

CUSTOMER IMPACT

Spudnik Equipment + Dirac

A Grimme company and leading U.S. manufacturer of large-scale agricultural machinery, Spudnik partnered with Dirac to eliminate tribal knowledge bottlenecks and standardize complex assembly execution.



"I had never built this assembly before.
The Dirac instructions had everything I needed."

Pedro — Assembly Manufacturing Engineer, Spudnik Equipment

33%

FASTER BUILD TIME

60%

LESS REWORK

99%

FASTER RAMP

1 Week

IMPLEMENTATION

01

Challenge

Spudnik's lower boom assembly (Model #880) could only be reliably built by a single operator with 15 years of experience. That expertise was never formally documented.

2.5x**LONGER BUILD TIME**

New operators required 15 hours to complete builds that an experienced operator finished in 6 hours.

2+ hrs**REWORK PER INCIDENT**

A single skipped bolt early in the assembly sequence triggered hours of costly disassembly and rework.

~200**QUESTIONS PER BUILD**

New operators relied on constant expert guidance, creating bottlenecks and slowing production.

Engineering BOMs were structured for design, not manufacturing, and there was no tool to translate EBOM to MBOM. Production forecasts depended entirely on operator availability.

For a company scaling heavy equipment builds, production resilience hinged on undocumented knowledge held by a single person.



02

Solution

Spudnik deployed Dirac's platform to automatically generate animated, model-based work instructions directly from the 3D product model.

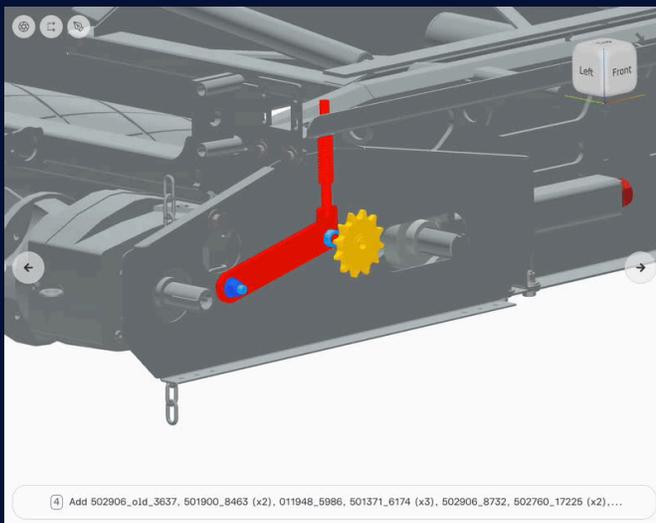
FROM PURCHASE TO LIVE INSTRUCTIONS ON THE FLOOR: ONE WEEK

Dirac enabled Spudnik to:

- Digitize expert tribal knowledge into standardized workflows
- Guide new operators through complex assemblies with animated sequencing
- Eliminate sequencing ambiguity that caused costly rework
- Restructure EBOMs into manufacturing-ready MBOMs
- Empower manufacturing engineers to adapt designs for real-world assembly

Operators no longer depended on proximity to experience.

Execution became embedded in the system.



03

Impact

33%

FASTER BUILD TIME

New operator built time dropped from 15 hours to 10 hours after a single training cycle.

60%

LESS REWORK TIME

A recurring 2+ hour rework incident was eliminated through clear, animated sequencing.

99%

FASTER OPERATOR RAMP

Guidance that took ~1.5 days now takes just 5–10 minutes with Dirac.

01

Throughput Improvement

Throughput improved immediately with fewer errors and less stress on the floor. Build time became predictable regardless of operator experience level.

02

Rework Elimination

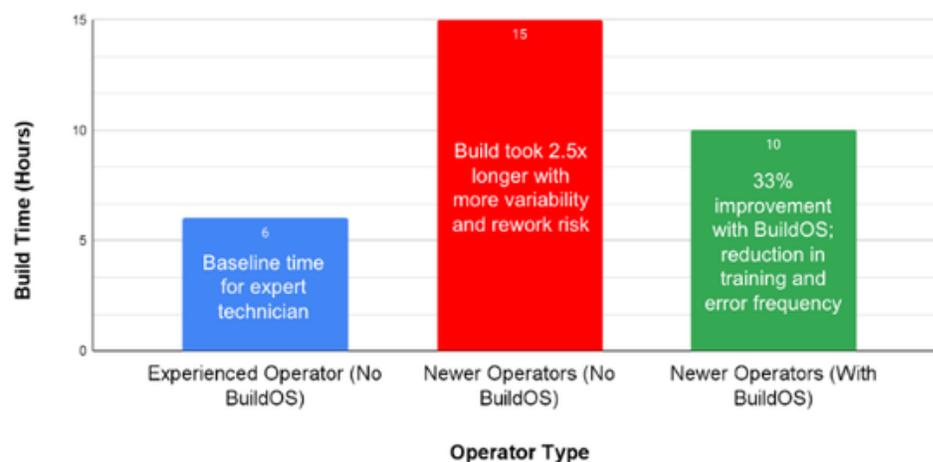
The recurring bolt-sequencing error — which triggered 2+ hours of rework per incident — was eliminated during Dirac trial builds. Animated sequencing removed ambiguity and prevented repeat errors.

03

Operator Independence

New operators completed the lower boom assembly independently within a week of initial Dirac deployment. Questions per build dropped from ~200 to ~20. Ramp-up shifted from shadowing experience to executing a documented, model-driven process.

Figure 1: Assembly Time Comparison for Lower Boom (Model #880)



Spudnik transformed a single-operator dependency into a scalable production system. Critical knowledge is now institutionalized, build time is predictable, and rework is prevented before it happens. Throughput no longer depends on who is present.

DIRAC



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more?**

contact@diracinc.com