

Matthew Warstler (ASM), Cale Huston (ASM)

## Combine Separator Demonstrator

### Objective:

Purdue ABE has received a combine separator unit that has the potential to be converted into an open section, live action demonstration unit. The separator is currently sitting on a wagon running gear. The overall demonstration unit design will include permanently mounting the separator section to the running gear, powering the separator to operate an appropriate slow speed with an electric motor, planning the disassembly and machine work necessary to create the display, and supervising the modifications and re-assembly of the unit. The final solution will also have Plexiglas shields around for safety purposes and additional lighting to aid in the instructional use of the demonstrator.

**Alternative Solutions:** John Deere has a separator demonstrator on the floor of the Harvester Works plant in Moline, IL ran solely by one electric motor, the team's solution is to divide the unit into three processes and power each with their own individual power supply. The main components that the team intends to display are intake/feeding, threshing/separating, and cleaning. The team has also elected to add a safety shield and supplemental lighting.

**Societal Impact:** Upon completion of this particular project, this demonstration unit will serve as a useful learning tool and provide knowledge about the inner components of today's combine.

Pre-Modification



Post-Modification



**Background:** To gain design insight John Deere shared images of the demonstration unit on the Harvest works floor. This unit is available for the public to view for knowledge on the operations of a modern combine.



**Sustainability:** This demonstrator is durable and mobile which will provide knowledge and education to ASM/ABE students for years to come.

### Budget:

|                        |           |         |
|------------------------|-----------|---------|
| John Deere Spray Paint | \$4.09 x6 | \$24.54 |
| Spray Can Handle       | \$2.50 x1 | \$02.50 |
| Total                  |           | \$27.04 |

**Tool Utilization:** In the component removal of the separator the team used many industrial tools. Air impacts were used to remove many of the bolts, shields and pulleys. A plasma cutter was used in the majority of the side paneling. To clean and smooth out the cuts electric grinders with buffing wheels were implemented.

**Applying Principles:** To guarantee that the team's final solution was adequate for the desired needs, an implementation of engineering, management, and safety principles were used. The team utilized principles and standards learned in the ASM program to efficiently modify the unit for educational purposes.

**Sponsor:**  
Dennis Silver  
Front End Equipment Configuration Lead  
John Deere

**Technical Advisor:**  
Dr. Robert Stwalley

**Instructors:**  
Dr. Robert Stwalley  
Dr. Bernard Engel

**Acknowledgements:**  
John Deere