

# Engineering Design in Practice

**MacDon**<sup>®</sup>

*The harvesting specialists worldwide.*

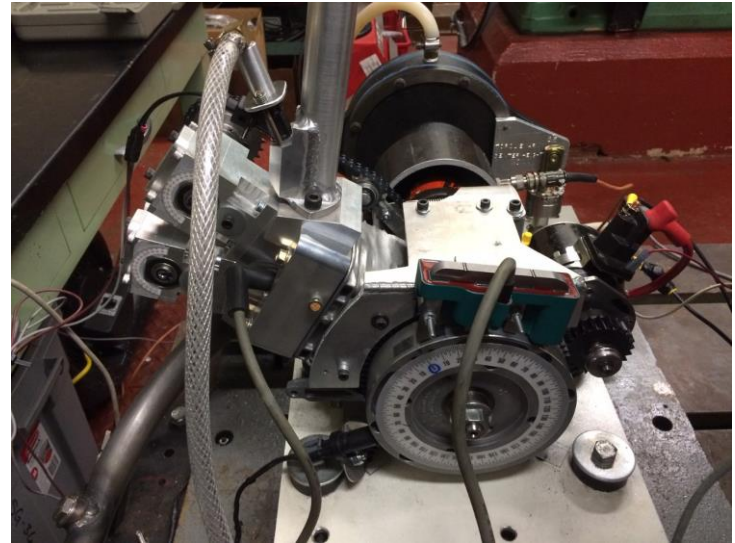
# Outline

- About Me
- About MacDon Industries
- What I do
- College takeaways
- My advice



# About Me

- Attended MSOE 2012-2016
- Graduated with BSME degree
- Active in MSOE SAE chapter
- Member of SuperMileage Vehicle team
- Senior Design project was SMV engine
- Passion for agriculture



# About MacDon Industries

- Canadian-based agricultural equipment manufacturer
- Market leader in harvesting technology
- Philosophy that product needs to be significantly better than OEM
- Linamar-driven goal of 3X growth by 2030
- Expansion into Wisconsin
  - Hiring the customer



# Sun Prairie R&D Facility

- 15,000sq.ft.
- 7500 shop
- 7500 office
- 20 engineers



# What is a Draper Header?

- Harvests all major crops but corn
- Mounts on an OEM combine
  - Or a MacDon tractor
- Promotes ideal crop flow
- Increases combine efficiency
- MacDon is market leader



# What I do

- Member of Draper Header design team
  - Mechanical design
  - Work remotely
- Travel to Canada
- Project manager – NPD projects
- Field test planning and visits

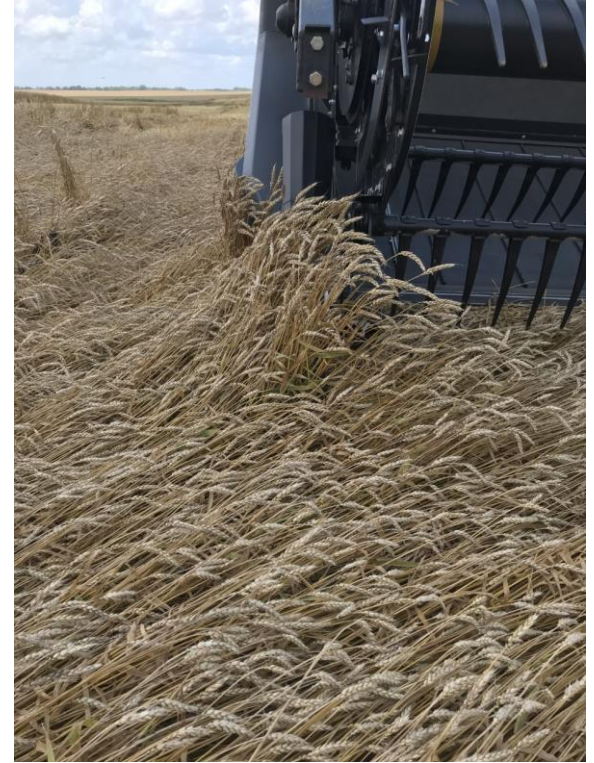






# Do What it Takes to Learn

- Test “Mules”
- Adjustability
- Expect Failures



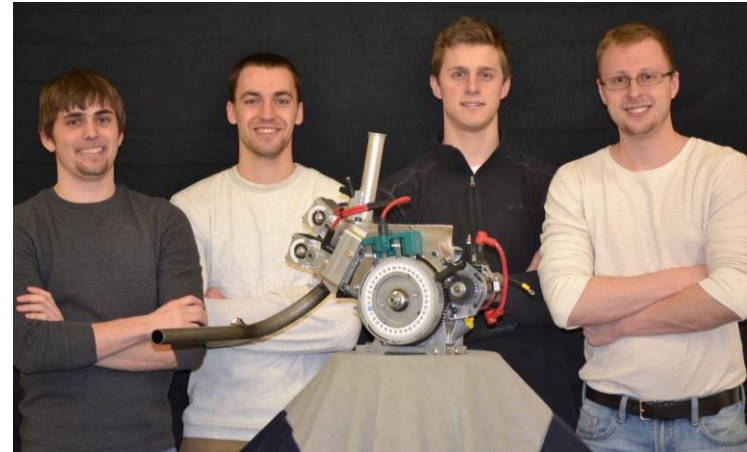
# Supplier Interaction

- Design of purchased components
  - Work with the engineer
- Understand the application
  - Supplier point of view
- Reel paddle vs. whisker project
  - Demand perfection



# What I Learned in College

- MSOE was a good education
- You know how to do the math – now apply it!
- How to learn (don't lose sight of this)
- Surround yourself with good people



# What I Wish I Learned in College

- Simulation cannot capture all real-world scenarios
  - Experimental data
- Weld design and common failure modes
- More electrical knowledge
  - Sensors
  - CAN BUS



# My Advice

- Use hand sketches to solve problems
- Communication is key
  - Try to be the informant, not the informed
- Find a method of organization that works and stick with it
- Don't be afraid to say no (be smart about it)
- Set realistic deadlines
- Always perform a quick sanity check

**Questions?**

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**Thank You**

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