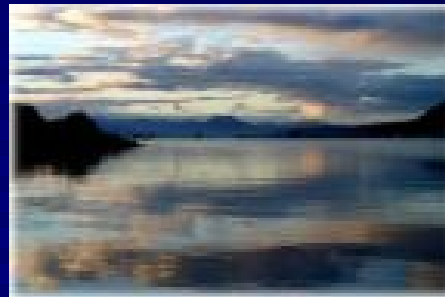


# Motor Cooling DOE Case Study

- This company approached us because they recognized the need for Design of Experiments (DOE) – but never had success before. Word of mouth led the organization to call us and give us a try.
- The product is a large and complicated device.
- Prior experience always required them to spend an extra 6 to 9 months to complete the design after the originally planned launch date.

# Motor Cooling – Situation

- **Goal: Quietly fan cool the motor on a device**
- **Response/ measurement: Air speed (m/s) and noise (db)**
  - **A basic requirements conflict. To better cool the motor, turn the fan on high. To make the fan quieter, turn the fan off. So how do we meet these competing needs?**



# Motor Cooling – Solution

- **Approach: Explore different fan designs and parameters using DOE. Determine if a window exists for optimization.**
  - Alternatives were considered together to meet the project needs
  - Involving the person conducting the test avoided logistical constraints unknown by the rest of the team



# Motor Cooling – Immediate Results

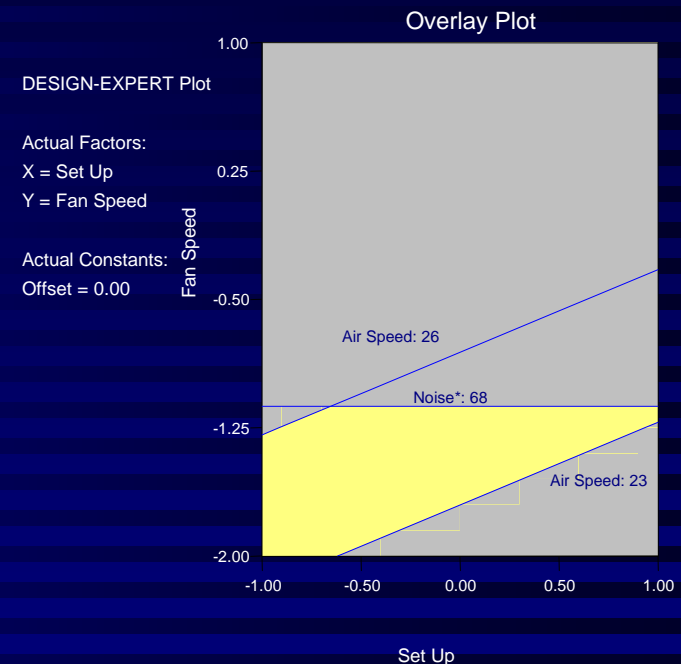
- Found the window of operation prior to building the first “production” part.
  - Avoided the typical launch delay
    - Eliminated need for custom noise reduction components
  - Provided the answer with reduced development schedule and cost
  - Made decision to select the appropriate vendor

"We had ambitious expectations and needed a DOE win. You were able to address our technical challenge and show scaling options for other designs."

- Project Manager

# Motor Cooling – Long Term Results

- Predictable end of projects with consistently improved time to market
- Scalable and usable for other systems
- Set the company standard for design of this product – at least another 6 major new products were brought to market with the first design attempt.



# Perry's Solutions, LLC

- Consulting and Training services from DOE and SPC to project planning and management
  - Solving NPD design, execution and re-plan situations
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