Current Problem:
In today’s fast paced farming there is a growing demand for efficiency. Hauling manure is a time consuming process and efficiency is lost when the operator has to manually switch pump valves to load.

Our Mission:
Our mission was to improve the convenience and efficiency of manure loading by offering the ability to remotely change modes from agitate to load.

Deliverables:
• Working model of remote controlled manure pump
• Wiring schematic of system
• Hydraulic schematic of system
• Comparison of remote system versus manual operation
• Project budget.

Project Application:
This remote controlled manure system was designed for the Balzer Doda pump, but can be retrofitted for any type of manure pump.

*With this system we have found many applications around the farm that could be controlled remotely
Manure Handling Problems
• Slow loading time
• Costly Manure Spills
• Operator Fatigue
• Manure valves difficult to operate with aging pump

Manure Spills are a frequent problem
• Increased regulations on CAFO
• Larger manure pits and lagoons
• More volume being moved

Our Plan of Attack
✓ Develop ideas for a remote operated valve and how to move the valve
✓ Designed, built, and tested a remote operated hydraulic valve
✓ Comparison of manual versus remote operation

Building Process
Remote Receiver and wiring in weatherproof box
Electro hydraulic valve used to control hydraulic cylinders
Mounting the cylinders to the manure valves
System Wiring and Plumbing

Schematic of wiring

Plumbing the hydraulic cylinders

Hydraulic Schematic

System Testing and Evaluation

Manure pump in operation pumping manure

Two members of the group testing the valves

It takes only 3.5 days to pay for the system

Cost of Project

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote Receiver</td>
<td>$95</td>
</tr>
<tr>
<td>Electrohydraulic Valve</td>
<td>$145</td>
</tr>
<tr>
<td>Hydraulic Cylinders</td>
<td>$306</td>
</tr>
<tr>
<td>Hydraulic Supplies</td>
<td>$148</td>
</tr>
<tr>
<td>Wiring Supplies</td>
<td>$82</td>
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<tr>
<td>Steel</td>
<td>$30</td>
</tr>
<tr>
<td>Paint</td>
<td>$15</td>
</tr>
<tr>
<td>Misc Hardware</td>
<td>$19</td>
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<tr>
<td><strong>Total Cost</strong></td>
<td>$840</td>
</tr>
</tbody>
</table>

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