://www.analyticsinsight.net/wp-content/uploads/2018/07/Big-Data-in-Automotive-2-1024x555.jpg>

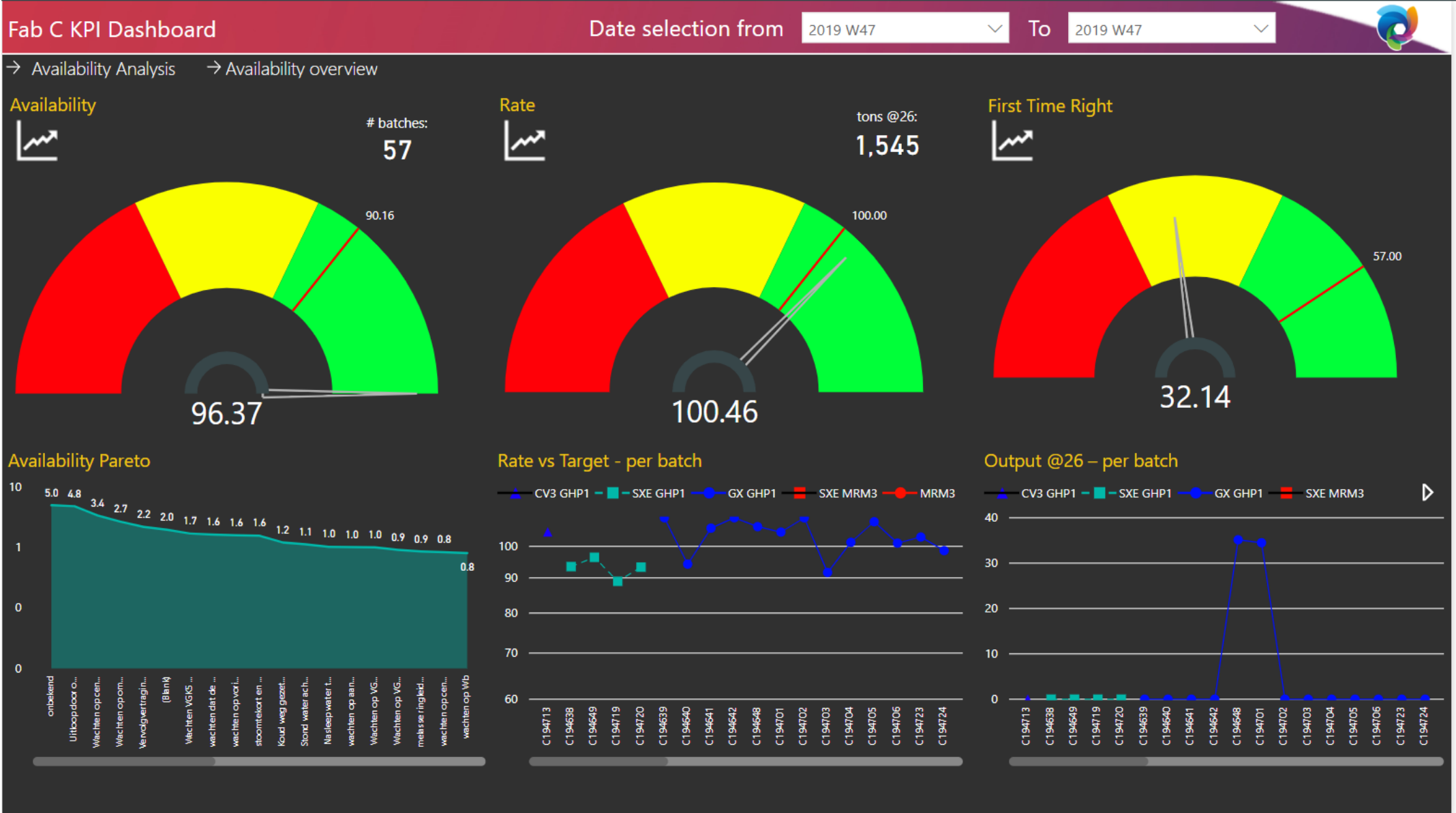
# Yeast Extract Plant, Delft, Netherlands



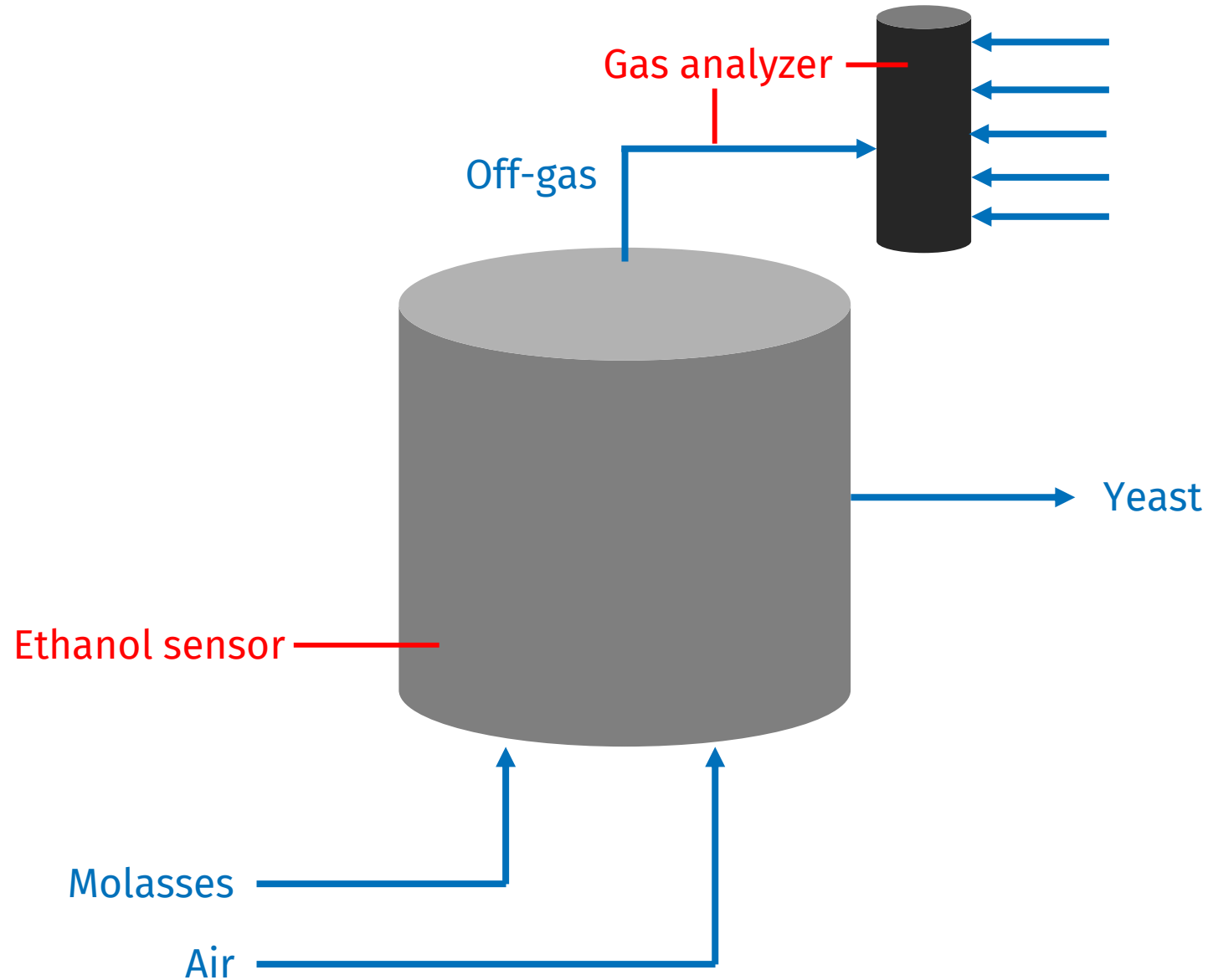
# The road to operational excellence



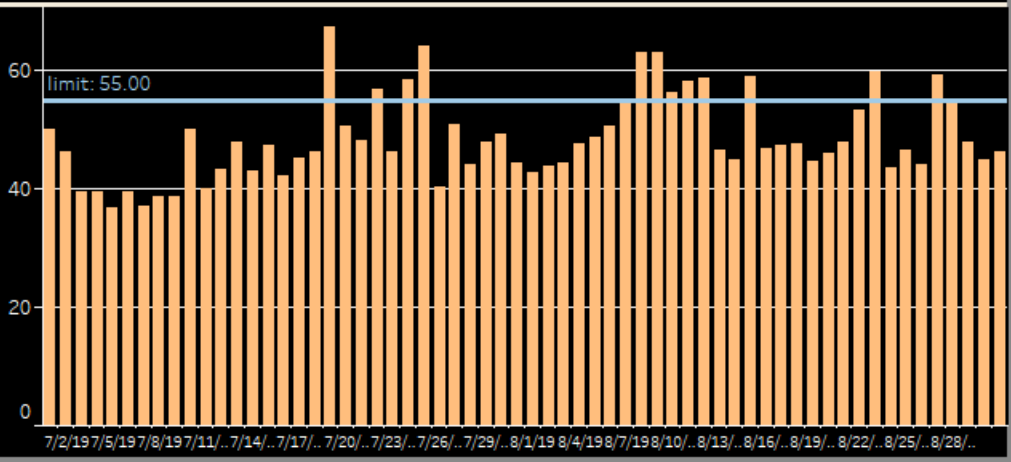
# Fermentation dashboard



# Case 1: emissions



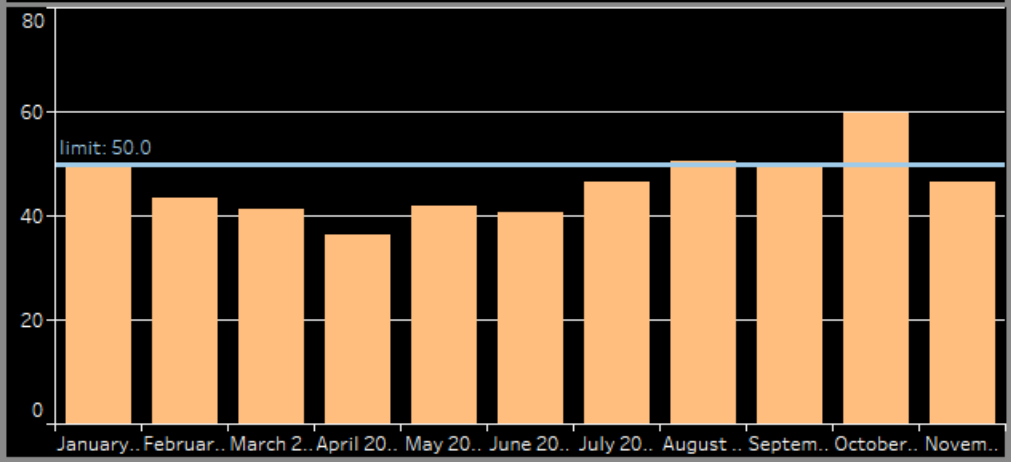
VOC daily average (mg/Nm3)



Daily avg VOC

- January 2019
- February 2019
- March 2019
- April 2019
- May 2019
- June 2019
- July 2019
- August 2019
- September 2019
- October 2019
- November 2019

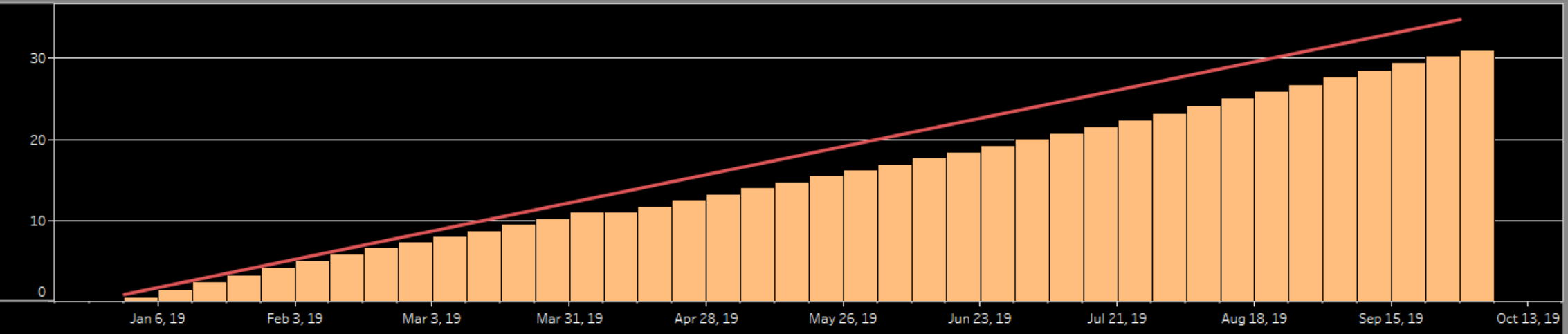
VOC monthly average (mg/Nm3)



monthly avg VOC

- January 2019
- February 2019
- March 2019
- April 2019
- May 2019
- June 2019
- July 2019
- August 2019
- September 2019
- October 2019
- November 2019

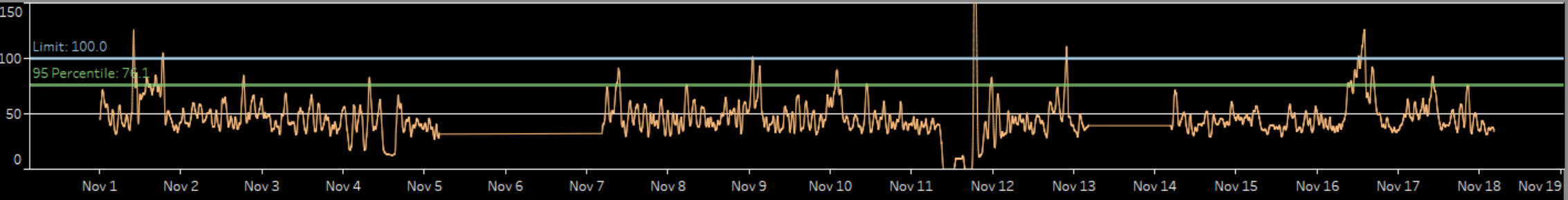
VOC load cumulative (ton)



Cum VOC load

1/1/2019 to 10/4/2019

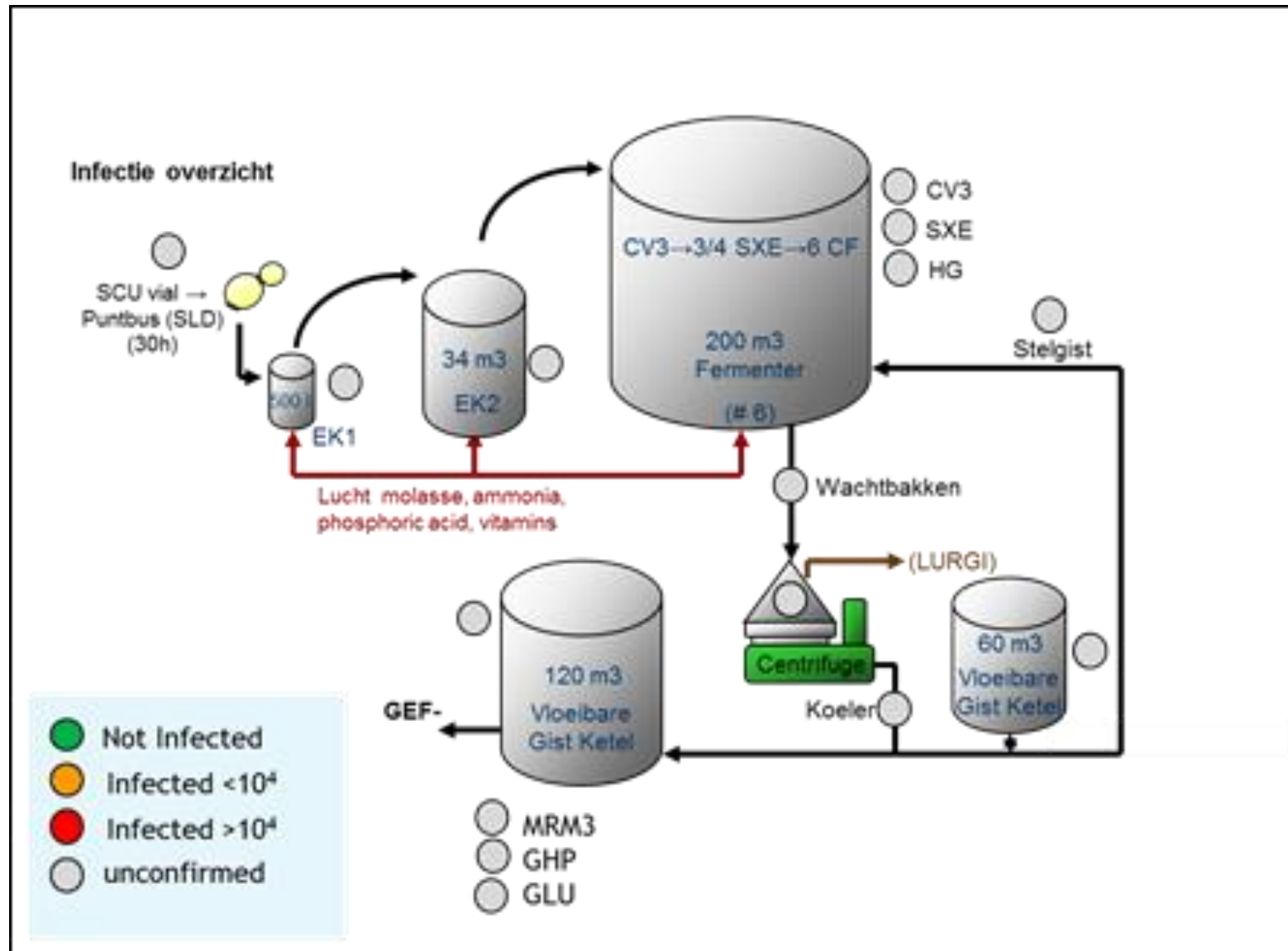
running 30-minute average VOC concentration chimney (mg/Nm3)



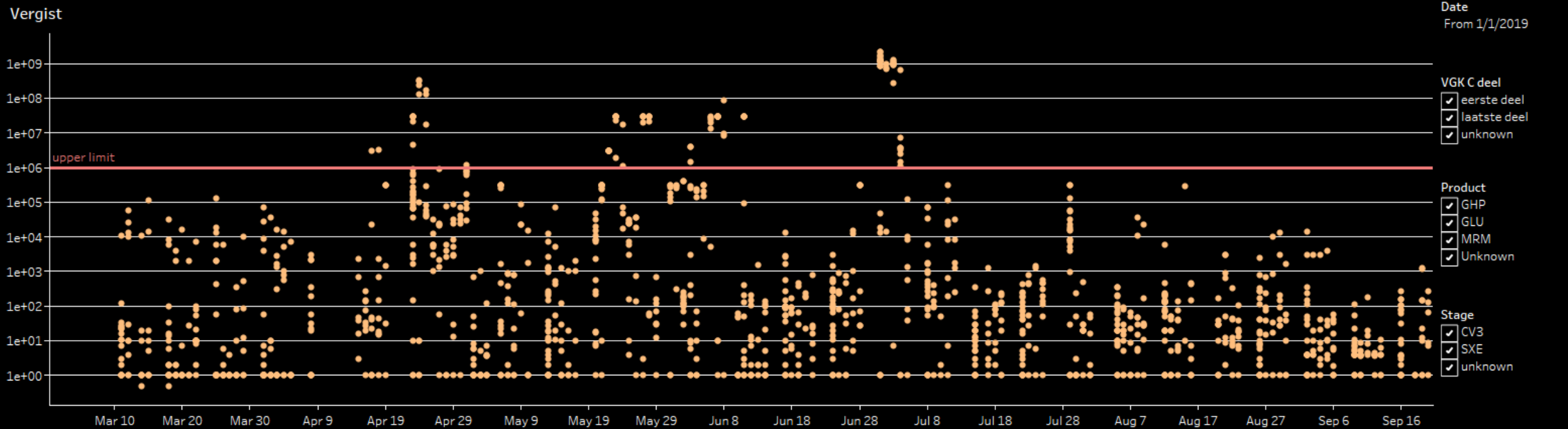
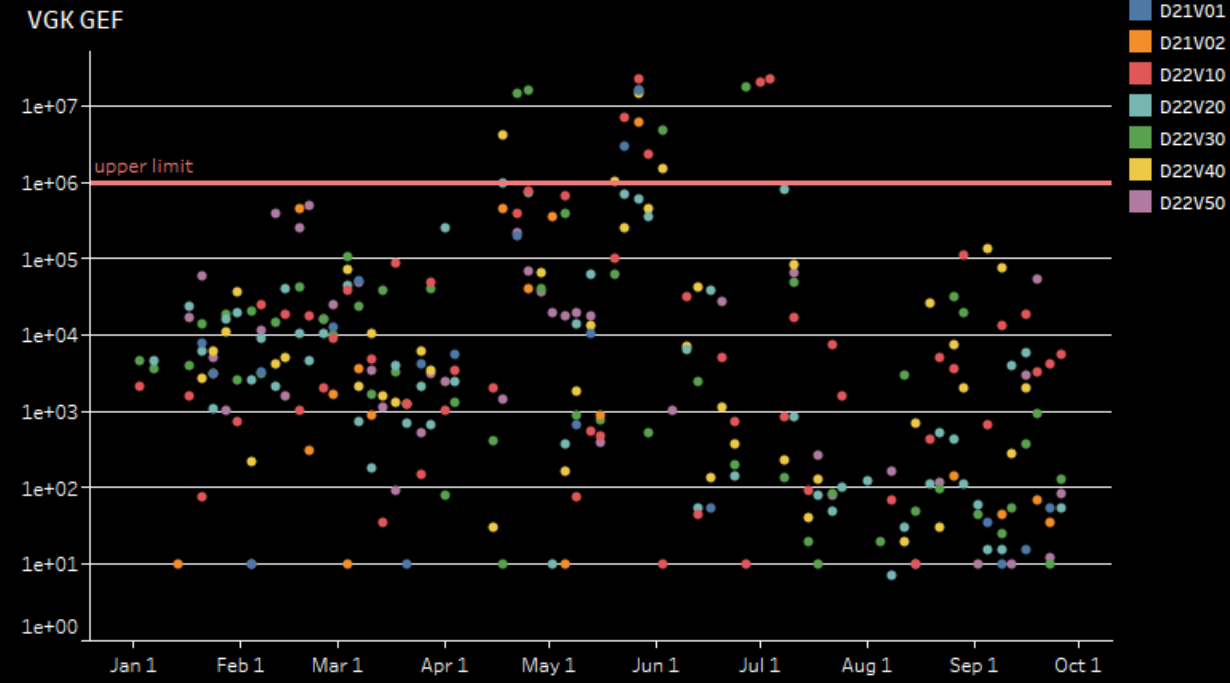
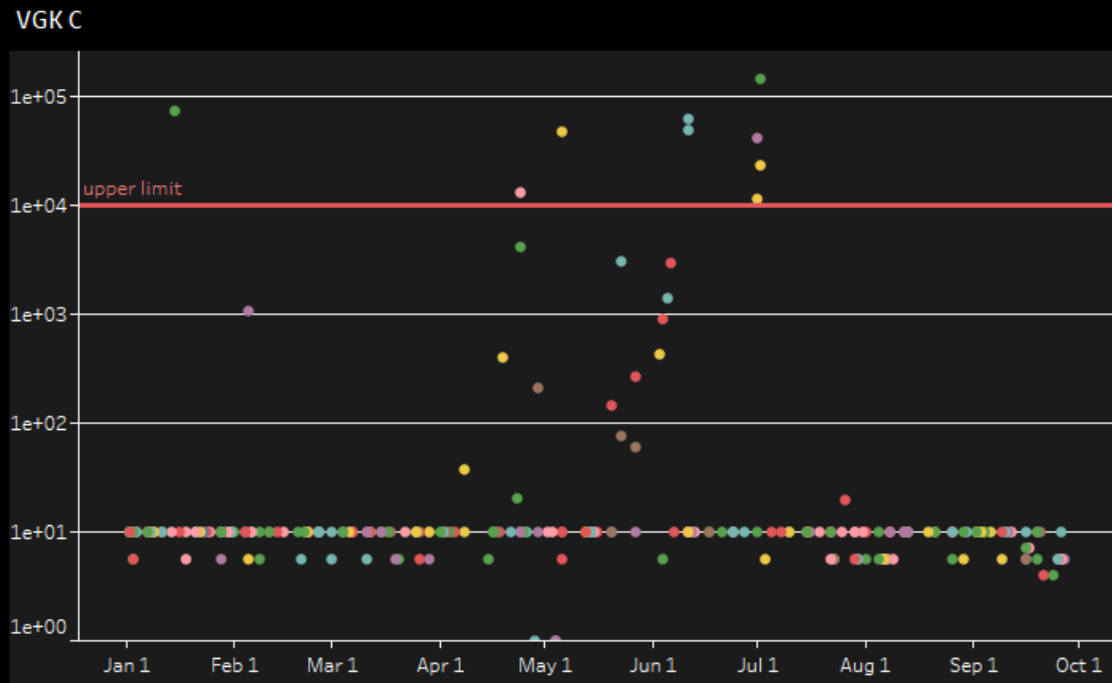
running 30min

11/1/2019 to 11/18/2019

# Case 2: contamination







# Case 3: utilities

Dashboard
Layout ⌵

Device Preview

**Size**

Custom size (1400 x 900) ⌵

**Sheets**

- W. Gas Consumption
- W. Steam Production
- W. Steam Production vs Consumption
- W. Plant Steam Consumption
- W. Plant Fab C
- W. Plant GEF
- W. Plant Fab D
- W. Steam Gap %
- W. Fab C - ABS- 16b
- W. Fab C - ABS- 4b
- W. Fab C - ABS- 0.5b
- W. GEF - ABS- 16b
- W. GEF - ABS- 4b
- W.Fab D - REL - Steam
- W. Fab D - REL - Water
- W. Fab D - ABS- 16b
- W. Fab D - ABS- 4b
- W. Lurgi - ABS- 0.5b Steam consump...
- F. CO2 & Gas Emissions
- F. GPB Steam
- M. GEF drinkwater
- M. Fab C Drinkwater
- M. Koeltoren drinkwater
- M. Demiwater

**Objects**

- Horizontal
- Vertical
- Text
- Image

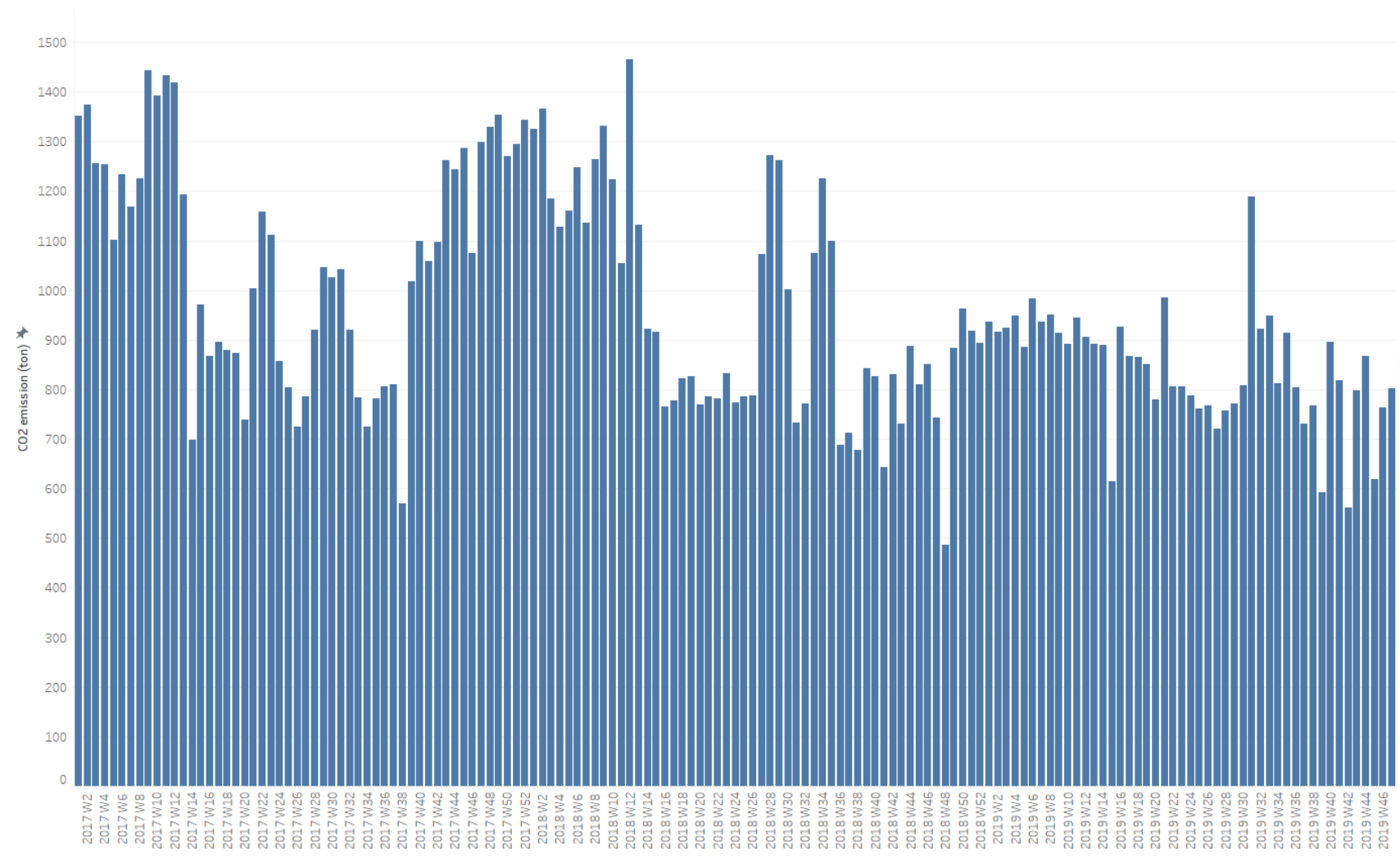
- Web Page
- Blank
- Button
- Extension

Tiled

Floating

Show dashboard title

F. CO2 & Gas Emissions



# Take-home message

- Don't underestimate the effect of the 'straightforward' stuff
- 'Advanced Analytics' can start simple:
  - Automate regular reporting
  - Automate manual quality checks
  - Capture the learnings throughout the plant
- As you get experience, move to more complex objectives
  - Various data sources
  - Batch tracing

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