Feasibility and Process Design

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Feasibility

- **Design - "Can you…"**
- **You – after a quick glance, "sure"**

Agenda

- Requirements Aspects
- Process Considerations
- Process Design

Requirements Aspects

- Base material
- Processing expectations
- Colors or finishes
- Marking or printing
- Environment
- Others from group?

Expectations

Process Considerations

- Surface finish of base material
  - Mold, machine, porous
- Treatment options
- Pretreatment
- Other items from group?

Process Design

- Time
- Temperature
- Pressure
- Many others
- Fixtures
- Supply chain

Typical Testing

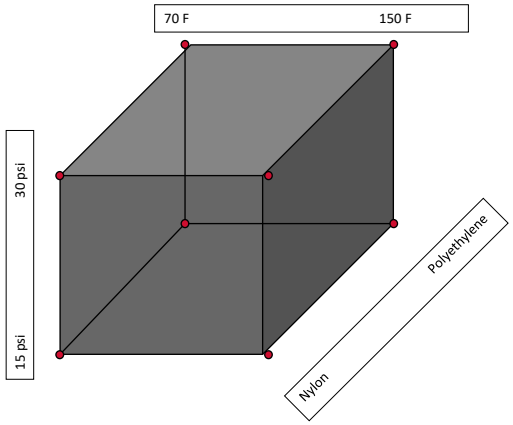
- **Repeated tests at variable steps**
  - **10, 15, 20, 25, 30, 35, 40, 45 and 50 psi**
  - **70, 90, 110, 130, 150, 170 and 190 F**
    - **At "best" pressure**
  - **Lots of combinations**
  - **Not sure about interactions between pressure and temperature**

Design of Experiments (DOE)

- **How do we find an ideal sweet spot?**
- **Simultaneous, strategic changing of variable settings and multiple output measurements**
- **Confident prediction to speed decision making**

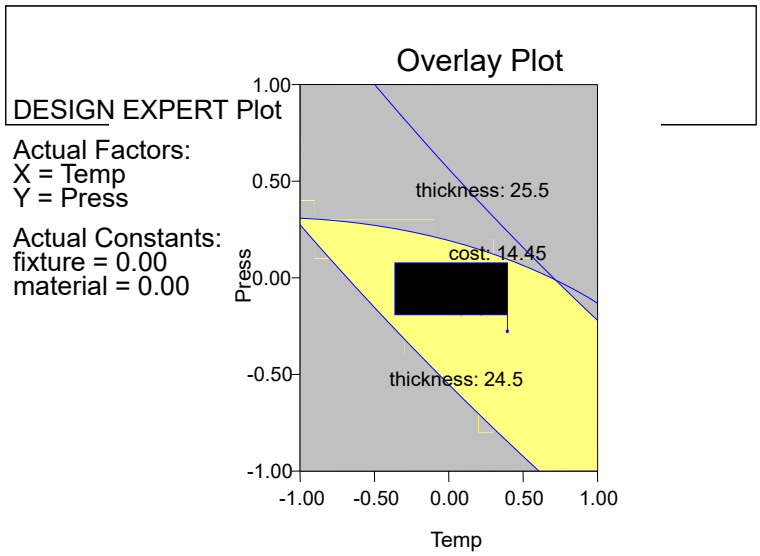
May be useful for feasibility but certainly an advantage for development

Design of Experiments



DOE Testing

- **DOE can explore extremes and avoid all of the middle values**
  - **Interpolation often matches quite well**



Conclusion

- **Feasibility creates expectations. Be careful.**
- **Design needs to be confident and fast**
- **Design of Experiments (DOE) accelerates empirical understanding of inputs and outputs. Leads to better decisions.**
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