

ONTARIO DRIVE & GEAR:

THE POWER OF PRECISION

When Ontario Drive & Gear says their gears, drives and vehicles can go anywhere, they mean it. Manufacturing Digital learns more

Written by Anne-Frances Hutchinson / Produced by Brad Evelyn

Joerg Stieber can tell you pretty much anything you'd want to know about altitude. As a lifelong aviator and current team leader of the 2010 Canadian Soaring Team, he'll be happy to share his experiences reaching new heights with sailplanes and motorless flight.

As President of Ontario Drive & Gear Limited (ODG), he'll delight in describing how his firm's precision gear technology and state-of-the-art utility vehicle design helped set not only a new world altitude record for land vehicles, but also the standard for industrial innovation in drives, transmissions and robotic vehicle platforms.

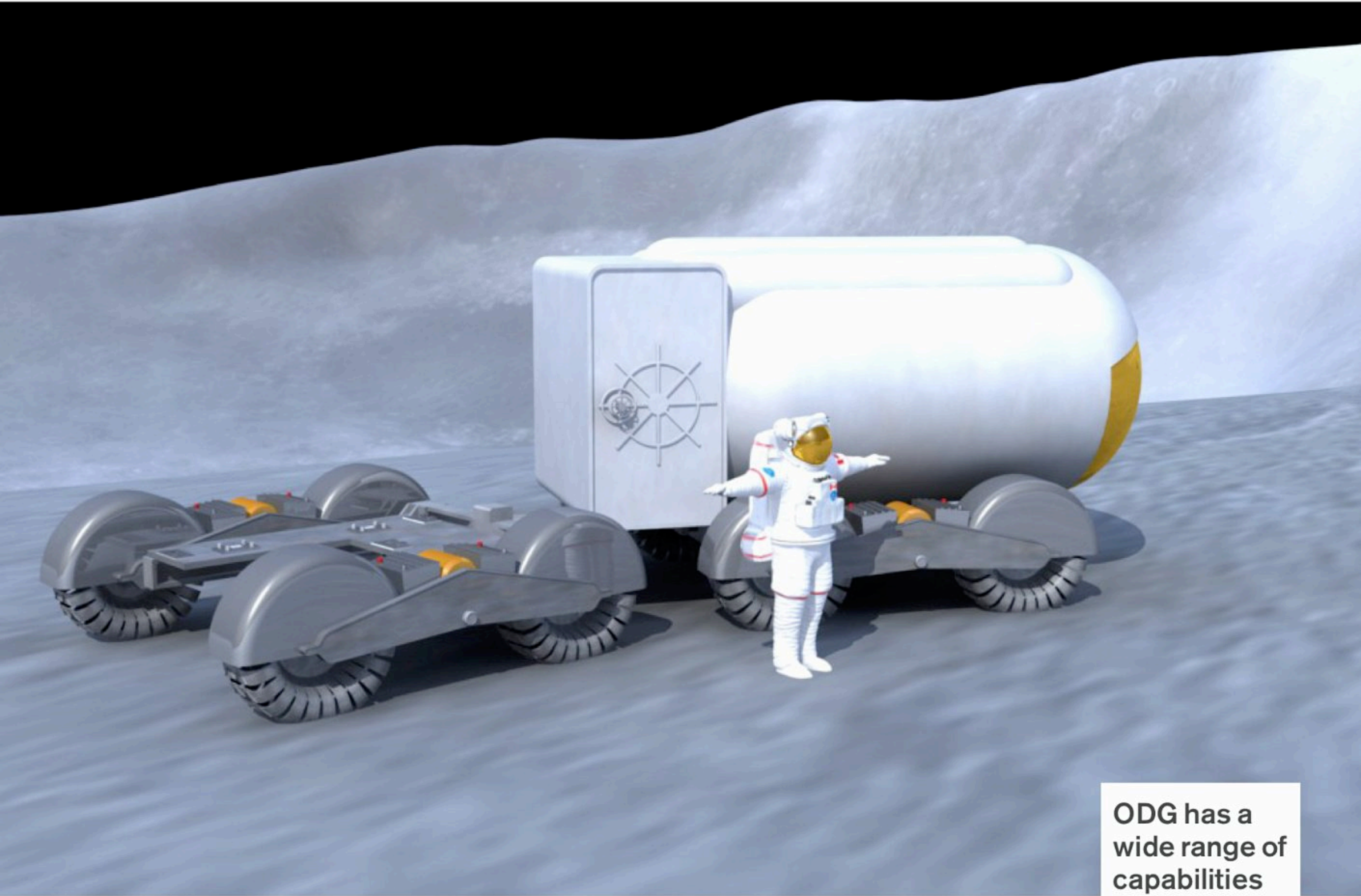
GETTING IN GEAR

Founded in 1962 as a power transmission and gear manufacturer supplying the North American markets, ODG, the Canadian-based subsidiary of

German gear manufacturer Heynau Getriebebau, soon entered the vehicle market with the development of a transmission for a 6-wheel drive amphibious ATV. Five years later, ODG brought its flagship utility terrain vehicle to market. The firm split the business into two units: an industrial division to support the gear manufacturing business, and the other to expand the vehicle line.

On the gear side, maintaining a sharp focus on precision gear-making meant steering away from the automotive industry and into creating novel custom-built gears, gearboxes and power transmissions for electric vehicles and a host of industrial applications – including extremely small gears used for satellite positioning.

The 2008 purchase of a \$1.5 million CNC gear grinder propelled ODG into new territory: the ability to develop and manufacture “quiet”



ODG has a wide range of capabilities

gears. The CNC grinder enables freshly milled and hardened gears to be ground to extremely high degrees of precision and accuracy, which in turn creates a less noisy gear – a boon for electrical drive production.

“You see more and more of these electrical drive systems in new technologies that are coming up: hybrid buses, hybrid cars, electric vehicles, and so on,” Stieber explains. “In an electric vehicle, the gear noise is critical because there’s no engine to drown out the noise. For the new forward-looking technologies, quiet gears are very important.” Quieter gears are also more efficient, enabling better transmission performance.

“Industries are changing, and the traditional industries are to some degree declining, most of all the automotive industry. Fortunately, we were never really centered on that,” Stieber notes,

citing emerging markets such as wind turbine manufacturing, energy saving technology, and electrical and hybrid engines. Quiet gears, he says, “lend themselves to electric drives where you need efficiencies to improve battery life.”

MOVING RIGHT ALONG

ODG’s 1967 foray into the utility terrain vehicle market with the all-season amphibious Argo eventually positioned ODG as the world leader in amphibious UTVs. Although the market-leading Argo is classed as a recreational vehicle, its ability to traverse virtually any kind of terrain has been embraced on a global level by first responders, law enforcement and utility companies.

The newest Argo model boasts a new transmission design and ODG quiet gears. Subtle chassis modifications make the Argo more

KAPP AND NILES

Kapp and Niles focus solely on gear finishing machinery and advancing the grinding processes. Our customers deliver complete gear boxes and individual gears to transportation, wind turbine, aerospace, construction, mining, marine and mill industries. Gear box designs demand ever-increasing performance for low vibration and high load/ speed performance. These demands are met with innovative machine designs such as the KAPP KX500 FLEX and the NILES ZP10B machines. Increased productivity, reduced setup time, and improved process safety lower total costs while meeting higher demands. Kapp Technologies serves the North American customers with service, parts, and technology support for the KAPP Group.



**ODG
makes
'quiet'
gears**

comfortable to drive for first-timers, and a more efficient transmission brings more power to the wheels, making it easier to haul heavy loads.

"That's a major new development on the transmission side and the vehicle side of the market as well," says Stieber. "The market acceptance is really great.

We introduced it in August, and ever since we've been booked to capacity to make this particular vehicle." ODG's commercial amphibious UTV, the Centaur, is designed for tough industrial jobs in harsh environments, from forestry to resource exploration and defense.

LEAN AND GREEN

Lean management principles and tools have optimized efficiencies at ODG for decades. In addition to their existing MIS system, ODG recently added an inventory management

system for small parts and consumables. The scale-based system allows suppliers to track their inventory online, eliminating the need for purchase orders.

"We still have a purchasing department," Stieber says, "but the time freed up in the purchasing department is put into use for our supplier monitoring system. Now we are talking actively to our suppliers, rating them, and giving them feedback about how we perceive them and how they are performing for us."

The company's Kitchener manufacturing



ODG specializes in many vehicles

facility is designed to control the flow of waste materials and has specially created containment areas to store its waste oil. According to the company website, ODG has nearly eliminated chemical discharges, and “has zero external roof exhaust as a result of its green and lean manufacturing process.”

ODG also recently earned Environmental Certification ISO 14000, one of the highest international standards a manufacturing facility can achieve for environmental management. ODG’s energy saving initiatives include adopting oil-free gear cutting or “dry hobbing.” In addition to being the market’s most environmentally friendly gear manufacturing technology, the process enables ODG to cut gears 30 percent faster, significantly optimizing productivity.

GEARS IN SPACE

When Manufacturing Digital last spoke to ODG in June of 2008, the firm was involved in the nascent stages of a lunar rover study for the Canadian Space Agency. The study stage has been completed, and ODG is one of several Canadian manufacturers uniting to bring their technologies to space exploration.

“We are part of a team. We’re bringing our drive technology to the table so we can make basically whole drive systems, wheels, axles, drive motors, and transmissions and so forth. Other people are bringing electronic components, the controllers, battery technology, communications technology, and so on,” Stieber says.

Decades of experience in developing vehicles that can literally go anywhere is a perfect fit for the



The Argo handles varied terrains

CSA's objectives. "Our expertise in making drive systems work and our CNC grinding technology certainly helps in making small transmissions and very precise transmissions, and making them effective," Stieber says. "Lunar vehicles have to be very terrain capable and able to operate in a totally extreme environment."

The concept prototypes are garnering attention in other industries, says Stieber, particularly as platforms for robotic vehicles that traverse less accessible and potentially dangerous landscapes. "We've already been approached by people who are in the resources business for these vehicles to use as platforms," he notes. "We're learning as we go and we're developing new technologies as we go, and part of that new technology goes into our everyday vehicles." ■

FACTS AT A GLANCE

ODG

COMPANY NAME: Ontario Drive & Gear

NO. OF SITES: 1 main site

ESTABLISHED: 1962

EMPLOYEES: 180

REVENUE: CAN\$40-50million

www.odg.com