

GLOBAL SOLUTIONS

GLEASON CORPORATION • KEEPING THE WORLD IN MOTION™ • GEAR EXPO & EMO SHOW ISSUE • VOL. 1, NO. 2

WORLD SPREADS

about MITEC's quiet gears

Haven't heard of MITEC yet? You soon will. Otis, Thyssen, Schindler and O & K swear by MITEC's hypoid gear sets, and equip their angular elevator and escalator drives with them. Ford, GM, BMW, Audi, Volkswagen and Mazda are just a few of the automotive customers that use MITEC bevel gear sets to minimize noise and vibration in their power transmissions and 4-wheel and all-wheel drives. So popular, in fact, have the Eisenach, Germany based company's gears become that over 90% of their product goes to customers outside Germany.

Phoenix rising. The MITEC success story is even more remarkable when you consider that the company, founded in 1991 in Eisenach, East Germany, lost its government-owned factory after the East/West unification. Founder Dr. Michael Militzer salvaged what he could, then put his faith in new techniques, and technology, such as Gleason Phoenix® bevel gear grinders.

"MITEC's decision to buy its first

"This continued investment in the latest Gleason technology has meshed nicely with the demand for quieter, more dependable gear sets."

Gleason Phoenix® 400G bevel gear grinder set the company on its current course of leading the industry in the production of strictly finish ground gears," says Dr. Hermann Stadtfeld, Dr. Militzer's partner in Bevel Gear Industries (BGI), a new company for the optimization of bevel gear manufacturing. "This continued investment in the latest Gleason

technology – soft cutting, hard finishing and testing – has meshed nicely with the global marketplace's increasing demand for quieter, more dependable bevel gear sets that can be manufactured faster and shipped with a fraction of the logistics."

Hard finishing made easy, efficient. MITEC today is one of the world's very few gear manufacturers that has mastered the art of finish grinding quiet automotive axle drive units in large, economical volumes.



Finish grinding of hypoid bevel gear sets on these Gleason Phoenix® 200G CNC Grinders leads to quieter gears and a fraction of the logistics required by lapping.

Quiet...

Quieter...

Front Wheel
Drive Trans
Axle Drive set

Rear Axle Drive
Hypoid Set

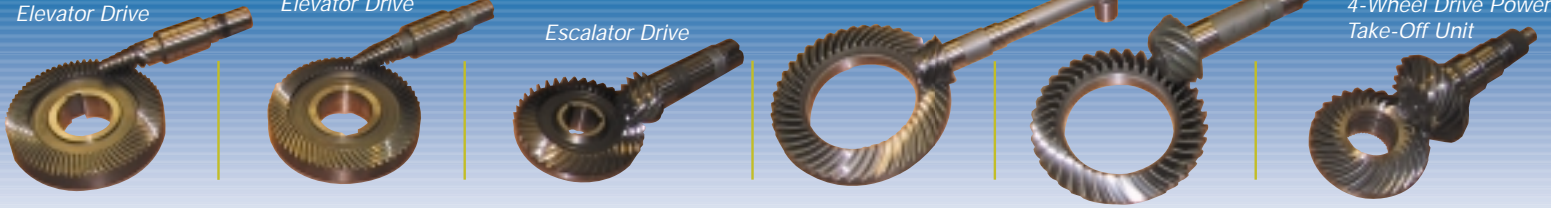
Quietest!

Elevator Drive

Elevator Drive

Escalator Drive

4-Wheel Drive Power
Take-Off Unit



When compared to the more common process of lapping gears after heat treat, finish grinding the MITEC way has many end user advantages. For example, lapped gear sets (pinion and gear) must be built as a pair, since the lapping process uses pinion and gear as tools to hard finish each other. As a result, lapped pinion and gears aren't interchangeable and must always be handled, shipped and stored as a pair, adding significantly to logistical costs and complexity. MITEC, however, has eliminated the logistics of lapping by instead using nine Gleason Phoenix® 200G CNC Hypoid Grinders to produce a highly accurate flank surface with a precise, pre-determined topography. The process allows the consistent, repeatable production of completely identical pinions and gears.

“MITEC will ship the world's first ground automotive gears that don't require individual shimming in 2003,” says Dr. Stadtfeld. “This is made possible because of the precision of the Gleason grinders. As a result, gear sets can be manufactured separately at different times, in optimum quantities, and shipped in separate bins.”

In addition MITEC uses a Gleason Phoenix® 500HCT CNC Gear Tester to conduct advanced inspection including single flank testing, structure-borne noise measurement, and automatic tooth contact pattern recognition. This testing technology has helped MITEC develop the properties and guidelines required to produce gear sets that are among the quietest in the world.

Power Cutting®, around the clock.

MITEC has also been an innovator in soft cutting, since it was the first company in Europe to put Gleason Phoenix® CNC 175HC Power Cutting® machines into full production. Since 1998, these machines

have run full out in a three shift, five day environment, with uptimes higher than 90%. They replaced older mechanical Gleason Gear Generators.


The new 175HCs are equipped to use the latest Gleason® cutting tools made from advanced new carbide materials and featuring advanced coatings. Stock removal rates are 5-8 times faster than the older Gleason machines, hence the term POWER CUTTING®.



Gleason Phoenix® 175HC Power Cutting® Bevel Gear Cutting Machine performs soft cutting operations dry and with production rates many times faster than conventional methods.

In addition to higher stock removal rates, the Phoenix® 175HC machines are equipped to cut dry. Dramatic reductions in cutting times, and improved surface finish and gear geometry quality are all realized, as compared to conventional methods.

Big in Balancers. MITEC Automotive AG, combined with its high tech subsidiary MITEC engine.tec gmbh are also the world leader in the production of engine balancer systems. Engine balancers are used to make smaller engines feel as smooth as larger engines. The engine balancer rotates with twice the engine rpm, making it the fastest rotating unit in the engine and canceling out other rotating forces. A typical MITEC engine balancer requires three cylindrical gears, and one on the crankshaft – many of which are manufactured by MITEC using Gleason and Gleason-Pfauter machines.

“MITEC’s remarkable resurgence, and their vision for the future, are strongly linked to a commitment to investing in only the best, most productive gear manufacturing technologies,” concludes Dr. Stadtfeld. “The market for their quiet ground bevel gears will likely double by 2005. They are hard at work today with Gleason planning machinery, tools and logistics for an expanded MITEC bevel gear manufacturing operation.” 



MITEC’s engine balancer systems use cylindrical gears produced on Gleason and Gleason-Pfauter gear cutting machines.

MITEC founder Dr. Michael Miltzer and Dr. Hermann Stadtfeld established in the fall of 2001 BGI Automotive GmbH & Co. KG to focus on bevel gear research, development and optimization. BGI works closely with two nearby universities, including Technical University

Illmenau. The company has already embarked on R & D projects with BMW to optimize gear efficiency, and MAGNA STEYR on a new generation of four wheel drive systems, in addition to its on-going support of MITEC’s bevel gear manufacturing operations.



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