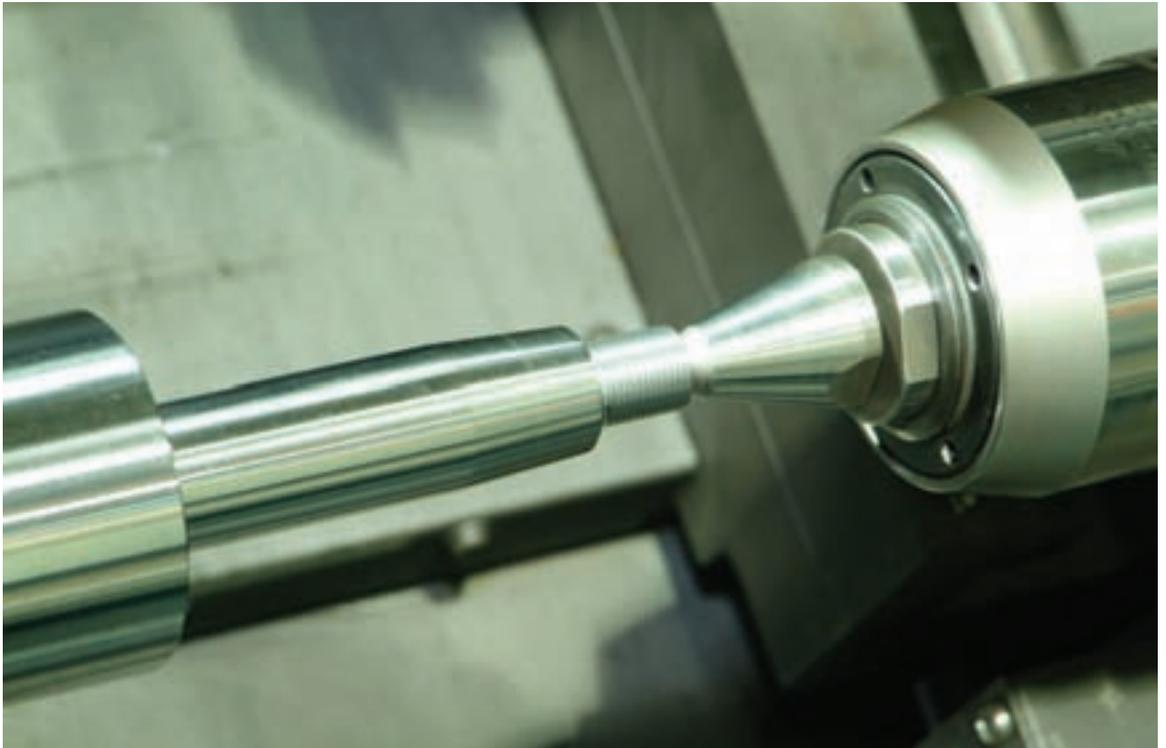
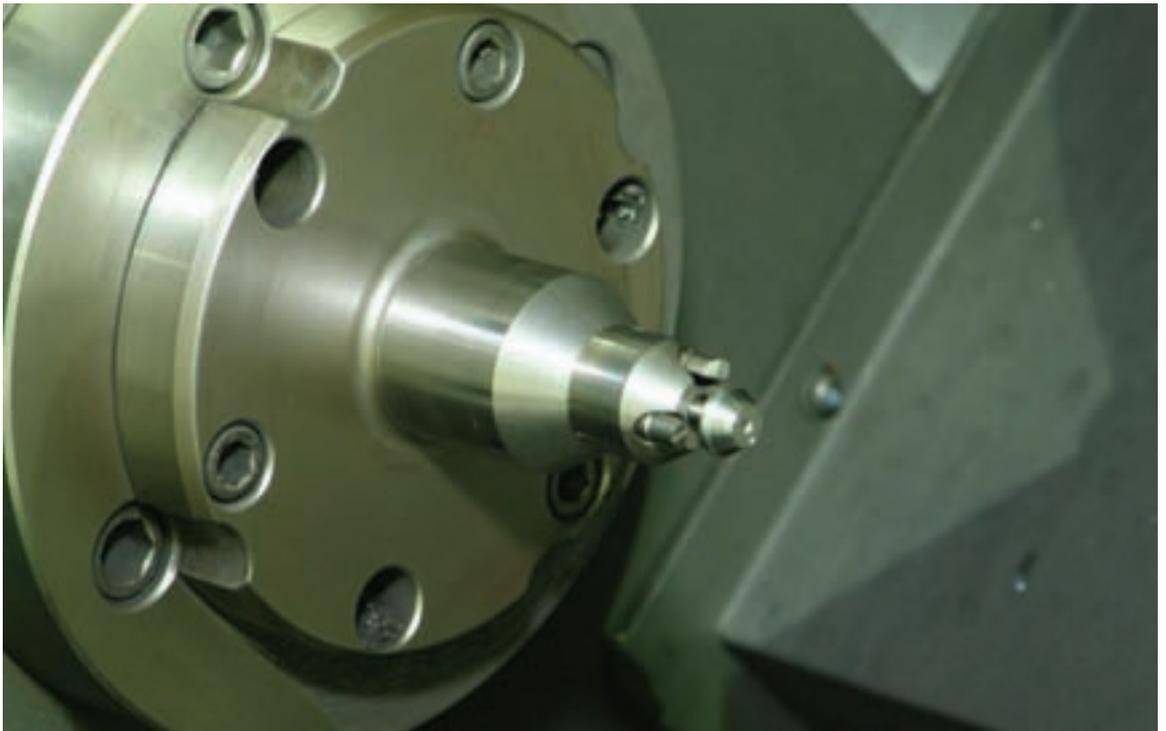


UNITED GEAR & ASSEMBLY



A shaft-type part is fixtured in United Gear's Neidlein Ultra live center Type RNW. The company uses the live center with all of its face drivers. Hydraulic pressure drives the center pin into the part with up to 5,500 pounds of tailstock pressure to hold the part against drive pins in the face driver.



A part is turned on a special face driver designed for United Gear by Neidlein. The company started by running just two parts on this driver, but now it runs about 85 separate parts. While the original two parts required material up to 4 inches in diameter, many of the other 85 parts are only about twice the pin diameter. Applications engineer Keith Mallek says the company can run them much faster—usually four times as fast—using the special pins with dual grabbers.

Turns to Face Drivers

IN MANY APPLICATIONS, MECHANICAL FACE DRIVERS MAY BE THE BEST WAY TO TURN PARTS. THEY PROVIDE MAXIMUM FLEXIBILITY AND LOWER CYCLE TIMES, CAN TURN THE SMALLEST AND LARGEST OF PARTS, AND PERMIT BOTH HEAVY AND INTERRUPTED CUTS.

A major benefit of face drivers lies in their ability to allow complete turning of a part—from one end to the other—in a single operation. Parts routinely cut using face drivers include automotive transmission parts, crankshafts, cam shafts, pinion gears, electric motor shafts and axles up to 36" diameter.

In order to keep up with increasing demand for turned parts, United Gear & Assembly, Inc. of Hudson, WI, turned to Neidlein face drivers and live centers from LMC Workholding. With face drivers, the company could not only meet customer demands, but was also able to lower its scrap rate. The biggest benefit United Gear & Assembly has received is the dramatic reduction of changeover time, in many cases cutting changeover time from two hours down to 15 minutes.

Meeting the Challenges of Rapid Growth

United Gear & Assembly is a manufacturer of gears and related power transmission parts used in over-the-road and off-road equipment. The company produces spur, helical, bevel and internal gears and splines. Altogether, they sell about 1.5 million gears per year to customers such as Eaton Hydraulics,

Allison Transmission, Caterpillar, John Deere and Mack Truck.

The company also does a lot of shaft work. The majority of the material being worked with is bar stock for turning applications that are processed on the Neidlein face drivers and live center. Diameters range from 1–5" and lengths vary from 8–38".

Keith Mallek, applications engineer, says United Gear & Assembly acquired its first face driver about ten years ago. "Since then, we've picked up a significant amount of new work, and as a result, we've purchased more face drivers to meet an increasing demand for the types of gears we produce on these machines."

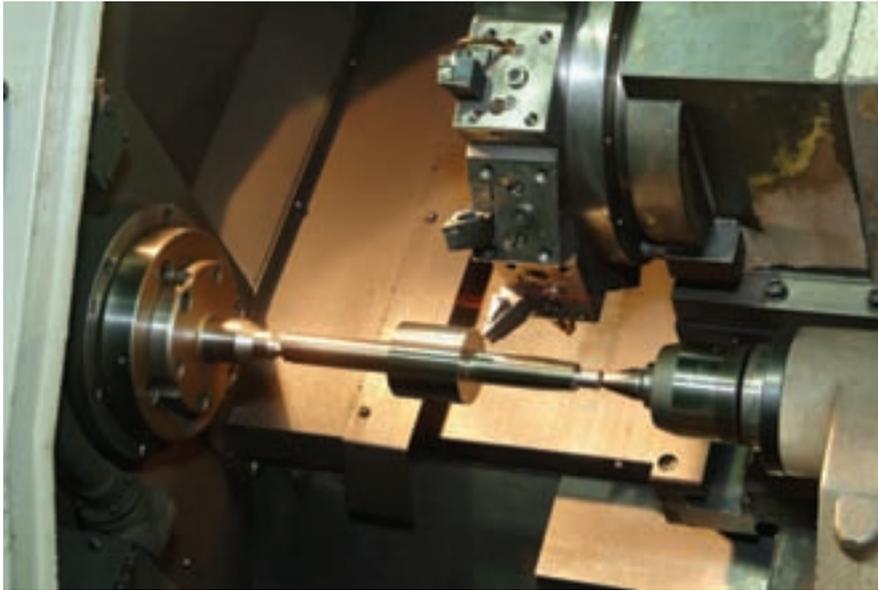
Expanding Their Applications

"Originally we only used face drivers on very few projects," Mallek explains, "but over the last year and a half, we've broadened our horizons and we now use them a lot more. This is because we've taken on some additional work that lends itself to face drivers, but also because we've seen them as a better alternative to chucking on some of the other gears we've been producing."

Mallek reports no problems with face driving applications. The company has continued



Keith Mallek, applications engineer with United Gear & Assembly, is holding two of the longer shafts the company manufactures. In addition to the shafts, the face driver and the live center pin used to turn these parts are shown in the foreground.



A special-design Neidlein face driver. Most face drivers that Neidlein produces are designed to handle bar stock up to three times the diameter of the drive pins. With these dual-gripper drive pins, United Gear can turn up to 4" diameter bar stock.

three standard Neidlein units (models FSB-1, FSB-01, and FSB-4).

"Primarily we're working with 8620 and 4140 steels," Mallek says. "We also run 4340, which is quench and temper material that's usually around 32 to 38 Rockwell C. We use the standard drive pins in our face drivers, which work fine with these materials."



The face driver on the left is a Neidlein Model D-4. The other is a Model D-6. The tips on the right and in the middle are tips that United Gear can interchange on the RNW ultra live center. These are stock centers, but with these tips the company can run about 150 different part numbers just by changing the center pins. The third part in front is a replacement part for the face driver. Four extra ones were made so if one breaks they can be changed out in about five minutes.

A Custom Designed Solution

On one job, United Gear & Assembly uses double chisel pins on a special face driver designed for them by Neidlein. "This is a new application for a current job that we had because we exceeded the recommended 3-to-1 ratio of the drive pins," Mallek explains. "The part is four times the diameter of the drive, so they designed a special face driver with custom double chisel pins that actually have two teeth on each side. The face driver only holds three pins but since there are two cutting edges or two chisels on each pin, it provides the equivalent of six pins because there are six gripping edges.

"We ran a test and gave all the paperwork to them," Mallek continues. "Neidlein produced the driver and told us what we can and cannot do with it. It's worked perfectly and does a good job. There are two part numbers that we are running on this driver, but they are members of the same family of parts."

The face drivers are used for about 10 percent of their gear work and for almost 100 percent of their shaft work.

Weighing the Benefits

"Our business is growing tremendously," Mallek observes. "The face drivers are one more tool we have to meet

this growing demand and expand our horizons. Right now we are operating three machines with face drivers. The majority of the material that we run on the face drivers falls into the 1-1/4" to 2-1/2" range. A major benefit to us is the ease of changing from one part to another."

Many part orders are recurring and the company is typically running lot sizes from 100–1,800 pieces.

"Our overall scrap rate did go down," Mallek observes. "We had issues with T.I.R. on the former process, but by going the way we did, we've eliminated that problem. Also, throughput is better. But, the biggest benefit we get from the Neidlein face drivers is in our changeover, which has been reduced dramatically."

The machines are run for three shifts around the clock for six days of the week. The changeovers vary daily depending on the needs of the customer. It could be one changeover in a 24-hour period, one every three days or two in a day. But no matter when the changeover may be, United Gear & Assembly was able to reduce its changeover time from two hours to about 15 minutes in many cases. ■

For more information:

LMC Workholding
P.O. Box 7006
Logansport, IN 46947-7006
Phone: (574) 735-0225
Fax: (574) 722-6559
E-mail: info@logan-mmk.com
Internet: www.logan-mmk.com

United Gear & Assembly, Inc.
1700 Livingstone Rd.
Hudson, WI 54016
Phone: (715) 386-5867
Fax: (715) 386-6473
E-mail: customerservice@ugaco.com
Website: www.ugaco.com