JMP in Manufacturing at Dow: Challenges and Examples

JMP Benelux Users Group

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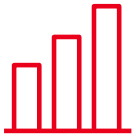
This Is Dow

Every answer starts with asking the right question.

At Dow, these questions and the pursuit of solutions for the world's toughest challenges inspire us to collaborate and use our materials science expertise to create **innovative solutions** that transform our world and deliver a sustainable future.

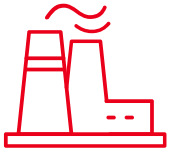


2022 NET SALES

$57B

EMPLOYEES

~37,800



MANUFACTURING SITES

104

GLOBAL REACH

31 countries

in which Dow manufactures products

Chemometrics, AI and Statistics: Help Dow Make Data-Driven Decisions

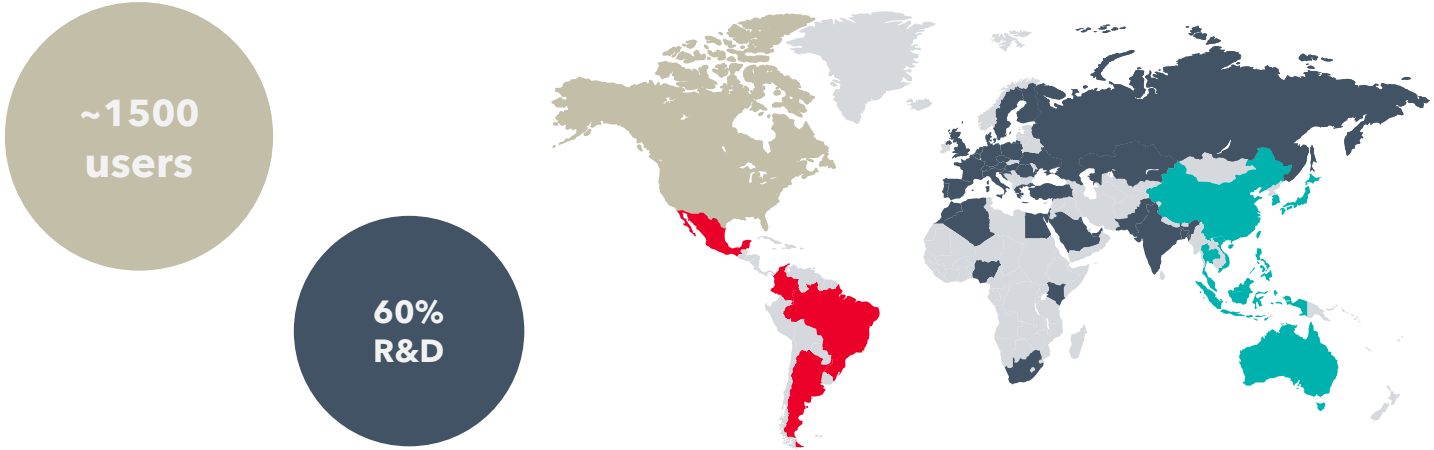
Chemometrics
Application of multivariate statistics to process data, partnered with process experts to troubleshoot plant operations.

Artificial Intelligence (AI)
Application of advanced machine learning techniques on alternative data sources to improve operations.

Statistics
Application of concepts such as Design of Experiments and Measurement System Analysis etc. as well as statistical training and JMP consultation.

JMP Reach at Dow

- Big focus on digitalization and better use of data in Manufacturing
  - JMP usage in manufacturing: broad population with basic knowledge and few advanced experts
- The future of JMP at Dow lies within Operations/Manufacturing



JMP usage in Manufacturing: Challenges

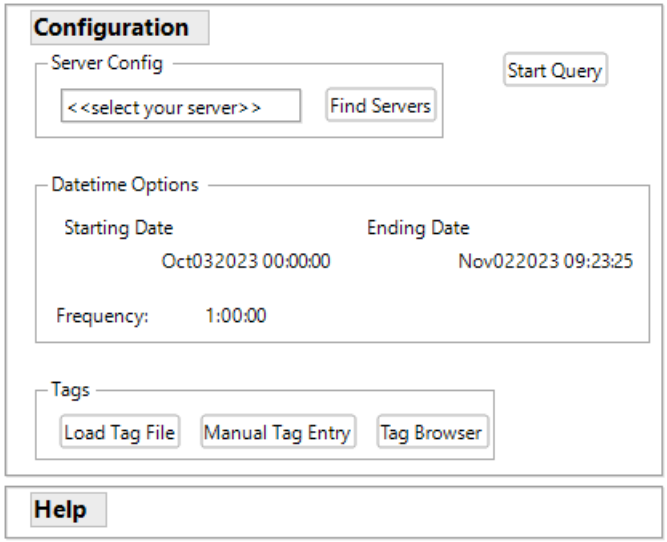
- While JMP has been in the Dow computing environment for two decades, enforcing it in the manufacturing environment can still face several challenges
  - Resistance to change
  - Integration challenges
  - Scalability
  - Lack of training/time

Resistance to change

- "Excel is not perfect, but it is ***good enough***."
  - Where is the value? JMP UI is not that different from Excel, but JMP functionalities are menu-accessible and far superior
- "JMP is only for advanced users"
  - The value of JMP for the broader manufacturing audience is data cleaning and visualization
- A JMP Champion within each organization is key to break some of these barriers
  - Focus on those who see analytics as a career opportunity

Integration and Automation

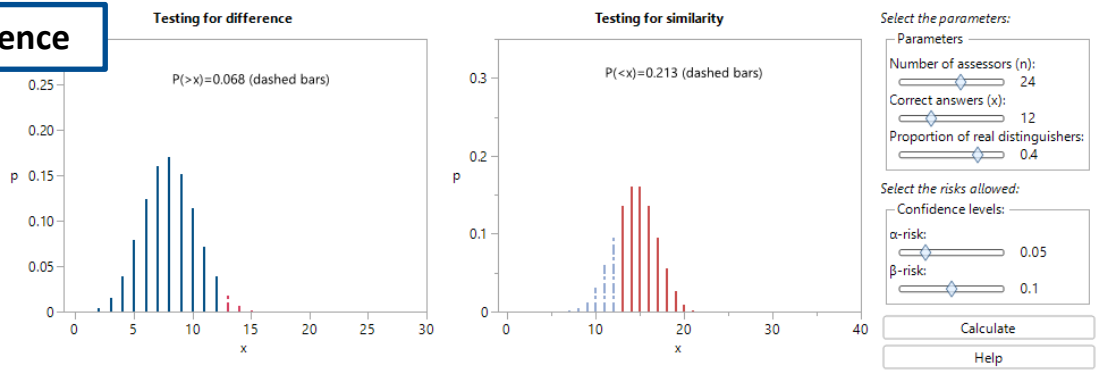
- Plethora of specialized tools: why switching to JMP?
  - ‘One platform for all’
- Data connection: “helper scripts” have been developed and deployed as JMP add-in for different data sources



Scaling up, training and supporting plan

- Internal and External Communities of Practice
  - Depot for Dow-built JMP add-in
  - Seminar, training resources, questions, etc.
- Leverage JMP Learning Resources / JMP Inspire Events
  - Regional sessions in the local language
  - Opportunity to get credit within the corporate training platform for STIPS
- Educational/interactive Tools

Triangle Test for Sensory Science

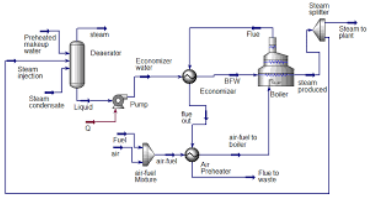


JMP in Manufacturing at Dow: Success Stories

- Surrogate models for mass and energy balances
- Process screening for sample plan optimization

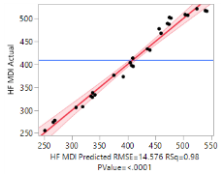
JMP in Manufacturing at Dow: Success Stories

- Surrogate models for mass and energy balances



Process Simulation Software

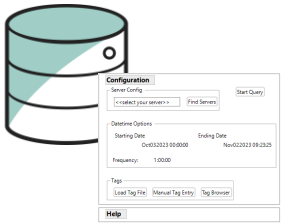
DoE
Linear Models
Nonlinear Models



Formula Depot

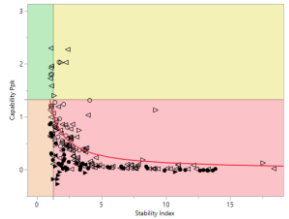
Real-time Optimization

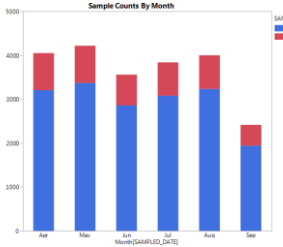
- Process screening for sample plan optimization

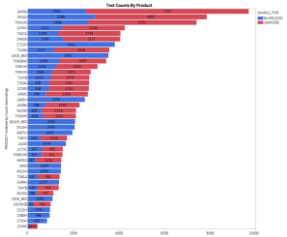


Data import helper scripts

Process Screening







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