onshape by ptc

Onshape Case Study

NORDEN MFG

INDUSTRY:
INDUSTRIAL EQUIPMENT | AGRICULTURE

The Challenge

Norden Mfg is dedicated to making life easier for small and mid-sized farms by engineering hay handling equipment designed for real-world farming conditions. From their industry-leading bale accumulators to their wheel rakes and bale squeezes, Norden builds tools that help family farms thrive without requiring million-dollar machinery or large work crews.

Like many innovative companies, Norden was born out of necessity. Working on their farm, the Kuhns family knew that when the sun is shining and rain is coming, you don't have time for unreliable equipment or unreliable CAD.

"One of the things that's supremely important to a farmer is reliability," says Glendon Kuhns, Vice President and lead designer. "I can't wait for parts to show up. The machine must be reliable."

As their product line grew, so did the complexity of design and production. Working in SOLIDWORKS was slowing them down: crashes, file management issues, and the need for expensive hardware created productivity bottlenecks and affected their bottom line.

That's why Norden Mfg decided to switch to Onshape.

Results

- **Reduced onboarding time by 50%:** New users with no formal engineering background are fully productive in under three weeks thanks to PTC Onshape's intuitive interface and extensive Learning Center.
- **Eliminated file management headaches:** With no need to worry about broken links, missing files, or version control discrepancies, engineers spend more time designing and less time organizing.
- **Reduced IT overhead:** No servers to manage, no specialized graphics cards to buy, and simplified license management — setup takes just minutes.
- **Increased design confidence and reliability:** Built-in simulation tools help engineers understand stress flow and material performance before a part is ever built.
- **Enabled remote collaboration:** Team members can access, review, and mark up designs from anywhere, including on mobile phones or Chromebooks.

"With SOLIDWORKS Simulation, I had to do a full pack-and-go of the model and move it to my local machine to set up the scenario. Then I'd cross my fingers it would run, and if I made a design change, I had to start over. With Onshape, I just set it up and go. I use it way more now because it's always there, and it works."

– **Glendon Kuhns**, Vice President and lead designer, ***Norden Mfg***

Norden Mfg: Empowering Farms with Smart Hay Handling Equipment

Discover how Norden Mfg uses Onshape to accelerate product development, empower designers, and build reliable hay handling equipment for small-to-medium farms—without the headaches of desktop CAD.

The AlfaTed fluffing tedder, a gentle and efficient hay fluffer, is one of Norden Mfg's newest products.

Norden Mfg's Mission

Every product Norden Mfg designs centers around a common goal: to simplify hay handling for small and mid-sized farms with efficient, field-ready solutions. Their fully mechanical bale accumulator systems, which operate without expensive hydraulics or electronics, streamline the process of arranging and transporting small square bales and reduce the need for manual labor and large crews.

With a range of models tailored to various farm sizes and outputs, Norden ensures that family farms can choose equipment that fits their specific needs. Complementing their accumulators, Norden's grabbers, tie-grabbers, and bale squeezes further enhance operational efficiency, allowing farmers to handle bales with ease and precision. By focusing on durable, user-friendly designs, Norden empowers family farms to thrive without needing to purchase overly complicated machinery or rely on unreliable labor forces.

Family farmers themselves, the Kuhns saw firsthand how labor shortages, unpredictable weather, and outdated equipment were threatening the viability of smaller farms. Their first product, a mechanical accumulator for small square bales, was created when founder Kenneth Kuhns realized he couldn't keep losing crops due to labor delays.

One summer, their typical labor pool was unavailable during the Fourth of July holiday. The family managed to bale about half of the 50 acres of hay on the ground themselves before rainstorms rolled in.

"A good portion of that crop of hay was lost. It was just wasted because we couldn't find help," recalls Glendon Kuhns. The situation led Kenneth to realize, "I have to mechanize this. I'm not rich enough to just lose my money, I have to have something."

Designing for Real-World Dirt, Sun, and Sweat

For the Kuhns family, farming isn't a metaphor—it's a lived experience. Glendon and Lucas Kuhns grew up working long hours in the fields, moving hay bales by hand under the blazing sun, dealing with scratched legs, heavy lifting, and sudden downpours that could wipe out days of hard work.

"The hay is pokey, heavy, and dirty. You're in the heat, racing against the weather. It's brutal work, and that's exactly why we build the machines we do," says Glendon.

The foundation of Norden's success is designing equipment that truly understands and addresses the harsh realities farmers face. Their flagship product, a bale accumulator, solves one of the most grueling problems in haymaking: manual bale handling.

The Norden Mfg bale accumulator, designed in Onshape, arranges and moves small square bales with machines instead of hand labor.

The accumulator collects small square bales into neat stacks of 10, 15, or 18 and drops them in the field, allowing a single operator to pick them up with a loader instead of handling them one-by-one by hand.

The genius of the design lies in its simplicity. It requires no hydraulics or electronics, making it affordable, reliable, and easy to maintain, even for smaller farms with older tractors.

"Our dad built the first prototype because no one made the machine he needed. The existing solutions required expensive, modern equipment. He couldn't afford that. So we built it ourselves," says Lucas.

Watch the Video

From there, Norden has continued developing new tools specifically designed for small to mid-sized farms, including the Norden Bale Squeeze (which lifts entire stacks of bales in one motion) and wheel rakes with innovative flotation controls that minimize contamination from dirt. The AlfaTed fluffing tedder, their newest product, fluffs windrows quickly while minimizing damage to the hay.

"It's all about enabling farmers to work faster, safer, and smarter without needing a million-dollar machine or a large crew," Glendon adds.

Whether it's offering different bale grouping sizes to match the scale of a customer's operation or using standard, repairable components that can be found at a local farm store, every product Norden creates is engineered with the working farmer in mind.

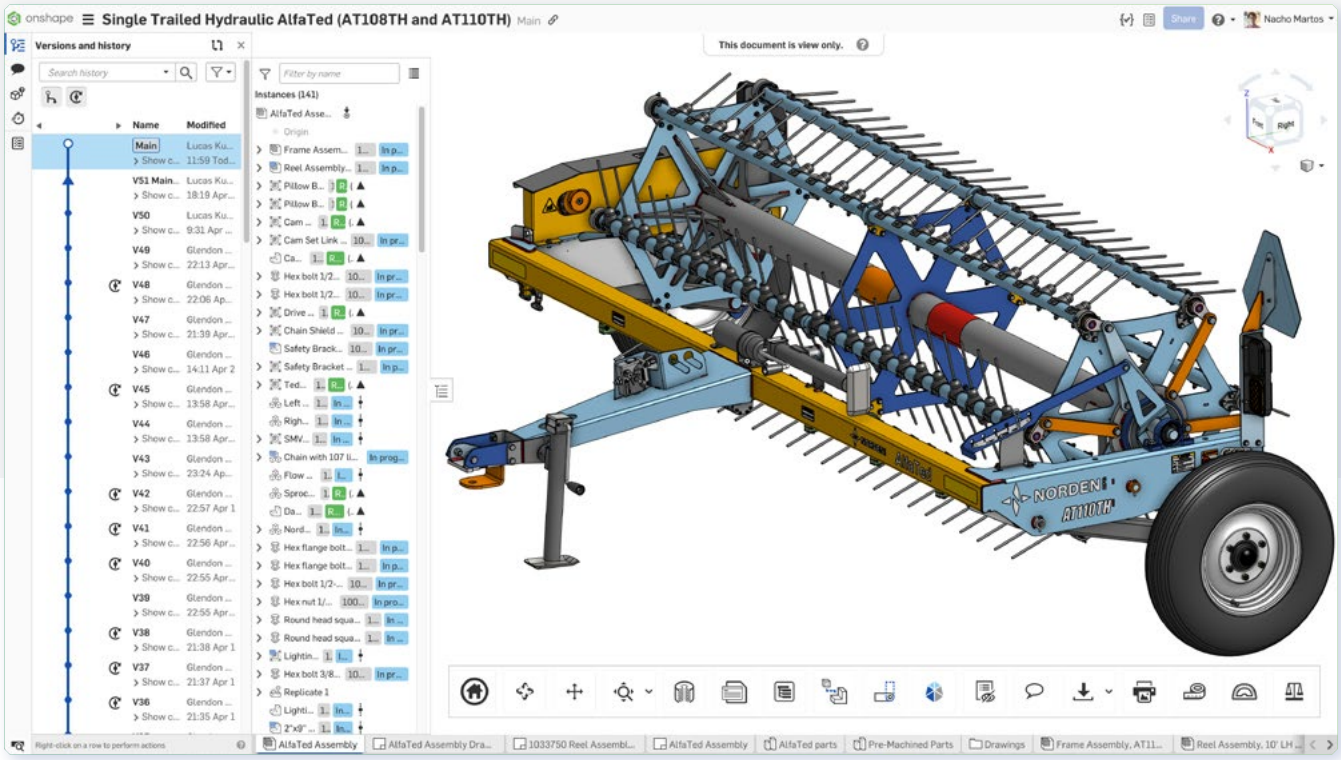
"We're not trying to replace the farmer. We're trying to protect them. Protect their bodies, protect their time, and help them get the hay in before the rain comes," says Glendon.

To continue delivering practical, reliable tools, Norden needed a design platform that was just as dependable, leading them to switch from SOLIDWORKS to Onshape's cloud-native CAD and PDM platform.

Why Onshape CAD

As Norden's product line grew and their engineering team expanded beyond Glendon and Lucas, their legacy desktop CAD system, SOLIDWORKS, began to hold them back. Frequent crashes, complex file management, and hardware requirements were slowing development and limiting collaboration. Onboarding new designers, especially those without formal engineering backgrounds, was time-consuming and costly due to software installations, license administration, and training overhead.

Norden needed a CAD platform that could keep pace with their fast-moving design process, support a growing and diverse team, and eliminate the IT burden that came with desktop software. Onshape's cloud-native architecture delivered exactly that.



The AlfaTed model was designed and managed using Onshape CAD and PDM.

By moving to Onshape, Norden unlocked real-time collaboration, seamless v, and a scalable design environment that empowered both seasoned engineers and shop-floor talent to contribute to innovation without worrying about file overrides, system crashes, or costly rework.

"With Onshape, we're not babysitting our tools. We're using them to build better products, faster," says Glendon.

Powerful Tools for Smarter Products

Every new product Norden designs must be able to withstand daily field operations like bouncing behind a tractor across uneven fields or lifting thousands of pounds of hay. Norden uses Onshape's full suite of features to develop, validate, and visualize their products.

Before a prototype ever hits the shop floor, the team uses Onshape Simulation tools to help ensure that components won't fail under stress loads.

"I always run a sanity check before handing a design off to production," says Glendon. "I need to understand how the stresses flow through the machine so I can reinforce or adjust before it ever gets built."

Unlike traditional simulation tools that require separate installations and specialized hardware, Onshape's simulation is seamlessly integrated into the design workflow. For Norden, that means no exporting, no waiting, and no separate environments to manage.

"With SOLIDWORKS Simulation, I had to do a full pack-and-go of the model and move it to my local machine to set up the scenario. Then I'd cross my fingers it would run, and if I made a design change, I had to start over," Glendon recalls. "With Onshape, I just set it up and go. I use it way more now because it's always there, and it works."

Because of this streamlined approach, simulation has become a regular part of their design process, giving the team more confidence in structural integrity and performance without slowing down their pace of innovation.

Norden also relies on Onshape's Render Studio to create marketing-ready visuals before a physical product even exists. Part Studios and automated BOMs make building, referencing, and modifying complex assemblies more efficient and accurate.

Onshape rendering of the AlfaTed fluffing tedder, built to fluff windrows quickly while minimizing damage to the hay.

Onshape enables the Norden team to work with greater confidence and fewer limitations, from interpreting ISO standards for loader attachments to designing weldments with dependent sketches and defining multi-part relationships. "It's the best of both worlds—powerful engineering tools with none of the baggage of desktop CAD," says Lucas.

Designed to Move as Fast as the Farm

For a lean team like Norden's, speed and reliability are essential. When a new idea surfaces, often in response to a customer request or an urgent need in the field, it must go from concept to prototype quickly. Utilizing 10 Onshape licenses, Norden's engineers can design, iterate, and validate their ideas in real-time without being slowed down by software crashes, version conflicts, or outdated file check-in and check-out processes.

"When I'm in Onshape, I don't have to hedge my bets. I can just go for it, try the idea, and roll back if needed. There's no penalty for creativity," says Glendon.

Onboarding Talent From the Shop Floor

One of Onshape's biggest advantages for Norden is how easily it brings new users into the design process, even those without traditional CAD or engineering backgrounds.

"We're saving half the time training new users because we're not teaching them how to manage files—we're teaching them how to design," says Glendon.

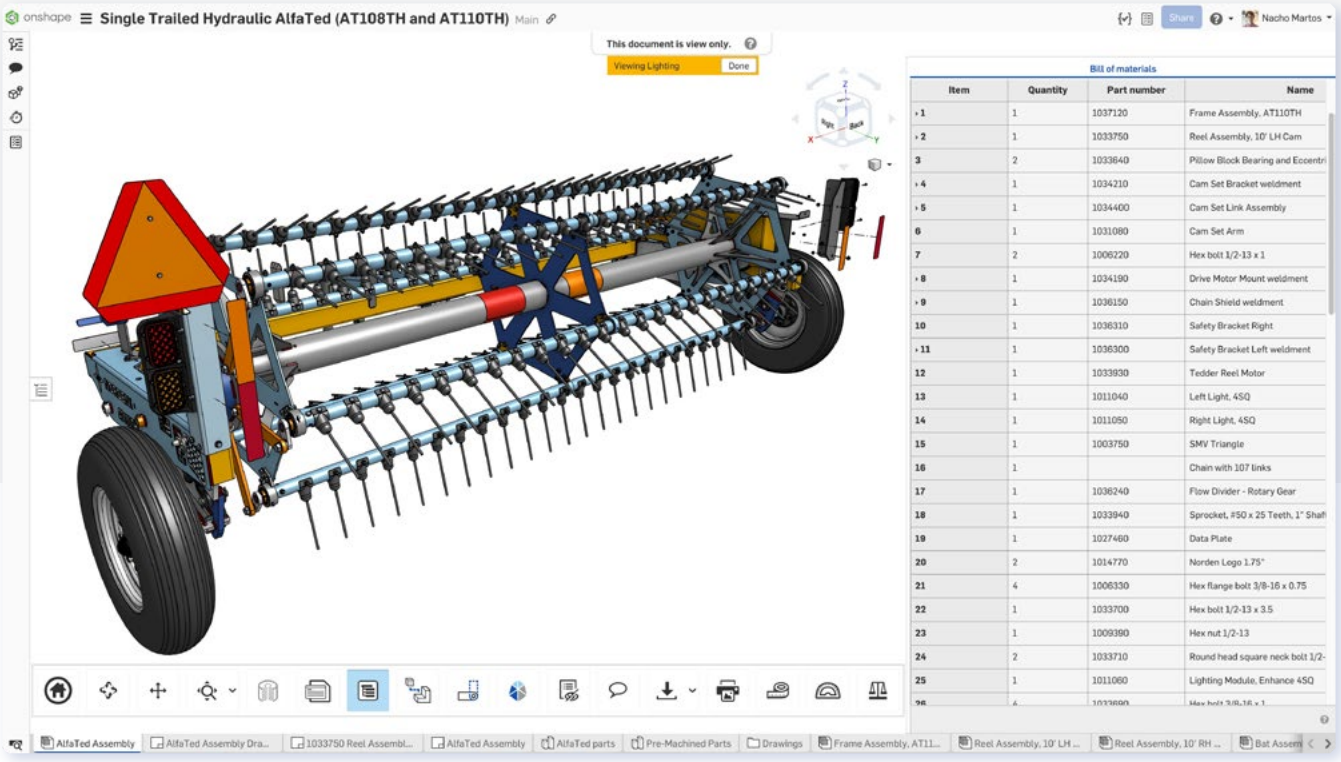
Many of their designers started out as welders or machine operators and transitioned into design roles using Onshape's Learning Center and intuitive interface.

Norden Mfg has been fabricating its own products since 2017.

"We had a welder become an R&D designer in less than three months," says Lucas. "He started out using a Chromebook and a mouse we pulled out of a cabinet. Now he's designing production fixtures and customer-requested parts."

Streamlined Setup, Zero Maintenance

Before Onshape, Glendon (who also handles the company's IT needs) was constantly managing SOLIDWORKS installations, file servers, license tracking, and hardware requirements. Adding a new user could take weeks and cost thousands in new hardware. Today, it takes minutes.



AlfaTed model BOM, living alongside the design, ready for manufacturing.

"I don't need to manage servers, buy special graphics cards, or babysit installs. I just assign a user, send an invite, and they're good to go," Glendon says. "It saves us an IT guy, honestly."

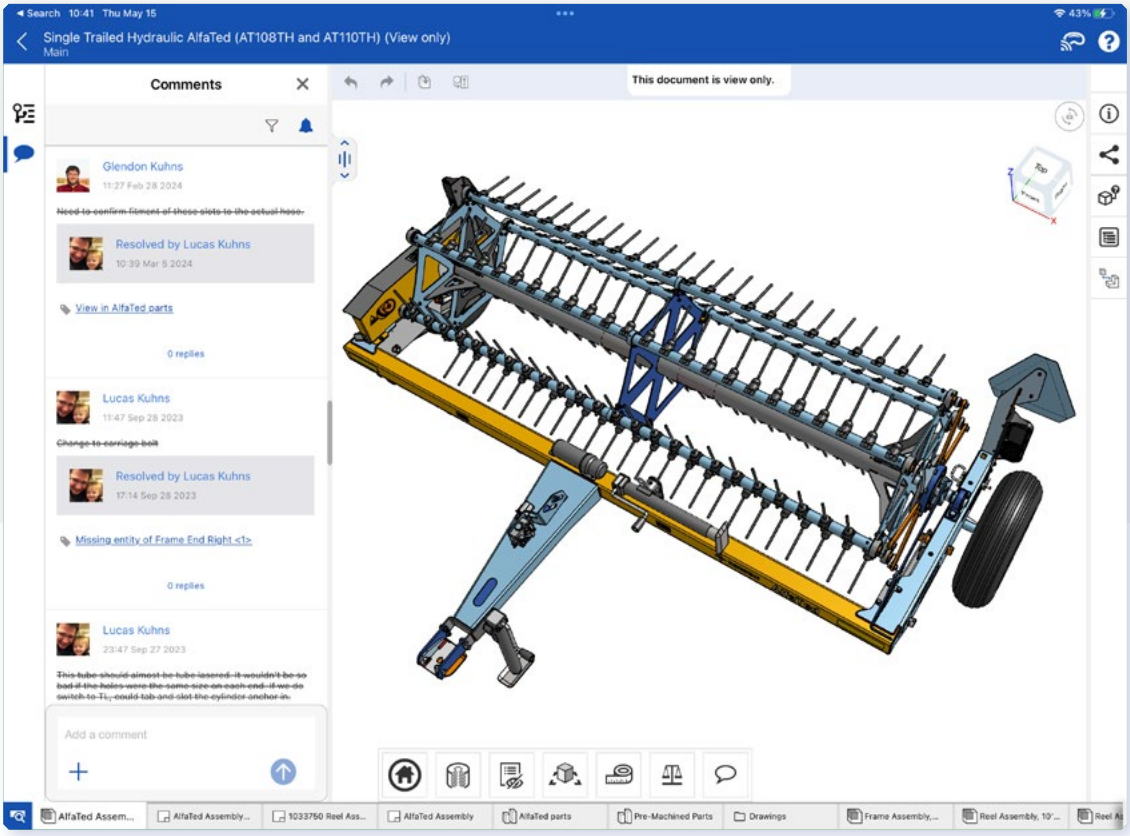
This shift has made a big impact on Norden's ability to stay nimble. Because Onshape is entirely cloud-based, they can onboard designers faster, work on designs in real-time on almost any device, and eliminate downtime from system crashes or file mismanagement. Everyone works from the same source of truth, no matter their location or device.

"With Onshape, we can focus training on good design, not where to save files or what not to rename," adds Lucas.

Built for the Way They Work

Due to the fast-moving and widespread nature of their work, remote access to CAD is a must-have for Norden. When situations arose requiring reviewing fixture designs after-hours or responding to customer requests from the road, Onshape's cloud-native platform allowed team members to access designs instantly.

"I was lying in bed when a fixture design came in. I pulled it up on my phone, zoomed in, marked it up, and sent it back," says Lucas. "That kind of flexibility is just normal for us now."



The Onshape mobile app can load large models in seconds, providing on-demand access to CAD models.

This ability to work from anywhere has helped Norden stay agile and responsive, not just internally, but also with customers and fabrication partners. When onboarding new designers or collaborating with shop-floor team members, Onshape's accessibility makes it easy to loop people in quickly without needing specialized software or hardware.

"We're often moving fast—from napkin sketch to production—and being able to collaborate in real-time from anywhere makes a huge difference," Lucas adds.

Looking Ahead: Continuing to Grow with Onshape

As the agricultural landscape continues to shift, Norden remains focused on serving an often-overlooked segment of the agriculture industry. With Onshape as their design foundation, Norden is accelerating product development, training new designers faster, and continuing to expand their equipment lineup—from hay handling systems to loader attachments and beyond. "There's still so much work to do for farms like ours," says Glendon. "With Onshape, we're not just keeping up—we're getting ahead."

Norden Mfg is a family business dedicated to supporting independent farmers, turning practical experience into machines that benefit the small-to-medium agriculture industry.

As they continue to grow, the team at Norden is driven by the same values that sparked their first product: reliability, simplicity, and a deep understanding of what farmers really need. With the right tools in hand on the field and in the design office, they're building a stronger future for the next generation of farmers.