Main frame of the grapple is 3/4-in. thick steel plate salvaged from old logging equipment a friend gave McLaen. He lengthened the arms to reach the cutting edge, which was mounted to parts of an old plow.

"Grapple Blade" Great For Spreading Gravel, Dirt

Dale McLaen can spread dirt and gravel as smoothly from his skid steer bucket as he could with a gated dump truck. His grapple blade holds scooped-up material in the bucket and lets him meter it out as desired.

"I just raise the blade the desired amount and spread away," says McLaen. "It works just as well when cleaning barns or working with other loose material."

McLaen started with a 60-in. bucket he got from a neighbor with whom he often trades metal scrap. It had been modified with 3-pt. hitch brackets and was headed for the scrap pile.

"The paint wasn't even worn off the cutting edge, though it sat outside for years," says McLaen.

McLaen cut off the brackets and added the grapple arms. Instead of tines, he fitted the arms with a blade.

"I figured I could use it with gravel and feather the gravel out," says McLaen.

The main frame of the grapple is 3/4-in. thick steel plate salvaged from old logging equipment a friend gave McLaen. He lengthened the arms to reach the cutting edge, which was mounted to parts of an old plow. A length of 2-in. steel pipe was mounted between the arms to stiffen them. The main frame was welded to a pivot shaft he fabricated from a section of an old Vibra Shank 3/8-in. thick rock shaft.

"I found two pieces of pipe that fit inside the pivot shaft and butt welded them to 5 by 5-in., 1/4-in. steel plate," says McLaen. "I put grease zerks in the pivot shaft before inserting the mounting pipes and bolting the plates to the top inside rear of the bucket."

A 1 1/2-in. hydraulic cylinder salvaged from an old Bobcat grapple bucket was put to work on the new grapple. McLaen mounted a clevis point to the top of the bucket. He routed the hydraulic hoses from the cylinder, down the backside of the bucket to the loader arm pivot point. Open-sided brackets spot welded to the loader arm secure the hoses back to the auxiliary valves.

"The hoses slide into the brackets easily," says McLaen. "The arrangement keeps them from getting out of place and pinching."

McLaen reports the biggest challenge was positioning the clevis points for the cylinder. "It took a big compass and a bunch of cardboard to figure out how to make the cylinder fit," he says. "There was only one sweet spot. Everything else was too far or just not right."

After using the bucket a few times, McLaen added a safety feature. He installed an expanded metal step to the top of the bucket.

McLaen has a long-standing tradition of using oil well sucker rod on everything he fabricates. "If I have to, I'll just weld a piece on," he says. "This time it was easy. The sucker rod was just right for clevis pins to hold the cylinder."

After using the bucket a few times, McLaen added a safety feature. He installed an expanded metal step to the top of the bucket. It reduces the chances of slipping when entering and exiting the cab.

"The bucket is working great," says McLaen. "Thanks to my neighbor, I probably have around $275 or less in it. The cutting edge at $68 and the hoses at about $140 were my biggest costs. The rest was mostly salvage."

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Mini Skid Steers Handle Tough Jobs

In the early 1980's, Australian inventors John Alan Porter and Doug McIlwraith grew increasingly tired of the hard labor in the landscaping business. Their physical exhaustion eventually encouraged them to build a clever labor-saver they called a motorized wheelbarrow. It worked well, so a year later, they built another one with an 11-hp. gas engine, painted it red and white, and sold it. The partners initially called their machine a dingo, changed the name to Jaden a few years later, and to Kanga Loaders in 1988. The company has been on a roll ever since.

Today, Kanga produces several compact loader models and even a remote-controlled version that's gaining traction. Kanga still has its manufacturing headquarters in Australia. Distributors and dealers are in the U.S., UK, South Africa, and New Zealand.

The mini-loaders are used by rental businesses, public works crews, landscapers, and others who want motorized power to replace physical labor. The company even offers three custom-built "Business on a Trailer" models that carry a Kanga loader and several attachments. Kanga recently partnered with Kubota to supply engines for its machines.

Rod Lehpamer, Kanga General Manager, says the company's loaders have economized and simplified the workplace for hundreds of businesses. He says the company's focus has always been on making the mini-loader more productive and not on building larger, more powerful models. Their machines are compatible with more than 60 attachments that dig, carry, haul, build, or plant almost anything.

Amy Root owns a Colorado Landscape and Design business that's used two Kanga Loaders for 15 years. Root says they use nearly 20 attachments in their business that do everything from digging holes and rooting out stumps to hauling rocks or building walls. She says the machines are powerful, easy to use, virtually trouble-free, and if there has been an issue, the company has excellent service.

Kanga machines are compatible with more than 60 attachments that dig, carry, haul, build, or plant almost anything.

Contact the company for pricing as different model sizes, attachments, and engine options are available.

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Researchers built a mobile renewable EV charging station with an anaerobic digester and external combustion engine. They also built an electric tractor to run off the power.

Farm-Based EV Charging Stations

As demand increases for Electric Vehicle (EV) charging stations in the U.S., farmers may offer a unique power source in the future - animal and crop waste. Many dairy farms already create power with on-farm anaerobic digesters. A new research project at Michigan State University hopes to adapt the technology to create EV charging stations in rural areas.

"We view farms as ideal locations for charging stations," says Wei Liao, director of MSU's Anaerobic Digestion Research and Education Center. "We intend to group farms and transfer power to central locations near the highway."

The initial research is with dairy farms because it's Michigan's leading agricultural commodity, with about 90 percent small and medium-sized operations of less than 1,000 cows.

To demonstrate the process, researchers built a mobile renewable EV charging station with an anaerobic digester and external combustion engine. They also built an electric tractor to run off the power.

The research has just begun, Liao says. There are many challenges to making developing smart off-grid charging systems economically feasible. But there's also plenty of interest from farmers and rural residents interested in lower kW/hour rates. It would also benefit businesses that work in rural areas such as milk haulers.

And there's opportunity. The same technology used to create power from dairy cattle waste can be applied to other supply lines.

"Up north, this system can be used for organic waste and restaurant waste," Liao cited as examples.

He adds that another benefit is that using waste to produce electric power reduces emissions from vehicles and helps dairy farms achieve carbon neutrality.

MSU has already demonstrated the benefits of anaerobic digestion, with its south campus 450,000-gal. digester in operation since 2013. In 2022, it produced 2.8 million kWh of electricity to power itself and 10 buildings on the south campus, using 12,500 tons of manure from the MSU dairy farm and 15,000 tons of food waste from MSU's cafeterias and the greater Lansing area.

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