

Tribine

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"It's exciting, no question," said Dillon of the concept he first envisioned 20 years ago while working on the Indiana farm his family has owned since 1844. "I always felt it would reach production; I just didn't know how."

"I'm not smart enough to see the future," he added with a smile.

In an age of bigger farms and precision management, Dillon hopes to cater to farmers wanting to increase productivity and efficiency.

At the family farm, Dillon watched grain carts go back and forth from the combine - with its 350-bushel grain tank - to the 1,000-bushel semi parked along the road.

The two machines with multiple tires compact the soil and require added cost and labor. Dillon thought there had to be a better way to harvest crops.

Thus, he began working on a concept that combined the mechanisms of a combine with a 1,000-bushel grain tank, eliminating the need for a grain cart and tractor running parallel with the combine. His first idea was to attach a grain cart to the back of the combine. That didn't work very well, and Dillon continued to hone the concept, building the first few prototypes on the Indiana farm and testing them there, Dillon said.

Those led to the design he has today, said Greg Terjesen, Tribine's vice president of sales and marketing.

"The traditional business hasn't changed since World War II," said Terjesen, adding that Dillon has put together a 15-member team, with many previously working for various agriculture manufacturing leaders.

However, regarding the red, yellow, green and silver machines of the industry, Terjesen puts the Tribine into perspective, just like any good marketing person would.

"We know we have a better mousetrap," he said.

Part of an evolution

Today's combine is a combination of two machines - a name derived from combining three separate operations of harvesting: reaping, threshing and winnowing - into a single process.

Early versions used horses or mules; then it was pulled by a tractor. In 1923, Nickerson's Baldwin brothers designed the industry's first self-propelled combine, built in an airplane hangar in Wichita. Mounted on a Fordson tractor, it could cut an acre of wheat for every mile of travel.

The combine continued to be improved upon, including by Kansas inventors. In 1947, Lyle Yost designed and invented the unloading auger - the catalyst for the development of Hesston Manufacturing in Hesston, a company eventually purchased by AGCO, according to AGCO. The device was used to unload grain from farm combines.

Yet, while bigger combines continued to be introduced with better technology, including precision tools like yield monitors and auto steer; traditional combines haven't changed much since World War II, said Terjesen. The crew is hoping the Tribine will revolutionize the industry.

Initially, Dillon relocated the Tribine to Kansas to be close to two agriculture manufacturers, Hesston's AGCO and Spearville's Crustbuster/Speed King, according to Kansas Agland in 2013.

At that time, the front module of the Tribine was essentially a Gleaner model

WHAT IS A TRIBINE?

The Tribine stands out with its orange color and 1,000-bushel grain tank. And, according to the company, the Tribine has the "world's largest threshing and cleaning system."

While not giving an exact cost, it is comparable to buying a new combine and grain cart, said Greg Terjesen, vice president of sales and marketing for Tribine Harvester.

He said there are plenty of other features that make it different from the conventional combine.

Cummins engines

The Tribine has two Cummins engines - one that drives the hydraulic system, the other propulsion, Terjesen said. The machine also has higher horsepower and better fuel economy.

Joystick and glass floor

"Every other combine uses a steering wheel," Terjesen said. "Guess what? We got rid of it." Instead, the Tribine uses a single joystick control - which saves space and allowed engineers to incorporate a glass cab floor in the steering column area. That helps provide unrestricted visibility of the header and field.

"The biggest thing we heard from farmers is they need to look at the feeder, they need to look at the header," Terjesen said. "When the operator is sitting in the seat, instead of being blocked by a steering wheel, he can look down at the feeder and look down at the header and see the material being processed."



Photos by Sandra J. Milburn/The Hutchinson News

Rein Herrman unstraps part of a telescoping auger at the Tribine Harvester complex Aug. 4 in Newton.

Ladder

The Tribine's design places the ladder in front of the machine's wheel, which allows easy access with a spacious walkway.

Compaction

Reducing compaction is a key benefit of the Tribine. The machine has four aligned, low-ground pressure tires - with a center articulation and pivoting rear axle. This helps ensure that the Tribine leaves only one trail. Terjesen said that other machines use up to six tires - which creates

multiple paths and more soil compaction.

24/7 operation

Engineers also incorporated 360-degree LED lighting throughout - enabling 24/7 operation. Meanwhile, with two 250-gallon fuel tanks, an operator can run the machine 24 hours without filling up, Terjesen said.

Speed

Speed of harvest is also improved, said Terjesen. The Tribine can unload its 1,000-bushel tank in less than two minutes.

Harvester specification comparisons

| Category/model | TRIBINE | Typical conventional combine |
|------------------------|-----------------------|------------------------------|
| Horsepower, continuous | 590 HP | 525 HP |
| Fuel tank capacity | 500 gallons | 330 gallons |
| Est. run time per tank | 24 hours | 12.7 hours |
| Feeder width | 66 inches | 55 inches |
| Rotor diameter | 38 inches | 30 inches |
| Concave wrap | 270 degrees | 180 degrees |
| Concave area | 3,561 sq. in. | 1,705 sq. in. |
| Separating area | 3,561 sq. in. | 3,078 sq. in. |
| Cleaning area | 13,293 sq. in. | 8,711 sq. in. |
| Grain tank | 1,000 bushels | 400 bushels |
| Unload rate | 8.5 Bu/Sec. | 3.8 Bu/Sec. |
| Weight est. | 48,000 lbs. | 46,000 lbs. |

JH/The News

S77 combine. Rein Herrman, an engineer with Crustbuster at the time, helped design the rear module. He now works for Tribine.

Dillon was able to bring on other longtime industry engineers, including Bob Matousek, who was with AGCO and Case and has been an integral part of getting the Tribine to production.

"There is no doubt it is way outside the mold," Matousek, the company's vice president of engineering, said of the Tribine.

Being involved in a state-of-the-art machine "at my age, it is amazing," he said.

Investing in harvesting's future

Dillon is fully behind his invention. In November 2015, he auctioned off 716 acres of his Indiana farmland.

According to Schrader Real Estate and Auction Co., the acreage sold for \$8.282 million, or \$11,567 an acre.

Dillon said at the time, according to Schrader, that he was using the proceeds as part of the capital for

production of the Tribine.

"The success of the auction clears the way for me to move forward," Dillon said in a release.

By February, Dillon and his crew had moved from an engineering office in downtown Newton to a new production facility, said Terjesen.

According to the city of Newton, Raw Investments, a for-profit Kansas corporation, bought ground from the city and constructed a 12,600-square-foot building at a cost of \$850,000. Raw is leasing the property to Tribine.

Dillon has kept the Tribine in Kansas because of its central location, Terjesen said. About 80 percent of business in the Grain Belt comes from five states - Illinois, Indiana, Iowa, Nebraska and Kansas.

"That is where we will be focusing," Terjesen said of marketing the Tribine. However, he added, the company doesn't expect to take over the market share of some of the nation's mainstay ag manufacturers.

"It's not going to happen," he said. "They aren't going to

combines making several tracks, as well as the tractor and grain cart scurrying back and forth through the field.

The Tribine has just four wheels.


"Compaction is the silent killer of yields," Nelson said.

Now, the team is ready to prove its need to farmers, who got their first glimpse of the Tribine in action at the Farm Progress Show in Iowa. As Tribine officials set up in late August for the show, the machines were already turning heads, Terjesen said.

Matt Jungmann, the show's director, said many of the 600 exhibitors use the show, which began Aug. 30, to unveil the latest and greatest. The Tribine also was at Husker Harvest Days in mid-September.

Jungmann said visitors at the Iowa show were able to see the Tribine harvest crops in the field. The show includes 350 acres of field demonstrations.

"It certainly catches your eye," he said. "It is not what you are expecting to see on the back of it."



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Russell Secest enters the cab of the Tribine at the Tribine Harvester complex in Newton.

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