

Gears of Gold

Gear buyers don't usually ask about karats, but the team at SKF's Industrial Transmission Division thought a new approach would add luster to their concept gearbox.

The 18k Golden Gearbox from SKF is a conceptual project designed to demonstrate the company's competence in the industrial transmission market. SKF is not actually in the gearbox market, but the company created a prototype that's a 250 mm size gearbox with the power of a 280 mm gearbox and a service life of more than 50,000 hours.

This gearbox is just a showpiece, but the bearings, oil seals, engineering and monitoring systems are for sale. Sandro Chervatin, an engineer at SKF's Industrial Transmission Segment, explains the connection between the 18k and the marketing of its components and services: "Compactness is often a target for standard catalogue gearboxes. It leads to decreased manufacturing costs, which is an advantage from the viewpoint of the gearbox manufacturer. It also allows a higher power output in a smaller space," he says.

To calculate the power rating, a stressing load cycle was created with start-ups every 60 seconds and a life requirement of 50 hours. The resulting equivalent power rating is approximately 70 hp with a service factor of about two due to the stressing conditions. Therefore, the gearbox's official power rating stands at 150 hp.

The extra long life span is due to several components of the interior design, including the new nitrilic compound used in the lubricant, which was specially created for the 18k.

The gearbox is typical of one that might be used in steel mills or cranes or in the pulp and paper industries. The 18k weighs 15–20 percent less than comparable gearboxes of the same size with 12–25 percent less volume, according to Chervatin. The gearbox is also engineered for zero unplanned downtime during its service life because of its monitoring system.

All of the internal gears have been completely re-engineered. The Centro Ricerche FIAT, a partner in the gear optimization process located in Turina, Italy, applied an automotive approach to

Welcome to Revolutions, the column that brings you the latest, most up-to-date and easy-to-read information about the people and technology of the gear industry. Revolutions welcomes your submissions. Please send them to Gear Technology, P.O. Box 1426, Elk Grove Village, IL 60009, fax (847) 437-6618 or send an e-mail message to hazelton@geartechnology.com.

the gear design starting from the SKF inputs on actual shaft deflections.

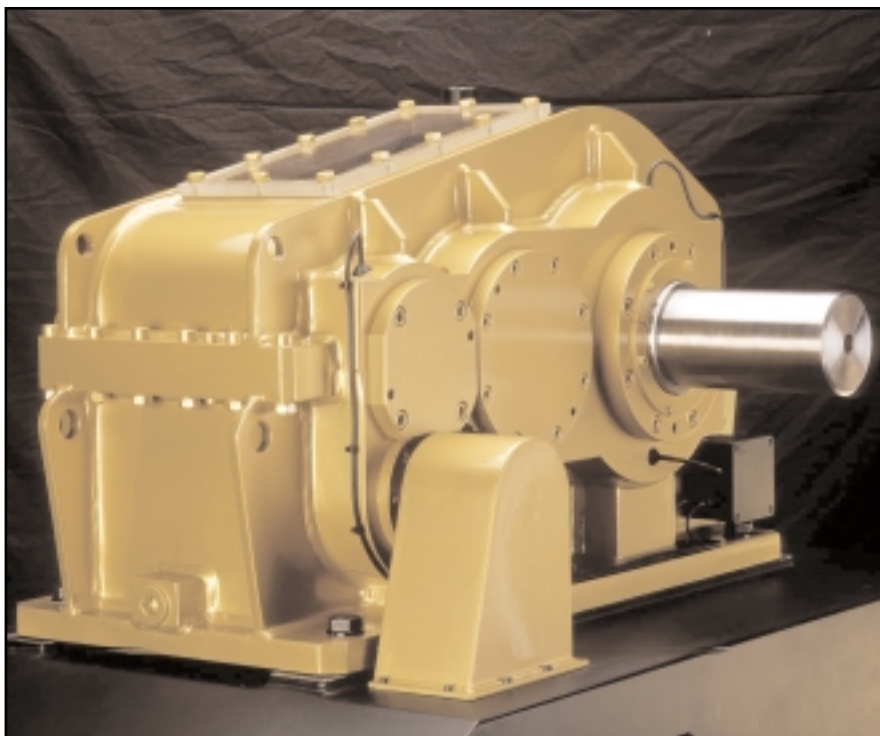
The redesigning extends even into the oil, which has been reformulated to match the gearbox requirements.

SKF worked in cooperation with Exxon Mobil to develop the latest mix of the oil. The joint effort set the criteria for an optimized oil selection that considered all the possible side effects for lubricating conditions.

With its mechatronic sensors, this product can provide a complete overview of the gearbox running system every hour of every day. Six online performance sensors do this by reporting constantly on speed, acceleration, torque, axial movement, temperature, humidity and lubrication conditions.

SKF was able to use in-house expertise in creating the 18k. The computer calculation system BEAST and Orpheus, the company's simulation system, both were instrumental in projecting the gearbox's capabilities.

The design includes nine of the company's premier bearings, including four Explorer spherical roller bearings, three Explorer cylindrical roller bearings, and two Explorer angular contact ball bearings. Other components include new



A gleaming gearbox from SKF, Exxon and Fiat.

standard roller shaft seals, five accelerometers, two position sensors, a temperature sensor, a torque sensor and a speed sensor.

The exterior is an SKF original as well. Chervatin explains, though, that it's just paint, not actual gold: "SKF is a profitable company today, but we still don't think of using real gold to build products."

For more information:
SKF Industrial Transmission Segment
P.O. Box 332
1510 Gehman Rd.
Kulpsville, PA 19443
Phone: (215) 513-4471
E-mail: Sandro.Chervatin@skf.com

Process Equipment's Virtual ND430

In early December, Brian Slone of Process Equipment Co. loaded a 3,500-pound gear inspection machine into his car for an out-of-state sales trip. The machine didn't weigh down his trunk, though; his tires didn't scrape the tops of his wheel wells.

Slone didn't even put the machine in his trunk; he didn't need that much space. He just tossed it onto his passenger seat.

All this easy loading and storage was possible because of virtuality.

On Slone's passenger seat was his laptop computer. At the potential customer's plant, Slone would use his laptop to connect to the Internet for viewing access to an ND430 Next Dimension® gear measurement system, set up in Process Equipment's plant in Tipp City, Ohio.

With connection and access, Slone would be ready for the gear inspection machine to be put through its paces for the customer in a virtual demo.

"It's like taking a 3,500-pound machine in the trunk of your car," says Slone, business unit manager for Process Equipment's metrology systems division, which includes gear inspection machines.

The virtual demo is Process Equipment's new means for promoting the ND430 system.

With one of the customer's personal

NEW! NOW YOU HAVE ANOTHER CHOICE...

and it's made in AMERICA!



A/W Systems Co. announces that it is now a manufacturing source of spiral gear roughing and finishing cutters and bodies.

We also can manufacture new spiral cutter bodies in diameters of 5" through 12" at present.

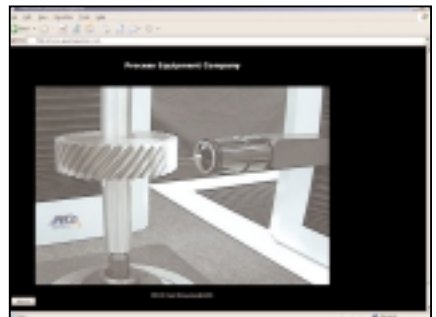
A/W can also supply roughing and finishing cutters for most 5"-12" diameter bodies.

Whether it's service or manufacturing, consider us as an alternative source for cutters and bodies. You'll be in for a pleasant surprise.

NEW! Hob and Shaper Cutter Resharpener is now available at A/W Systems Company



Royal Oak, Michigan 48067
 Tel: (248) 544-3852 • Fax: (248) 544-3922



Through the Internet, Process Equipment Co. can provide a virtual demo to a potential customer in another state of an ND430 gear measurement system in Ohio. And the possible reach of virtual demos? "Anywhere in the world," says Process Equipment's Brian Slone.

computers, a salesman goes to his division's website and uses a password-protected system to connect to a live Web camera in the division's metrology lab. He also boots up the ND430 gear application software on his own laptop.

The salesman then pulls up ND430 command screens on his laptop so the customer can see how data is entered and inspection routines are run. With his own computer, the customer can also see the inspection machine run the routines.

The salesman isn't actually operating the gear inspection machine, though. His command screens are exactly like the machine's, but they're stand-ins. While he enters data and runs routines, a lab technician in Tipp City mirrors the salesman, entering the same data, running the same routines on the screens that actually control the ND430.

"He's a virtual operator," Slone says of the salesman.

The demo allows the customer to see setup and inspection of his own gears or Process Equipment's sample gears. For example, he can see an inspection probe's calibration procedure, can see the steps and motions the machine goes through. And he can see the ND430 inspect index, profile and helix (lead).

A live camera lets customers see what the inspection probe is doing better than a static photo does.

"It just gives them a better understanding of how our system operates," Slone says. "Seeing the machine in motion answers questions that are difficult to answer over the phone or with a brochure."

If Process Equipment is measuring the customer's gear, the lab technician can e-mail the inspection results to the customer during the demo. If Process Equipment is measuring its own gear, then the salesman can pull up previously generated results on his laptop to show to the customer and can tell the customer what steps to take to analyze the data.

Besides demonstration, Process Equipment can also place tooling right

in front of the camera, so the remote customer can see different probe configurations.

But the customer needs to have a fast Internet connection, like a T1 line. Slone says a slow connection creates a problem: "The picture can be a little choppy."

Process Equipment started offering the demo in the summer of '03 and featured it in the fall at Gear Expo. The company has given several virtual demos, mostly to potential customers in the United States, but also to foreign customers. Process Equipment uses virtual demos only for the ND430.

With gear manufacturers scattered around the world, the virtual demo may someday establish itself alongside traditional means of demonstration: the trade show and the visit to the manufacturer's plant.

In line with that idea, Process Equipment still encourages potential


ND430 customers to visit its plant, but it understands that many potential customers have tightened their travel budgets because of the economic slowdown.


Slone himself describes the virtual demos as "more of a complement" to plant visits than a substitute for them.

Still, he sees the Internet as offering additional possibilities for communicating with customers—"This is just the beginning." ⚙


For more information:
Process Equipment Co.
4191 U.S. Route 40
Tipp City, OH 45371
Phone: (937) 667-7105
Fax: (937) 667-2591
E-mail: pdgsales@processeq.com
Web: www.gearinspection.com

The finest quality
TRU-VOLUTE
 A Leader in the Gear Tool Business for over 50 Years.







Master Gears




HOB Resharpener Service




Shaper Cutters



Gear Rolling Tester



HOBs



CNC HOB Sharpening Machine

Ultra Precise Hobs
 Accuracy Class: AAA, AA, A
 Materials: Carbide/Bridge/HSS
 Technology: Dry/High Speed/Hard Hobbing
 Range: 10~500 Diametral Pitch

STOCK AVAILABLE

**RUSSELL,
 HOLBROOK &
 HENDERSON, INC.**

17-17 Route 208 North, Fair Lawn, New Jersey 07410
 Telephone: 201-796-5445 Fax: 201-796-5664
A MEMBER OF OGASAWARA GROUP

Visit our website at: <http://www.tru-volute.com>