



Johnson Matthey
Inspiring science, enhancing life

Moving from the laboratory to the production plant

Ian Ball

February 2024

Contents

- Introduction to Johnson Matthey
- About Me
- Laboratory and the Plant
- Summary

Over 200 years of solving the world's biggest challenges

1817
Precious metal assayer



1918
Powell-Deering method



1974
The world's first emissions control autocatalyst



2002
Hydrogen fuel cell components



2020
Hydrogen electrolyser components



Catalysis

Metals chemistry

1874
Standard kilogramme weight



1960
Electrocatalysts for NASA's fuel cells



1983
Platinum group metal circular economy



2002
Syngas and chemicals process design and licensing

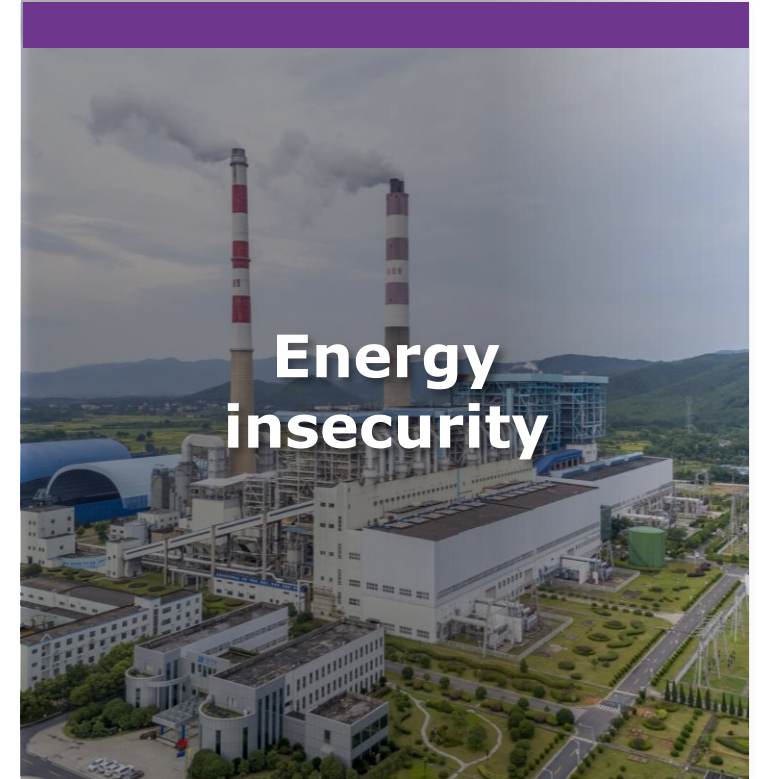
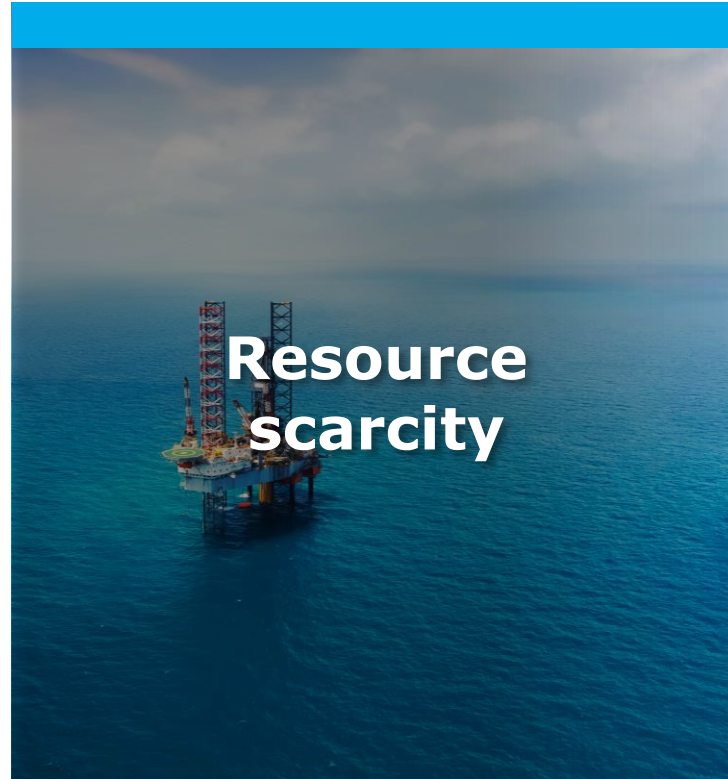
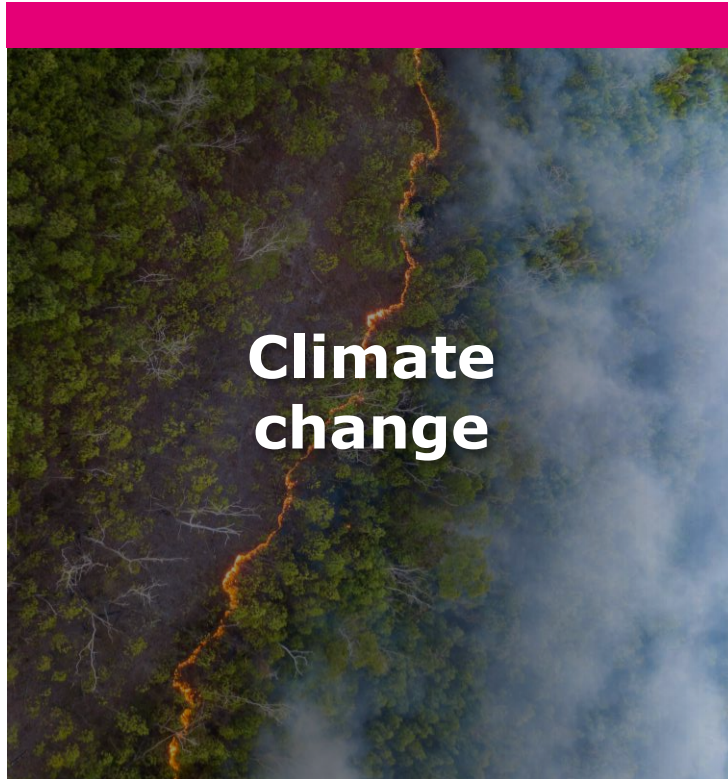


2018
Our first commercial sustainable fuels plant license



Process engineering

The world is facing some of its biggest challenges yet



We need to transition to net zero.



Catalysing the net zero transition for our customers, and for society

A global leader in sustainable technologies.

The world's leading **energy**, **chemicals** and **automotive** companies depend on us, to help them:

- Decarbonise
- Reduce harmful emissions
- Achieve their sustainability goals

About Me

Chemistry Degree. Catalysis PhD

(1994-2000)
Chemistry Department
University of Nottingham

1

Analytical Services Manager

(2009-2014)
Clitheroe – Manufacturing
Catalyst Technologies

3

2

Chemist

(2000-2009)
Characterisation
Royston – R&D
Emission Control Catalyst Development

Product Technical Manager

(2014-2016)
Clitheroe – Manufacturing
Catalyst Technologies

4

Plant Technical Chemist

(2016 – now)
Clitheroe – Manufacturing
Catalyst Technologies

5

Driving down automotive emissions

Global leader in autocatalysts for diesel and gasoline vehicles

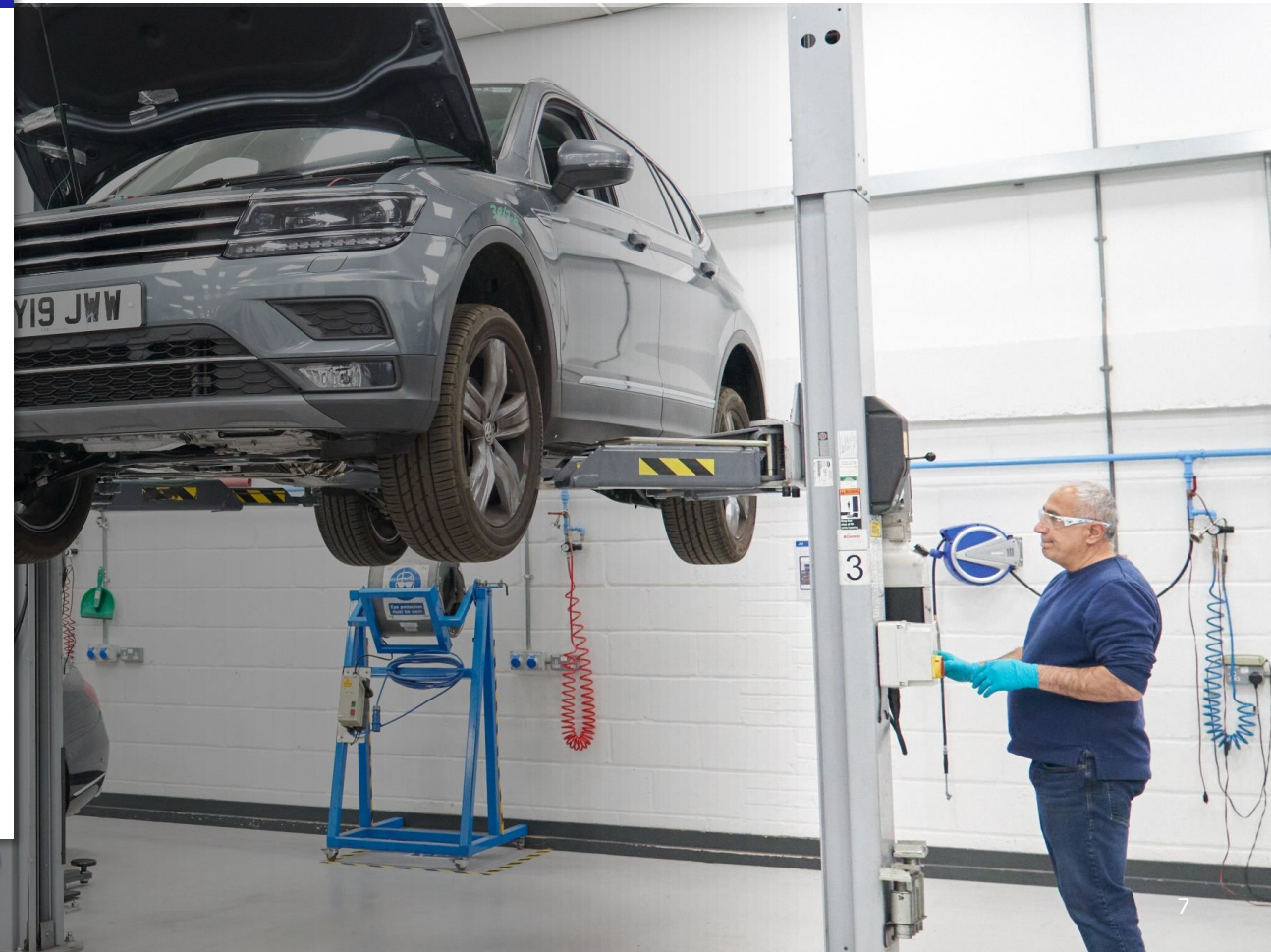


Helping deliver cleaner air across the globe for **50 years**

- **20 million tonnes of pollutants** stopped by our catalysts each year
- **1 in 3 new cars** on the road use a Johnson Matthey catalyst



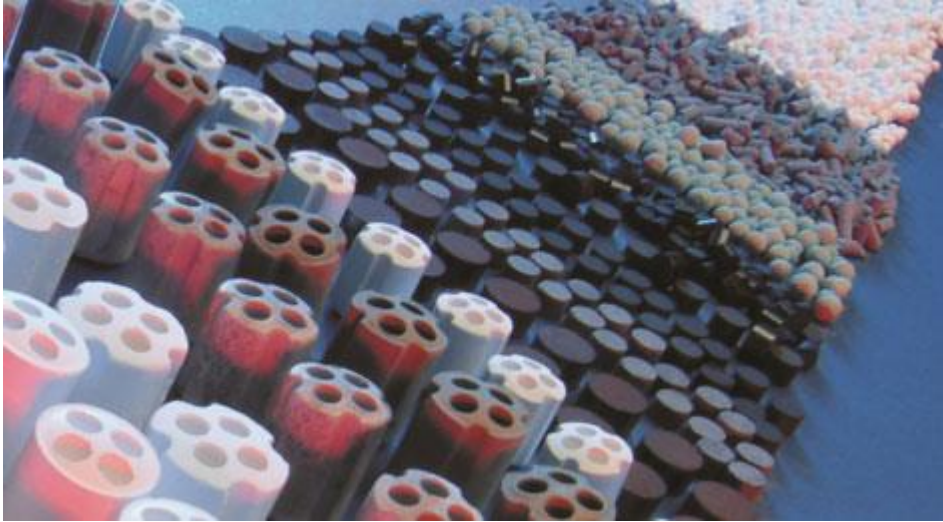
Working with our customers to meet **tightening air quality legislation**



Different Scale



Clitheroe Works



Transforming global energy systems



Pioneer in catalyst and process technology for sustainable fuels



Enabling **sustainable fuels** production from a range of sustainable feedstocks:

- Waste
- Biomass
- Captured carbon dioxide
- Renewable hydrogen



Working with our customers and partners on **pioneering global projects**

Materials



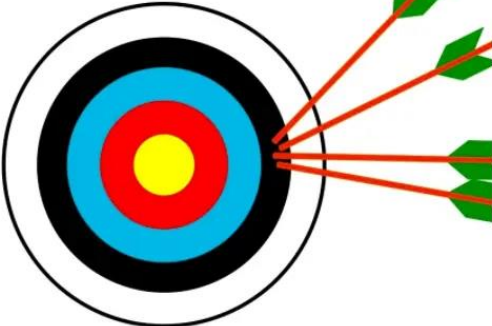
2 tonnes

Measurement

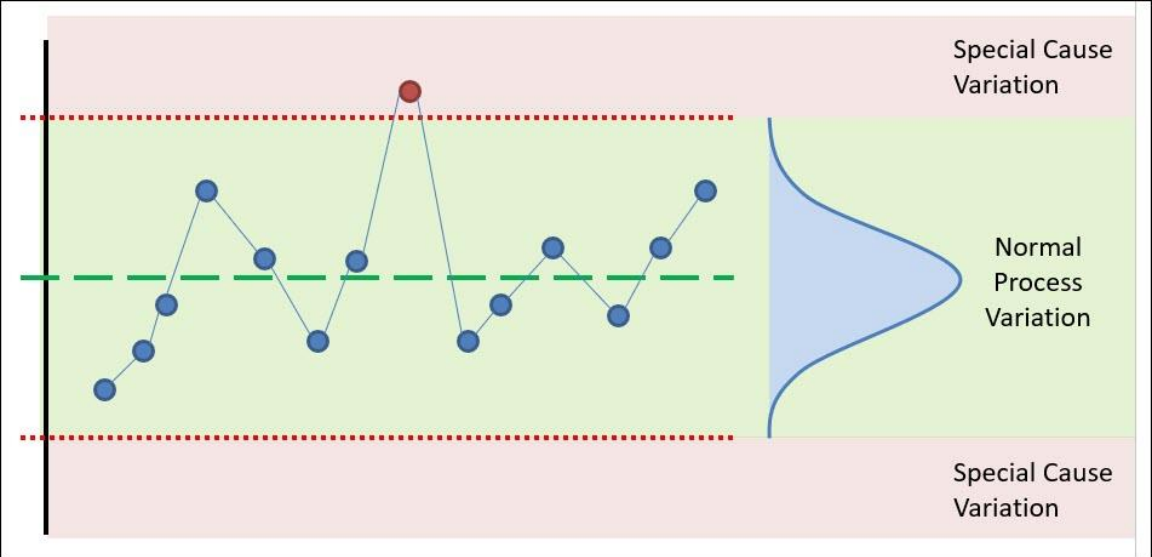
Precision VS Accuracy



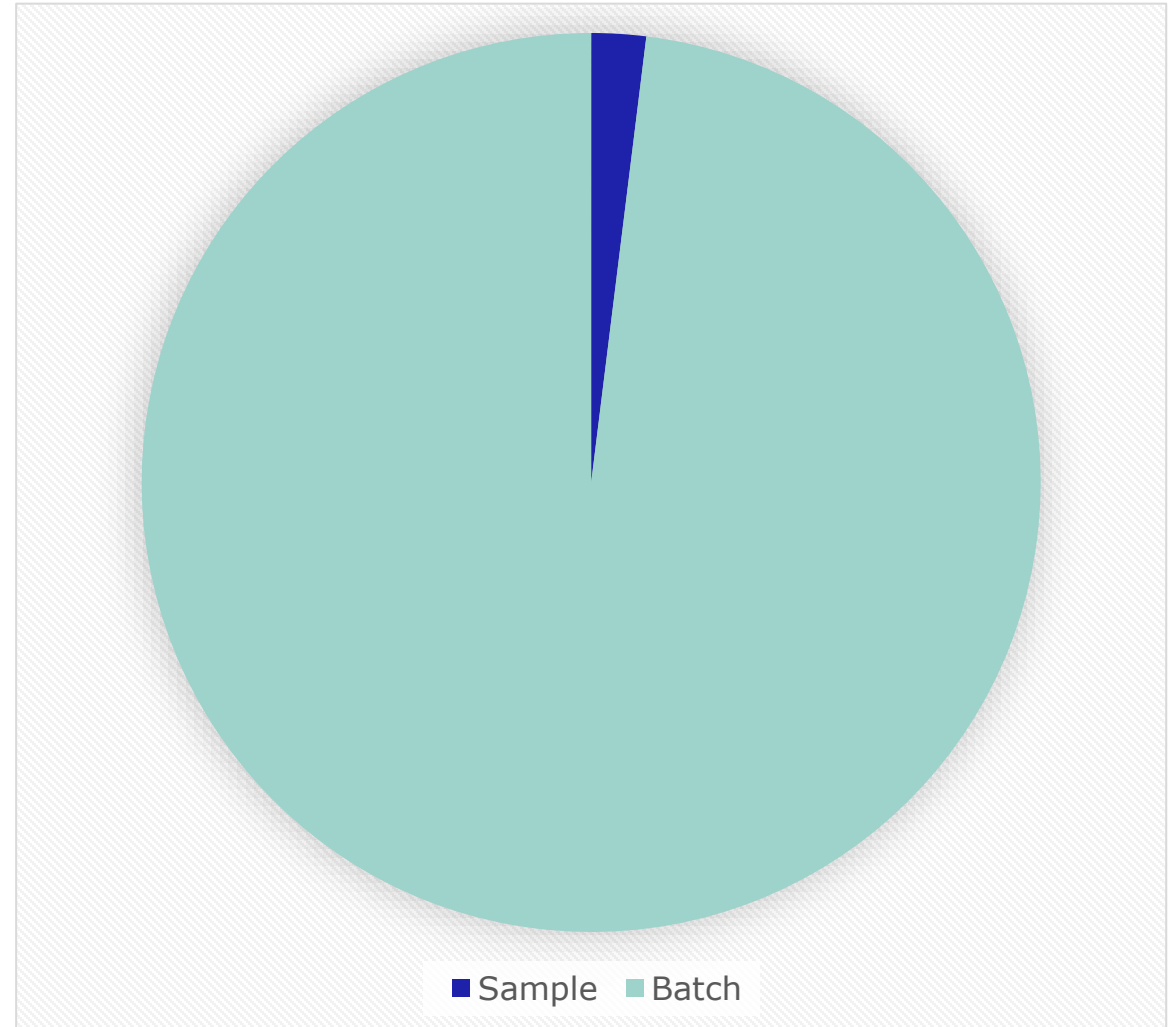
High Accuracy



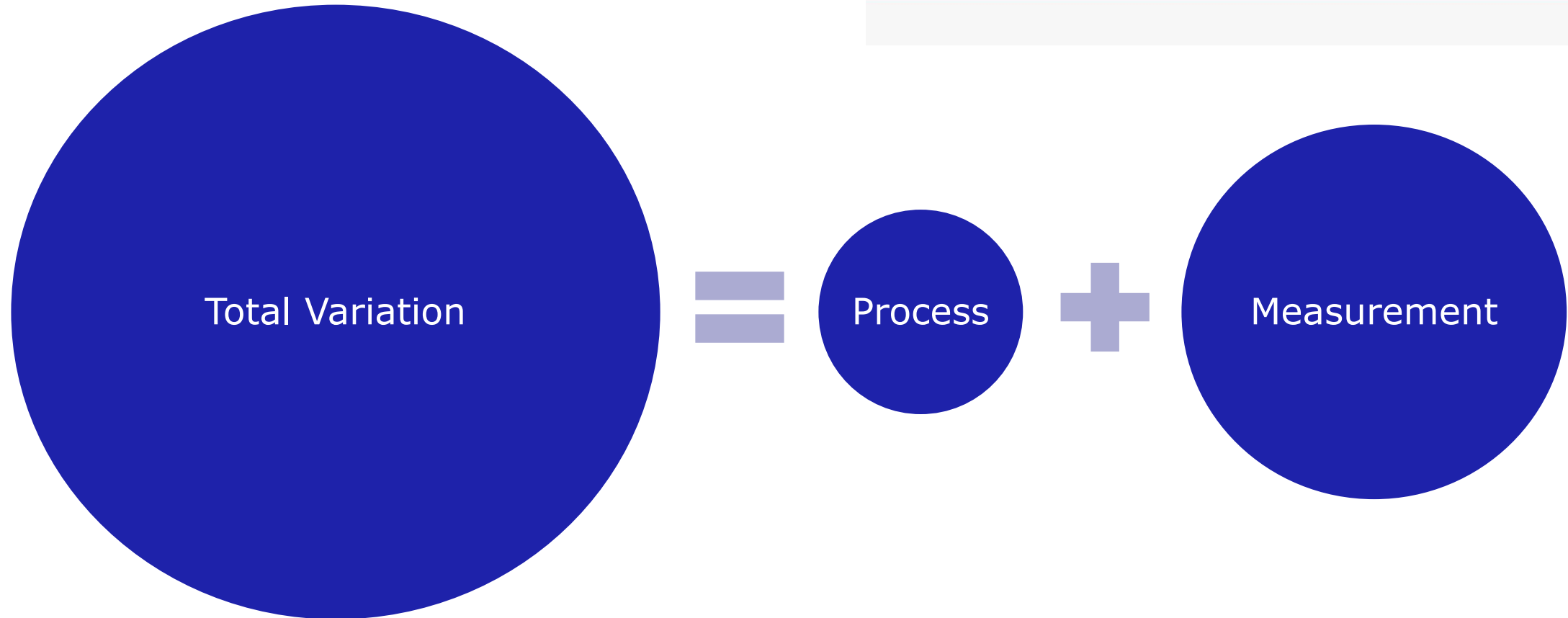
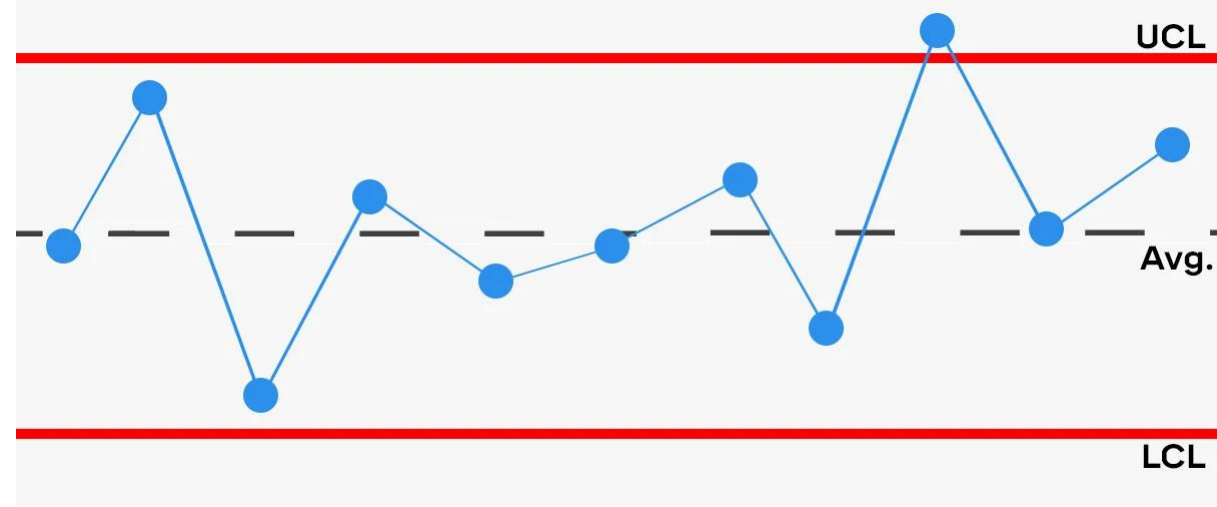
High Precision



Sampling



Variation



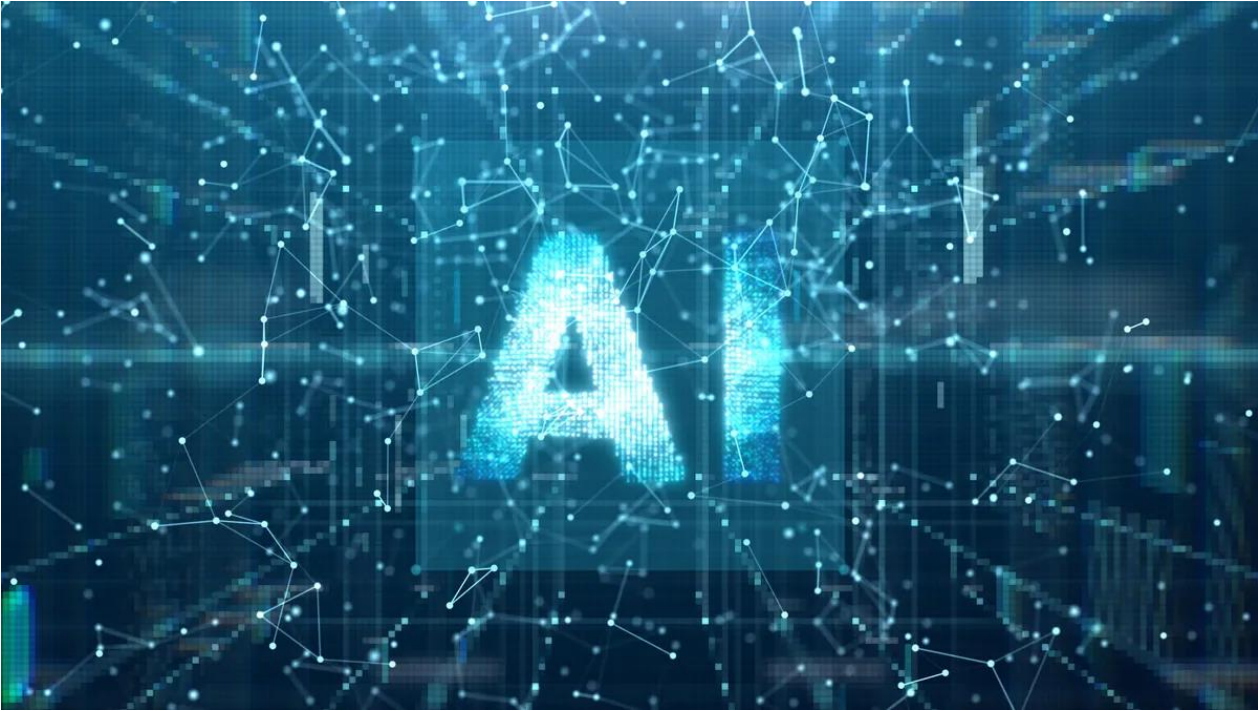
Equipment



Experiments



Data



Moving from the laboratory to the plant

Laboratory & Process Chemist

- Technical knowledge
- Working with materials
- Understanding of measurement
- Use to advanced equipment
- Experimental skills

When moving to the plant, consider:

- Environment
- Scale
- Impact
- Sampling
- Data

JM

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