



# Case Study

Coal Silo Refurbishment

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**INTEGRATED INDUSTRIAL SERVICES**

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# Customer Problem

- Client has aging infrastructure, specifically clean coal silos, that need substantial refurbishment including lining and truss repairs
- Prior repairs had not met the customers quality and cost expectations. Previous contractor's quality of work created future repairs, unplanned downtime, and rework.
- Access to the coal silos is limited to plant shutdowns, and the daily cost is substantial
  - *Silo number four is critical for coal delivery, with shut down costs of \$3.2M per day*
- ***Coal Miner requires the shortest timeline, most cost-effective, approach to complete repairs inside the coal silos***



Coal Silo Number 4

# Acuren/Tacten Solution

- Acuren and Tacten combined to refurbish four coal silos
- On the initial three silos significant savings were realized from an integrated team approach utilizing engineering, alternative access including rope access and VDeck suspended platforms, coating and blasting and welding
- Silo four was a critical path scope and through a robust process of continuous improvement the client realized ~\$15m in productivity gains and cost savings.

***“The implementation of lessons learned in execution of the work scope saved us \$13.5M in production and \$1.5M in access costs”***

*Lead Project Engineer*



*Rope Access Technician on the Side of Coal Silo*

# Technology

	Field Application	Advantages	Limitations
<b>Engineering</b>	<ul style="list-style-type: none"> <li>• Inspection and Maintenance Plans</li> </ul>	<ul style="list-style-type: none"> <li>• &gt;60 years of mechanical integrity experience.</li> <li>• Works directly with repair crews for efficient field-tested repair solutions</li> </ul>	
<b>V-Deck</b>	<ul style="list-style-type: none"> <li>• Installed via rope access, V-Deck allows for a platform to be suspended in various configurations</li> </ul>	<ul style="list-style-type: none"> <li>• Fastest installation rates compared to all suspended platform methods</li> <li>• Can be used for containment, allowing multiple trade activities</li> <li>• Allows technicians to gain additional work positions to increase efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Rigid panel has some geometry limitations</li> <li>• Must be suspended from above</li> </ul>
<b>Rope Access</b>	<ul style="list-style-type: none"> <li>• Access work at height locations traditionally requiring scaffold, aerial work platform, or ladder</li> <li>• Used in conjunction with trade labour to complete various tasks</li> </ul>	<ul style="list-style-type: none"> <li>• Time effective compared to scaffold</li> <li>• Ability to complete complex work at height locations</li> <li>• Safety improvement through reduced exposure Hours</li> </ul>	<ul style="list-style-type: none"> <li>• Rope access trained technicians required</li> </ul>
<b>Rope Enabled Trades Integrated Crews</b>	<ul style="list-style-type: none"> <li>• Inspection, Coating, Blasting and Welding</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated crews work off ropes to install access platforms and complete work.</li> <li>• Rapidly implement repairs at height</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of local rope access trained trades people</li> </ul>





# Integrated Solution

- During the 2020 outage Acuren completed inspection and an engineering remaining life assessment on a coal silo.
- ***Tacten utilized this engineering assessment to develop a repair and execution plan.***
  - *This plan reduced the outage window, total headcount, number of vendors, and overall cost to our client.*
- In June 2021, Tacten successfully completed the silo repair scope consisting of the removal and replacement of wear plates inside of the coal silo
- ***This project was foundational in shaping the client's understanding of Tacten and Acuren Integrated Solutions capabilities, which facilitated discussions with other client sites.***



*Silo plates prior to replacement*



*Tacten crews completing plate replacement*

# Integrated Solution

- In 2022, Tacten was awarded the mechanical repair scope in another silo. The **primary scope consisted of cleaning, inspection, and repair of roof trusses which had decayed over time**
- Acuren was able to utilize engineering and inspection capability to determine a full repair plan for the roof truss
  - *VDeck was critical as it allowed for limited anchor points with a shortened installation window. The limited anchor points meant minimal modifications when cleaning, repairing, and coating.*
- **The project saved our client 18 days and an estimated \$500k from traditional access methods.**
- Following the project, **a Tacten planner remained at the client site** as well as several mechanical services technicians, to perform welding repairs.



MEMORANDUM from the desk of Daven V  
May 29th, 2022

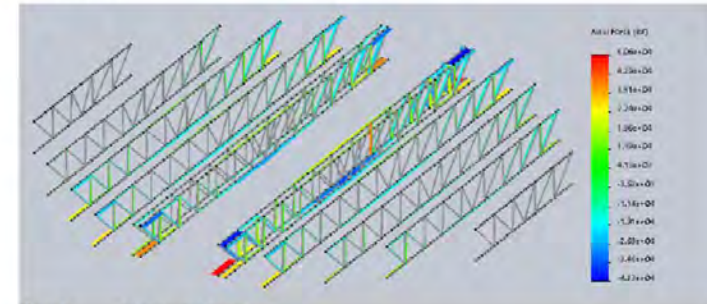
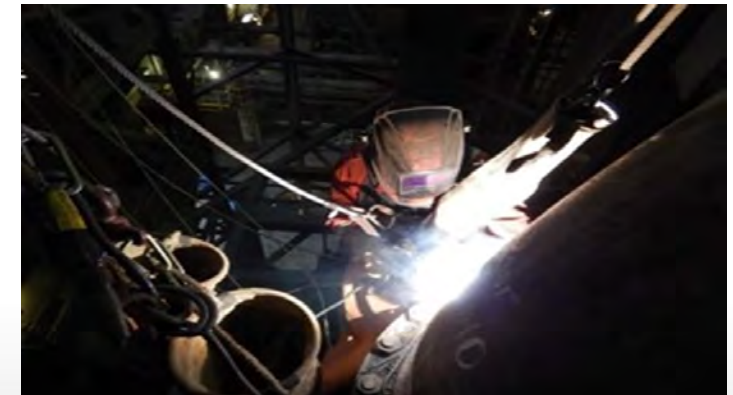


Figure 1 Axial reaction forces.

Truss No.	Reaction Force (lbs) - Platform and conveyor loads only			
	Bottom Chord	Top Chord	Diag	Post
10	30,333	-24,834	-18,064	12,152
10A	49,540	-39,790	-29,885	20,234
3	29,003	-24,407	-17,462	10,763
4	25,520	-21,092	-17,697	10,123
5	16,853	-13,305	-14,118	9,209
6	1,226	-643	-2,152	812

Acuren engineering report related to truss'



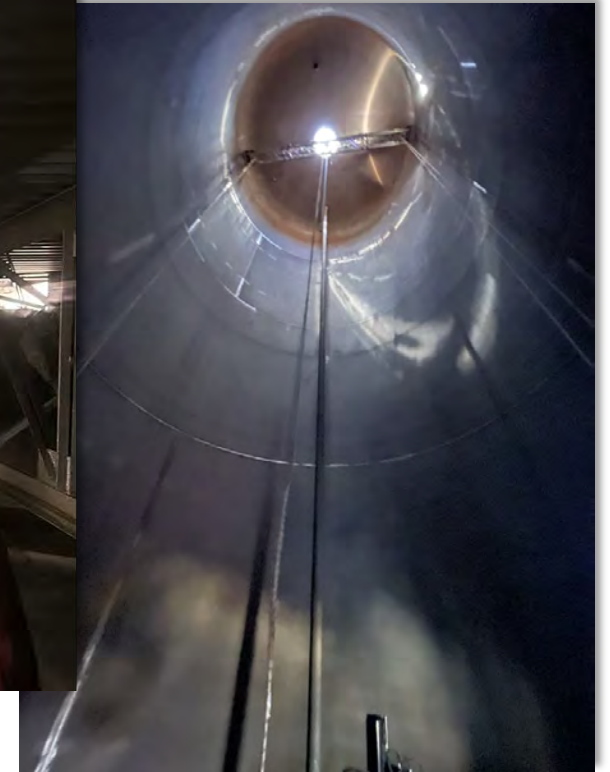
Tacten Rope Access Welder

# Continuous Improvement

- Our client awarded coal silo number three to Tacten, and a similar scope was performed resulting in multiple days saved from traditional methods
- The fourth silo project was on the critical path with time and schedule being paramount.
- Tacten leveraged the learnings from coal silo numbers two and three, to create an expediated project timeline, condensing the anticipated shut down window.
- **Tacten completed coal silo number four \$600k underbudget in 25 days less than previous silos saving the client \$15m.**



*Tacten Coatings Inspector  
Inside Coal Silo Four*



*Inside Coal Silo Four*

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*Lead Project Engineer*