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2011 aerial view of Ontario Drive & Gear buildings located in New Hamburg, Ontario, Canada

#### Manufacturing Operations

- 121,900 sq feet
  230 skilled employees
  Revenue: \$56 M (2012)



# Chairman's Message

As we are celebrating ODG's 50 year history, I feel Atruly fortunate to have had the opportunity to be at the helm of this unique company for over half of this time. From small beginnings ODG has steadily grown, providing an increasing number of jobs and making its contribution to a vibrant economy in the region, the province and the nation.

The most significant contributors to our success have been and continue to be the ODG people. It has been a joy and a privilege to work with such a talented and highly motivated team. I am proud that we are able

to provide stable, long-term employment – a rare quality these days. Many of our employees have been part of the ODG family for over 20, some even for over 35 years.

The ARGO, still our mainstay product, was introduced in 1967. Even after such a long involvement with this extraordinary machine, the ARGO still holds its magic for me. Over the years I have met many customers who are equally extraordinary. One of them traveled in his ARGO for 1000 miles north on the frozen Hudson Bay. Others, who have lost their mobility due to illness or accident, can still enjoy their outdoors pursuits thanks to the ARGO's go anywhere capability.



In terms of units produced, the ARGO is the world's most successful amphibious vehicle. After 45 years of continuous improvement and refinement, today's ARGO and its big brother, the CENTAUR, are better than ever.

Our expertise in building vehicles for extreme conditions has led to an invitation by the Canadian Space Agency and NASA to participate in the development of lunar rovers for future missions to explore the galaxy.

Over the past 12 years, by investing in the latest gear manufacturing technologies combined with in-depth training, we have developed ODG's Gear Division into

a world class gear and transmission facility. We offer our customers the benefits of an efficient production and rapid product development combined with a rigorous focus on quality.

ODG has always taken care to minimize its environmental footprint. This is reflected in our operations which are certified under the environmental standard ISO 14000 and in our products.

After 26 exciting years of running this company, I feel confident to hand over the reins to the next generation of managers to lead ODG into a bright future with renewed energy.

Joerg Stieber

# Corporate Values



Honesty, mutual respect and commitment are the pillars upon which our business is based. Our pursuit of excellence is to be evident in our actions, our products and our services. Customer satisfaction is the common goal of all our employees. We are committed to the continuous improvement of our products and our services. We believe in the dignity, worth and fair treatment of our employees. We respect our employees as the most important contributors to our success and we foster their personal development through education and promotions from within. We are committed to our environmental and social responsibilities.

# Environmental Commitment



Ontario Drive & Gear Limited is extremely proud of its commitment to minimizing its environmental footprint. We are continually exploring new opportunities

that will improve our products and performance, reduce our environmental impact and benefit our local communities.

To achieve these goals, we comply with all federal, provincial and municipal environmental laws. To reduce waste and emissions, we utilize material substitution, source reduction and recycling technologies in all of our manufacturing departments and offices. We use energy efficiently and effectively. A prime example of one of our "green" initiatives was the introduction of dry hobbing technology within our gear production facilities, which

eliminated the need for oil.

At ODG, we believe strongly in our environmental responsibilities. Towards this end we take careful consideration of all policies, practices and even the suppliers we choose to partner with. Our employees are firmly committed to our environmental objectives and, as always, are a key component to our success.





### Where it All Began



1962

In the early sixties the Soviet Union embarked on an increasingly aggressive course, culminating in

the Cuban Missile Crisis in 1962. People in Europe were afraid that the Soviets would try to take over the rest of continental Europe, or at least all of Germany, and another war would ensue. By that time Ortwin Stieber's company *Heynau Antriebtechnik*, which he had founded ten years earlier in Munich, West Germany, was growing rapidly, manufacturing a unique line of transmissions. Ontario Drive & Gear Limited was founded in Kitchener, Ontario. The plant was located on Fairway Road.

In light of the global political situation, Ortwin decided it was prudent to establish a base in a safe country such

as Canada. He followed an invitation of the Kitchener Chamber of Commerce to visit the area. He liked what he saw and in 1962 purchased an industrial property on Fairway Road in Kitchener and founded a small gear manufacturing company. He named it Ontario Drive & Gear Limited (ODG), so back in Germany, he would remember where the company was located and what it produced.

# Vehicle Development



# 1967

In its early years, the company struggled due to lack of direction and expertise as Ortwin Stieber

found it difficult to exercise effective control and provide proper guidance from the other side of the Atlantic. The means of communications in these days were airmail letter and telex. Overseas telephone calls cost a fortune, were difficult to set up and had terrible sound quality.

The company had landed a contract to manufacture steering

The original ARGO featured a distinctive orange fiberglass body and space for two passengers and gear.

transmissions for small skid steer amphibious vehicles made in Ontario. When this customer failed, ODG had a

number of transmissions ready to ship and no customer. Someone had the bright idea to develop a new and better "swamp buggy" since the transmission, which is the heart of such a vehicle, was already in-house. Thus the ARGO was born! It featured a fully sealed lower body, was powered by a 24 hp, 399 cc 2-cycle, 2-cylinder Kohler snowmobile engine and rode on six balloon tires.

# The Amphibious ARGO

The ARGO was very light and had soft, low pressure tires. In fact, it could drive over a person without causing injury. With its 6-wheel drive, tank-like steering and the ability to float in water it could go almost anywhere. With snowmobiles being sold in large numbers, it was expected that an all season, all terrain vehicle would become even more popular. In the late sixties and early seventies there were about 50 manufacturers in Ontario and the northern United States building similar vehicles.



1968: Seated in the ARGO is Ortwin Stieber, the founder of ODG.



#### ARGO Memorabilia

(left) 1969 *Everything's Archie* Comic Book featuring an ARGO on the front cover! (right) ARGO toy model.



# Where does the name ARGO originate from?



Engraving from 1882 depicting the ancient Argonauts from Greek mythology.

O ne of many stories in Greek mythology is the tale of Jason and the Argonauts. Jason was a prince raised by a Centaur who lived in ancient times, before the Trojan war. Jason sailed off in a ship named Argo to find the golden fleece which would allow him to claim his throne. The heroes who sailed with him and mastered many challenges and adventures were called the Argonauts.

Just like the ship Argo, that took Jason to his destination against

incredible odds, today's ARGO will take the modern Argonauts to their destinations through swamps, across lakes and over snow and ice.

ODG has maintained the tradition to name its products according to Greek mythology. Examples are: Centaur, the ARGO's big brother; Taurus, a 3-wheel ATV; and most recently, Artemis, a robotic concept rover for exploring the Moon and Mars.

# The 1970's: The Need for Expansion



s ODG went into full scale industrial production, a larger plant Awas needed to accommodate assembly lines and large vacuum molding machines to form the ARGO body. The company purchased a ten acre property in New Hamburg, Ontario, which offered ample room for future expansion, and built a new plant. Today, ODG is one of the largest manufacturers in the Wilmot Township and proudly reflects on fifty years of excellent relations within the community.

#### **Canadian Firm Expects to Turn Out 40 Argo Units Daily**

Ontario Drive & Gear Ltd. located at Kitchener. type of terrain. As the vehicle is amphibious it might be Ontario, Canada, as manufacturers of the Argo All Terrain Vehicle have not spared any effort in research and development to be in a position to introduce the 1970 Argo 6 wheel and Argo 8 wheel model.

With two manufacturing and assembly plants in Kitchener and New Hamburg, Ontario, they expect to turn out in excess of 40 Argos daily.

The Argo 6 and 8 are of extremely sturdy construction powered by a 26 horse power, 2 cylinder motor, spacious enough to accommodate 5 to 7 adults depending on the model. The extra power and heavy body construction of 5/16" ABS Cycolac plastic supported by a solid steel frame and axles assure a smooth and safe ride over any

mentioned that the water speed is 2-3 mph, however a provision for an outboard motor is molded into the rear of the body, thusly making it possible to increase water speed to 8 mph.

The Argo should be an ideal vehicle for family fun. Whereas the Argo 8 would be on top of this as a utility vehicle to be used by gas and electric companies, logging camps, game wardens, pipe line crews, telephone companies and many more.

Ontario Drive and Gear Ltd. have their sights set on making the All Terrain Vehicle a universal item for family entertainment and an economical, utility and work vehicle.





An ARGO Shark snowmobile along with ARGO vehicles at the 1975 Ontario Ploughing Match. This annual event takes place in different venues across Ontario and ODG continues to have a strong presence.



ODG switched from 2-cycle engines to 4-cycle engines. This vehicle is powered by a 16 hp Tecumseh, 4-cycle engine single cylinder and and its body is made of high density polyethylene (HDPE).



The gentleman driving the ARGO is Bob Archer, dressed up in Middle Eastern fashion. Since this early venture, ARGO has been continuously represented in this part of the world.



The Hover ARGO is an example of ARGO engineers' ingenuity in finding solutions for special challenges. In this case, the Hover ARGO was the only vehicle that was able to manoeuvre in a bauxite sludge pond.

### Increased Production





In 1972, ODG introduced the "stretched" version of the ARGO. With the 8-wheeler, ODG was able to offer the largest cargo capacity on the market. Its body was made of high impact ABS plastic and was powered by a 26 hp, 440cc, 2-cycle, 2-cylinder Kohler engine. In order to produce ARGOs on an industrial scale, ODG purchased a state-of-the-art vacuum forming machine to form large quantities of vehicle bodies. Later, in 1975 ODG would switch to high density polyethylene (HDPE) featuring greater impact resistance.

The demand for more power resulted in the launch of the sportier, tougher and faster ARGO Super Sport. It was powered by a 42 hp, 440 cc, 2-cycle, 2-cylinder Kioritz engine.



Back in the seventies when speed was the rage, ARGO had its own Racing Team with special ARGOs powered by two-cycle engines. The team brought home trophies from races all over the United States and Canada.



Snow tracks greatly improved the ARGO's traction and performance in deep snow. Instead of relying on a snowmobile, two ARGO enthusiasts enjoy the pristine beauty of the Swiss Alps.



The race is on...



When in doubt, the tires go up! Thankfully no one was hurt in this incident. Notice that all race vehicles had roll-bars.

### New Ideas Under New Leadership



In 1975 Helmut Heine became General Manager of the company. He implemented strict financial discipline as well as a management structure with clear lines of accountability.

Helmut also initiated monthly RDI (research, development and innovation) meetings. The idea was to focus on product development by bringing product design, production, sales and general management together to discuss how to improve the ARGO. A major new development was the implementation of a 4-cycle engine to power the ARGO. Although this single cylinder Tecumseh engine was no match for the powerful and high revving 2-cycle racing engines, its cleaner exhaust, lower noise, better reliability and torque soon won over more and more customers as the ARGO matured from a racing machine and "swamp buggy" to a serious workhorse. By the end of the 70s all ARGOs were powered by 4-cycle engines.



An RDI meeting involving (left to right): Frank Koreck (Design Engineer), Ray Reinhardt (Production), Bob Archer (Sales), Helmut Heine (General Manager) and Bruno Zyma (Sasquatch Development).



Over the years, ODG has always encouraged thinking outside of the box, and coming up with new products to sustain growth.



The ARGO Shark Snowmobile featured a 400 cc, 2-cycle, 2-cylinder, 43 hp Kioritz engine and a fibreglass body. A 440cc, 48 hp version was also available. Due to well-established competition, ODG decided to discontinue this product after a few years.



ARGO engineers had a long term vision. Will the ARGO ever make it to the moon? At that time nobody would have ever imagined that within 50 years ODG products could one day be part of a space mission.

#### ARGO in the News



Ontario Drive and Gear Ltd., of New Hamburg attended the Manufacturing Opportunity Show. Pictured from left to right are: Raymond Smart, representative of Ontario Ministry of Industry and Trade, Hong Kong, Don Grant, Director, Central West Area, Ontario Ministry of Industry and Trade; and Robert Archer, Marketing Manager, Argo-Ontario Drive and Gear Ltd., New Hamburg.

#### Local firm studies alternatives

Ontario Drive and Gear Ltd. of New Hamburg was one of several manufacturers involved in a manufacturing opportunity show sponsored by the Ontario Ministry of Industry and Trade and the Regional Municipality of Waterloo at Bingeman Park in Kitchener May 1 and 2.

The show offered government and industry buyers the opportunity to encourage and support local industrial development by exhibiting products and parts which were currently imported but could be sourced domestically. Manufacturers attending the show examined the items to determine if they could be produced by their firms.

Over 50 public sector and manufacturing organizations exhibited imported products and parts with sales estimated \$30 million. Canadians import \$95 billion worth of manufactured goods but for every \$1 billion worth of goods made in Canada to replace imports, 16,000 jobs are created.

An example of one import that possibly could be manufactured in Canada is stop signs. Gun holsters, corn brooms, sports equipment and even wire for paper clips which is imported from France are all possibilities for Canadian manufacturers.

The show gave manufacturers a chance to meet a large number of buyers at one location and to attend seminars on joint ventures and licensing.

Designed to increase manufacturers' knowledge of opportunities of doing business with government and industry buyers, the show is the second in a series of five to be held across the province this year and next.

The first show was held in Ottawa in April. Others are scheduled for Chatham in June, Toronto in October, St. Catharines next February and Barrie in March.



#### Bay buggy

Hamilton Spectator, January 29, 1977 Picture by R. Michael Hanley

Is it a moonbuggy cruising the terrain of some strange, steaming, icy planet? No, it's Constable Ron Platt of the Hamilton harbor police in one of the force's amphibious vehicles used to patrol the Bay area in wintertime. The eight-wheeled wonder is equipped with oars since it is capable of taking to open water and then climbing back onto dry land again. The police use the vehicle to check the thickness of the ice on the Bay, a might chilly task these days.



ARGO for the physically challenged

Pictured is a specially modified 8x8 ARGO featuring a wheelchair ramp.

1977

In the 70's, ODG worked to expand its overseas markets with sales of approximately \$2 million. Internationally,



The driver in the left ARGO is Helmut Heine, General Manager. The driver in the right ARGO is Bob Archer, Sales Manager and VP of Sales Marketing. In the center of the photo is Ray Reinhardt, the first plant manager.

that was developed at this time was the Sasquatch MK II. Introduced in 1979, it was an early attempt to break into

the ARGO was well represented in recreational and commercial sectors. Crayford Special Equipment of the UK imported and modified the vehicles for the European commercial market. Special design modifications to the ARGO made it possible to mount Durlex, and other equipment which made the vehicle very versatile and attractive for prospectors to use in exploration. Another commercial product

the market for snow grooming equipment. It featured a 95 hp Ford turbo-charged diesel 4-cylinder motor and a body made of fibreglass and steel. Despite being an excellent vehicle, ODG could not compete with established competition and only five vehicles were sold. However, ODG never gave up and continued with its innovative spirit launching new and exciting vehicles.



1977: (left to right) Ray Reinhardt, Mahlon Horst and Stan Serwaczak. In the background is the prototype of the company's Sasquatch Development.



At the 1977 Transport Expo in France. Left: Bob Archer, sales manager of ODG. Right: David MacMullan, principle of our European distributor Crayford.



Special modifications made it possible to mount Durlex, and other equipment. Many add-on solutions for the defense, exploration and public sector followed.



In 1979, ODG introduced the Sasquatch MK II. After more than 40 years, there is still one vehicle in operation.

# 1980's

In the early eighties, a flood of Japanese three wheel ATVs, based on motorcycle components, appeared on the market.

Even though the ARGO's capabilities were superior than what any 3-wheeler could offer, the low price of these machines attracted many customers. ODG responded by developing a 3-wheeler of its own, the Taurus. The vehicle was designed and built to be a serious workhorse. It was powered by a large 650 cc The three-wheeled Taurus was an excellent product. In terms of safety features and rider comfort it was far superior to the competition.

industrial engine which delivered its power through a CVT (a novelty for 3-wheelers at the time) and

an agricultural grade, all gear transmission. It had more suspension travel than any other 3-wheeler on the market and a solid platform for work boots instead of foot pegs. Technically the Taurus was one of the best products ODG ever made. Unfortunately, within a year of its introduction, the sale of all 3-wheel ATVs was banned in the United States.



### ARGO Models in the 1980's



The need for greater durability and safety saw the introduction of the first ARGO 8 I/C (Industrial/Commercial) with hydraulic steering brakes. This model rapidly captured 60% of the market share. The ARGO 6 Twin was introduced in 1985. Powered by the Briggs & Stratton, 656 cc twin cylinder I/C engine, the 6 Twin replaced the ARGO 6 Heavy Duty. Following the success of this model, ODG introduced the ARGO 8 Twin as a smooth running successor to the ARGO 8 Heavy Duty.



The extensive redesign of the ARGO 8 I/C in 1987 made this vehicle the most popular model in the ARGO line-up. 1989 saw the end of a fifteen-year run as the last Tecumseh powered vehicle came off the assembly line. But with the end of that era, a new one began as ODG introduced the ARGO 6x6 and 8x8 Magnum. The 8x8 Magnum was a top-of-the-line model that featured new clutch components and a transmission ratio to respond to customer requests for higher land speed. The 6x6 Magnum followed with similar upgrades.



Joerg Stieber, the founder's son, took over the management of the company.

Before immigrating to



Joerg Stieber takes an ARGO out for a test drive.

the ARGO soon emerged as the world's most capable off-road vehicle.

ODG's management

Canada in 1983, Joerg, who has an engineering degree from the Technical University of Munich, worked in aircraft design in Germany. Under Joerg's leadership, ODG's management team focused on innovation and continuous product improvement to successfully compete against imported ATVs. By implementing on average 60 improvements every year and introducing a new model every two years,

made the strategic decision to revive the gear and transmission business which had been neglected in favour of the ARGO. During the 90s and through to the present time, both ARGO and the Gear Division have shown continued growth, helped by the development of overseas markets. ODG was well on its way to becoming the world leader in amphibious vehicles.



In the 80's, innovation and strong technical leadership resulted in the launch of new models that

provided more value, versatility and durability. The Magnum 8x8 and 6x6 continued to gain popularity. High commodity prices along with the boom of the oil and gas sector in Western Canada increased the demand for ARGOs. More exploration and surveying companies were relying on ARGOs for personnel and equipment transportation in soft or flooded terrains. During the 90's, demographics and the expansion of sales channels. Exposure in international trade shows created interest from overseas' customers in Europe, Asia, Africa and Oceania.

ARGO vehicle sales exper-

ienced significant growth

due to ongoing product

improvement,

favourable

A professional marketing strategy provided more exposure and helped to establish ARGO in key markets around the globe.



Bob Archer (left) and Joerg Stieber (right) at the Royal Smithfield show in London, U.K., with the company's newest product: the Taurus 3 Wheeler, 1985.



Explorer Fernand Trahan of Val d'Or, Quebec, travelled with an ARGO from James Bay to Ivujivik at the top of Hudson's Bay in the Winter of 1992. A trip impossible to accomplish with any other vehicle.



ARGO distributor, in western Canada, celebrating its 5000th ARGO. In the foreground is Doug Lambley. Behind Doug is Laura Fleury and in the back with the yellow shirt and white hat is Adrian Fleury, founder of ARGO Distributor.



ODG's distributor in Puerto Rico explored new ways of advertising to appeal to new markets.



In 1985, the innovative ARGO 6x6 and 8x8 Vanguard were launched.



ARGO promotional brochure (mid 1980's).



The ARGO 6x6 and 8x8 Vanguard both featured a 16 hp Briggs & Stratton 4-cycle, twin cylinder engine.



1999 ARGO promotional brochure geared to commercial users.

min min



In 1992, ODG celebrated 25 years of ARGO production. To commemorate ARGO's silver

anniversary, 25 silver-bodied Vanguards were built. ODG introduced the first liquid-cooled engine in the new ARGO Conquest in 1993. The Kawasaki FD620D 20 hp V-twin engine captured the attention of the marketplace like nothing before and immediately propelled this model to prominence. Long lead times developed as demand far exceeded production rates that were pushed up weekly. A special poster was designed to celebrate the 25th year anniversary of the ARGO!

The ARGO 8x8 Response was introduced to the market in 1995 - the answer for the individual who needed eight-

wheel capacity at an attractive price. Once again, ODG demonstrated its commitment to the customer by providing quality-built, innovative products. The Bigfoot invaded the market in 1997, with an extended wheelbase to accommodate the 25" tires, increasing ride comfort over rough terrain. The demand for more power for the active sportsmen resulted in the development of the 6x6 Conquest.



1993: ODG introduced the first liquid cooled 20 hp 8x8 Conquest, the most successful model until its replacement in 2004.



1995: The ARGO 8x8 Response was the answer for a quality built 8x8 ARGO at an attractive price.



1997: The demand for more drive comfort and vehicle stability in a 6 wheeler resulted in ARGO 6x6 Bigfoot featuring 25" Rawhide III tires and a 18 hp Briggs & Stratton, 570 cc engine.



1999: The avid sportsman had been asking for more power and manoeuvrability. ARGO launched the 6x6 Conquest: the 6x6 Bigfoot with the 20 hp Kawasaki liquid cooled engine.

# Mobility for the Physically Challenged



Joerg Stieber (right) with Rick Hansen, Canadian Paralympian, President and CEO of the Rick Hansen Foundation. ODG donated three ARGOs for people with spinal cord injuries and mobility disabilities.



The ARGO was brought to Peguis Nation by Brad Bodner of Fast Line Sports in Manitoba. On hand to receive the ARGO was Stuart Manningway, Recreation Program Director of Peguis Nation along with several members of the community.



Early flyer featuring a modified ARGO 8x8 Magnum with specially designed backrest, seat cushion, transfer board and electric hoist for loading and unloading a wheelchair.



The specially designed ARGO 8x8 Magnum allowed great freedom and protection for the physically challenged.

### The New Millenium

ARGO's big brother, the 8x8 Centaur

The year 2000 was pivotal in ODG's history as a new, state-of-the-art plant was constructed for the Gear Division. This not only formed the foundation for a world class gear manufacturer, it also enabled ODG to continue providing better quality components for the ARGO.

The Vehicle Division expanded its product line by adding the Centaur, also known as the ARGO's big brother. With its tank-style steering transmission, the Centaur's heavy duty frame and turbo diesel engine was ideal for commercial and military applications. The first military order for the Centaur was placed by the South African Special Forces. Customers in North America and Europe soon followed and began developing customized platforms for versatility and functionality. China became a very important market for the Centaur through several partnerships and local assembly.

Another highlight of the new millennium was the launch of the 8x8 Avenger in 2004. This vehicle would evolve into the 8x8 Avenger EFI, 8x8 750 HDi and 8x8 750 HDi SE. Key features of the Avenger included handlebar steering, larger and better performing tires, more engine power, improved ergonomics and aesthetics, and the innovative ADMIRAL transmission, which was available in various gear ratios.



2004: The ARGO 8x8 Avenger featured a 26 hp 681 cc Kohler liquid cooled engine, 25" tires for improved traction, increased ground clearance, and a handlebar steering system. In 2007, the first fuel injected 31 hp 747 cc ARGO 8x8 Avenger EFI captured the market with improved fuel economy and better performance in high elevations.



2010: The ARGO 750 HDi featured a patent-pending triple differential transmission called ADMIRAL which greatly improved overall performance. The outer bearing assembly design significantly extended bearing life. The ARGO 6x6 650 HD and 8x8 700 HD would also use the same transmission technology.



2008: The new ARGO 6x6 Frontier featured a 23 hp Cooler Cleaner Briggs & Stratton engine, a 20/50 Amp charging system and new, larger chevron-tread ARGO tires providing 50% greater water speed, superior traction and better suspension. The ARGO 8x8 Frontier followed one year later as a highly competitive 8x8 entry model.



2011: ARGO 750 HDi-SE featured three way adjustable suspension seats, a convenient entry step and a deluxe lighting package. The ARGO 700 HD EU model was officially road-approved in Europe. In 2012, all HD models featured a high-torque transmission option for improved performance in extremely difficult terrain.

#### ARGO Worldwide Markets

There is a good reason why ARGO and Centaur vehicles are so popular around the globe. Few companies can produce a superior, amphibious, all season, all terrain vehicle that provides the same exceptional value and quality as an ARGO. Although several manufacturers have tried, most did not survive.

ODG's largest market has been North America with distribution in Western Canada, Quebec and the Atlantic provinces. Ontario and Manitoba are serviced directly by ODG through an extensive network of dealers.

ARGO Distributor in Edmonton started supplying ARGO vehicles in 1973 and has since established itself as a premium distributor in both the commercial and recreational markets. In the province of Quebec, Distribution Borgia has been a valued supplier of ARGOs since 1985 and continues to provide excellent service and support.

ARGO Sales in Newfoundland has been selling ARGO vehicles since 1993 and ensures utmost customer satisfaction by maintaining sufficient vehicles and parts in stock - at all times.

The United States have been represented since 1970 by a wide network of dealers.

The first overseas distributor was Crayford Specialty Vehicles, a well known engineering company, established in 1970, that specialized in custom modifications of cars in the UK.

In 1978, Argo All Terrain Vehicles in Australia opened its doors and has since become one of the most sophisticated solution providers for customized add-on solutions in both agricultural and exploration markets.

Another very important market is Russia, which was established in 1998 through ARGO Russia. Despite many challenges and obstacles, Russia has become the largest export market for ARGO vehicles, available through a network of specialised dealers throughout Russia.

To this date, ARGO vehicles have been sold in over 70 countries and all continents. Each region is unique with differing climates and terrain, however every ARGO customer benefits from the consistent reliability and durability of an extreme terrain vehicle that can be driven in all seasons, carry up to six passengers, and is fully amphibious without vehicle preparation.

# North America



Newfoundland, Canada - Sightseeing



Quebec, Canada - Flooding



Wyoming, USA - Camping



Alberta, Canada - Moose hunting

Alaska, USA - Ice fishing



Ohio, USA - Recreational ride

# Central and South America





Ojos del Salado Volcano, Chile - 6,646m (21,805ft) above sea level summit expedition

Argentina - Christmas parade

Brazil - Customer demonstration



Colombia - Agroexpo



Ecuador - Fire fighter training facility



Mexico - Federal police demonstration
## Central and South America



Paraguay - Water excursion

Suriname - Mining support

Guyana - ARGO Distributor



Costa Rica - Jungle tours



Panama Canal - Surveying and personnel transport



Caribbean - Insect abatement

# Europe



Austria - Avalanche rescue operations



Estonia - Winter vacations



England - Forestry maintenance



France - Château de Chambord



Germany - Forestry and wildlife management



Italy - Mountain patrol

# Europe





Russia - Fishing & hunting



Scotland - Adventure tours



Spain - The perfect tender for the perfect yacht - drive straight from water onto land



Sweden - Military exercises



Switzerland - Ski patrol

# Asia





China - ARGO launch parade

India - Himalayan avalanche control

Japan - Eco tourism



Korea - Military exercises



Malaysia - Palm oil plantation



Thailand - Disaster relief

# Middle East/Africa/Oceania



Kuwait - Centaur fire fighting unit



Central Africa - Hunting expedition



Sudan - Centaur vehicles destined for Oil & Gas industry



Africa - Safari support vehicle



New Zealand - Surf lifesavers



Australia - Mining and exploration

# ARGO Applications

What makes the ARGO and Centaur so unique? The serious big game hunter can use his ARGO where other hunters can't follow - through flooded areas, deep mud, rivers and streams, and over snow and ice. Hunt clubs and outfitters can offer their guests the ultimate off-road adventure. Very often, ARGO is the only vehicle that can get you there.

Families appreciate the ARGO as it carries people and gear to remote locations in any season, even in high elevations.

Many organizations such as snowmobile clubs, resort operators, hobby farmers, eco-tour operators and property owners need the ARGO to get work done, often in challenging terrain that cannot be accessed with traditional vehicles.

The demand for oil & gas, minerals, precious metals and diamonds is growing and it is becoming more difficult and costly to drill new wells and locate new mineral deposits. The ARGO and Centaur are used by environmental surveyors for site assessment and can also transport people and equipment to drilling sites and support other mining operations. ARGO and Centaur vehicles feature a multi-purpose platform that can be equipped with specialized cargo or dump boxes, cranes or drills. Power lines, gas pipelines, communication towers and cable infrastructure need to be maintained and expanded – any time of the year in any kind of terrain. The all-terrain all-wheel drive ARGO is the preferred choice when other vehicles fail.

Climate change has increased the risk of inland flash floods and coastal flooding. Search & Rescue organizations around the globe rely on the amphibious ARGO to evacuate the stranded and injured, transport rescue teams, carry equipment to remote sites, and help clean up in areas that are difficult to access. ARGO vehicles can also be equipped with fire-fighting equipment and stretchers to provide more support when required.

Another important challenge is insect abatement and weed control in flooded areas and around large bodies of water. The ARGO is the perfect vehicle for mounting spray equipment, foggers and tanks to access critical areas to fight mosquitoes, sand flies and excessive weeds in a safe and efficient way.

Furthermore, there is an exciting and sophisticated market for the defence and security sector, as well as many other special applications such as unmanned and remote controlled vehicles equipped with innovative detection solutions.

# Hunting, Fishing and Outdoor Recreation



Fishing



Ice fishing



Waterfowl hunting

Big game hunting



Camping



Cabin and cottage access in any season

# Off-Road Support Vehicle



Ski hill maintenance



Disaster response



Snow plow and trailer



Wood chipper



Crew transport

# Tour Operators and Outfitting





Hunt camps



Desert excursions



Eco tours



Wilderness outfitters



Wildlife preserves

# Utilities, Exploration and Mining





Drilling



Communications tower maintenance



Surveying

Power line patrol



Exploration and mining



Oil and gas support vehicle

# Public Sector





Fire fighting



Disaster cleanup support



Remote fire fighting



Fire & Rescue support



ATV rescue operation

# Forestry, Agriculture and Spraying





Salt water resistant



Centaur pulling spreader



Sand fly control



Customized sprayers



Weed control

## ARGO and Centaur Special Projects

ver the past decades, ODG has developed successful partnerships with OEM in the defence and security sector. It all started over 20 years ago with military projects when ARGO began supplying vehicles to the Canadian Army to be used as tank targets.

Due to its unique capabilities and unsurpassed versatility, ODG managed to develop project sales into markets with very high import barriers. In 2002, the newly launched Centaur was chosen by the South African Military as the next Rapid Response LogisticVehicle. Numerous modifications were made to the vehicle in order to meet the specifications, including localized manufacturing, component sourcing and assembly.

China was the second country to import the Centaur in a CKD form (Component Knock Down). This was created to reduce import duty rates from whole vehicle classification to individual part and component classification. Jinguan, manufacturer of specialized vehicles in China, received additional credits and incentives from the government as design, sourcing and assembly were carried out locally. Of particular interest, companies in China are the largest users of Centaurs having purchased approximately 130 vehicles prior to 2011.

The next hurdle to overcome was India. The first Centaur was sold in 2006 for avalanche control in the Himalaya Mountains, followed by an order of 20 ARGOs for the Mumbai Police Force to patrol city limits after the terrorist attack in 2008. The overall result of the ARGO presence was a joint manufacturing venture with BEML in Bangalore, with an initial order for 10 vehicles to be assembled in early 2012 with a reduction of import duty from 150% to 30%.

Although high import duties make it very difficult to sell into Brazil, it is definitely another important growth market for ARGO. After receiving positive feedback from several initial customers, ODG started production of vehicles for the utility and exploration markets in Brazil as they were facing many challenges in flooded areas and rain forests, as well as their public and defence sectors.

### Special Projects for Defence and Security



One of the longest programs in ODG's history is the Badger, developed through Meggit Defense Systems. Approximately 30 unmanned ground vehicles were in operation in Canada, Saudi Arabia and Australia. These armour-protected tow vehicles were designed for 2D tank targets for ground-to-ground military target practice. Two other variants that spun off from the original design were the Wombat and Rhino.



The South African Special Forces, through a partnership with Crayford -South Africa, purchased 106 Gecko vehicles. These vehicles were Rapid Deployment Logistic Vehicles used to resupply front line troops with ammunition, communications, personnel and evacs. It was such an innovative vehicle that it became the runner up recipient for the Ontario Exports award.



In 2006 a Chinese assembly partnership was formed with Jinguan, which eventually became the assembly site for Centaur vehicles in China. Approximately 50 vehicles were sold to Jinguan, modified to the specific needs of customers in the defence sector, as well as for patrolling and natural disaster response sector.



The AMSTAF, an unmanned ground vehicle with vision and obstacle avoidance systems, was primarily used for security purposes. Through partnership development with Automotive Robotics (Israel) and Whitebox Robotics (South Korea), ODG supplied a vehicle to run on either gas or diesel over electric drive line.

### Special Projects for Public Sector and Exploration



The Venturi was worked on in 2007 and designed specifically for Antarctica. These vehicles were altered to give off zero emissions in order to decrease contamination in Antarctic sampling sites. This project was a prototype that was funded by the Prince of Monaco, partly as their contribution to the ongoing testing that was taking part there.



In early 2008 the Chrysor was launched as a fully autonomous ground vehicle (unmanned or with operator) that could be used for perimeter patrol, surveillance, fire fighting, and re-supply. Sixty vehicles were sold to China.



The Geismar, which was also introduced in 2008, was co-developed by ODG and Modern Track Machinery in Toronto. Not only was it a remote controlled vehicle, it also had a 6x6 conversion to hydrostatic drive and was a speciality product for worldwide railroad repair and maintenance.



The need for more versatile and lower cost vehicles in the drilling and exploration industry resulted in the development of specific add-on solutions, such as a robust cargo box to transport core samples, as well as a crane solution to lift equipment and heavy tools when operating in remote areas.

## ODG Gear Division



In 1985 ODG began to focus on the gear operation as a way to make better use of the increasingly more expensive gear machines required for the ARGO transmissions. The decision was immediately successful and in its first year, ODG sold \$350,000 worth of product. In 1988, ODG hired Norbert Benik as sales manager to move the company to the next level. The first contract was with Magna to supply transfer cases for a GM electric van for sale in California.



The first Mazak Horizontal Machine Centre was installed in 1990. In 1993, ODG designed and manufactured its first complete transmission for Cadman Power Equipment for an agricultural sprayer application by combining three different transmissions into one gearbox. By 1994, the machine shop added a second shift and was expanded by 5,000 sq. ft.

# Superior Quality and Innovation



Continuous upgrades in equipment and increased sales activities resulted in new customers. Raymond Industrial Equipment, Trackless Vehicles Ltd, and Tigercat Forestry Equipment were added to the roster and still form an important part of ODG's customer base. In 1998, ODG and Raymond celebrated the delivery of the 10,000th Walkie transmission. ODG was awarded supplier of the year for zero returns and warranty claims. This was a great accomplishment and set the stage for future successes.



L-R: Paul Jantzi, Ortwin Stieber (founder), Hans Weigel, Norbert Benik (VP Sales Gears), Stan Serwazcak

In the same year, the first and very expensive CNC gear machine, a Liebherr gear hobber, was installed at ODG to produce the precision cut gears and other quality components demanded by ARGO and industrial products customers. This strategic decision was the beginning of a continuous upgrade of equipment and production technology. Eventually, every significant machine was replaced by a modern CNC controlled machine.



The continued expansion of the gear market made it necessary to add dedicated manufacturing and office space. In 1999 ODG decided to build a 32,000 sq. ft. facility next to the ARGO plant. The groundbreaking event was celebrated by employees and local politicians.



Construction started in 2000



Joerg Stieber delivers a speech at the grand opening of the new state-of-the-art building held on June 9,2001.



In depth engineering and manufacturing review.



In 2003, ODG invested in a state-of-the-art Klingelnberg P40 CNC Gear Checker. It was fully programmable, reduced measuring times and gave ODG customers a higher level of quality assurance, with full trace ability and gear tooth chart printouts when necessary.



In 2006, ODG added a fourth Liebherr CNC gear hobber featuring dry hobbing technology, allowing for the cutting of parts without cooling oil. Using in-process controls, quality is continuously monitored throughout the entire manufacturing procedure.



In seven short years the ODG Gear Division had outgrown its plant again. In the fall of 2007, plans were drawn up for a 17,000 sq. ft. expansion which was completed in April 2008.



The new building created space for further investment in the latest gear manufacturing technology using environmentally friendly production methods. ODG purchased a series of high tech KAPP grinders that would allow for considerable improvements in quality and productivity.





In 2009, after the recession ODG grew rapidly. Joel Wright took over as General Manager. ODG moved into many new markets such as military, mining, diesel truck, locomotive and hybrid vehicles.





In 2009, lean manufacturing was introduced to build a strong systems foundation to allow for the business growth.

# A World Class Gear and Transmission Facility



OG offers its customers a wealth of knowledge and experience in providing solutions for gears or transmission assemblies. ODG has the ability to design, manufacture, assemble and test which results in a robust cost effective solution that meets our customers most demanding requirements. ODG has achieved this by not only investing in the latest gear manufacturing technologies, but also focusing on the design and manufacture of quiet gears. Furthermore, ODG has embraced a green corporate philosophy through the entire operations. Going beyond just gears, ODG continues to offer a complete one-stop solution.

Currently ODG works with large, high profile OEM's, offering reliable supply of parts with focus on quality and delivery. ODG has ISO 9000 & ISO 14000 certification.

# Technology • Reliability • Experience

Whether providing solutions for transmission assemblies or individual components, ODG offers a wealth of knowledge and experience at every level. ODG has the ability to design, develop, prototype and manufacture which results in a robust, cost-effective solution that meets our customers most demanding requirements.

#### **Emphasis on Customer Satisfaction**

- Investing in the latest gear manufacturing technologies
- Focusing on the design and manufacture of quiet gears
- Embracing a green corporate philosophy throughout our operations
- Going beyond just gears, ODG offers a complete one stop solution

#### A Proven Track Record of Success

- Manufacturing of gears and transmissions since 1962
- Current supplier to many large, high profile OEMs
- Reliable supply agreements which focus on quality and delivery
- ISO 9000 & ISO 14000 certified







## Product Overview



Spur & Helical Gears : Diameter up to 400 mm, 0.75 to 8 module, AGMA 11



Internal Gears : Diameter up to 500 mm, 0.75 to 8 module, AGMA 11



Ground Gears: Diameter up to 300 mm, 0.5 to 10 module, AGMA 14





Transmissions and assemblies can be manufactured to suit a wide variety of applications (up to 250 HP) and sizes (up to a 30" cube).







Zamboni Transmissions

Magna Planetary Assembly

CNC Gear Shaping



ARGO Transmission Assembly



High Velocity Cell. Turning, broaching and hobbing with one piece flow.



In 2012, ODG Gear Division developed its first marketing campaign to build a brand image and to showcase its world class operation.

## COMPANY PROFILE **Ontario Drive** & Gear

This company provides a one-stop powertrain solution from gear and system designs to transmission assembly and performance testing.



its 50th anniversary this year, Joel Wright, general man-plication." aster of ODG, save, "50 years is a major accomplish-

contributions." subsidiary of a German company. It started out as a off-highway, agriculture, military, construction, and allcided to build its own vehicle, and hence the ARGO was "Many of our customers are household names that born. Today the ARGO is the world leader in amphibious people recognize. It is a feather in our cap to be astions in applications such as exploration, search and geared by ODG." rescue, industrial, hunting and recreational applications. ARGO is even buty working on a space rover, that plication of lean manufacturing principles. 'Today we one day will hopefully travel to Mars.

units, the Vehicle and the Gear division. In the early years both divisions were under one roof and all the COG gear capacity went into the ARGO. In 1985 a strategic decision was made to look for other external customers that fit in a similar manufacturing niche as the ARGO. Today ODG Gear boasts sales of \$25M, with 115 employees in a stand-alone 60,000 sq. ft. state of the art facility. "The ARGO taught us how to make a dependable bullet proof transmission. With the ARGO and where it goes, there is simply no room for failure."

Today ARGO represents only 20 percent of the ODG Gear capacity. ODG Gear manufactures over 850 different SKUs on a reoccurring basis. "It is a high quality, high mix, low volume machine shop," says Wright, "We've invested significantly in the last five years, spending over \$10 million on the latest technology. Customers are always impressed with our gear hobbing, shaping and grinding capabilities."

ODG's core competencies go beyond just gear manufacturing. The company offers a one-stop powertrain 55 workplace organization and, employee engagement, solution by offering gear and systems design, trans- We followed up with a standardized problem solving mission assembly and performance testing, "We are technique using "A3" problem solving. This gave us uniquely positioned for a job shop. Very few gear manu-built in quality and just in time delivery. This ultimately facturers can say they design, manufacture, assemble lets us offer our customers the fastest process, at the and test. Better yet we can offer this in a low volume, highest quality and the lowest cost." niche market."

pecially when everyone came out of this last recession started as a gear machine shop, built an ARGO busionly the large OEM's had the resources and gear exper- ness and once again we're known as a world-class gear tise to design transmissions. Many other OEM's do not manufacturer, It has taken 50 years and we are proud understand the nuances of gear design and those that to say we are doing well." did, cut back in these areas of gear engineering. ODG To celebrate their 50th Anniversary, ODG is planning many advanced engineering design methods such as the community.

Whether providing solutions for transmission assem- FEA and Ohio State GearLab LDP. COG design capabilibles or indvidual components. Ortano Drive and Gear ties go as far as being able to offer black box systems Ltd. (ODG) has the ability to develop, prototype and capability. "Give us the input, the output and the size manufacture to meet its customer needs. Celebrating and we can design gears and transmission for any ap-

As a result, ODG Gear serves customers in North ment and a comeratione to the company's historical America and around the world. Recently ODG has begun to brand its products with a "Geared by ODG," ODG Founded in 1962 in Kitchener, Ontario, ODG is a is in many products in the industrial, material handling, machine shop manufacturing gears. It grew into making terrain vehicle sectors. "Our top 10 customers are in 10 transmissions for all-terrain vehicles. By 1987 ODG de different markets", added Norbert Benik, VP of Sales. vehicles and can be found in the most extreme condi-sociated with such companies and to know they all are

Another major undertaking was the adoption and apare the house of lean" Wright said. "We built a foun-ODG as a corporation is divided into two business dation of employee training, maintenance excellence,

> "We've invested significantly in the last five years, spending over \$10 million on the latest technology. Customers are always impressed with our gear hobbing, shaping and grinding capabilities."

"It's all kind of a metamorphosis of where we've been "We saw a market need for the one stop solution. Es- and where we are headed. We've come full circle. We

has the capabilities to optimize a given gear set. Often a three-day event, which will include tours of the facilwe are asked how to make a gear quiet or how to im- ity, a golf tournament, media and supplier functions, a prove a gear's loading canying capabilities." ODG uses formal dinner and a family day for the employees and



Gear Solutions - June 2012

# Markets and Applications





Oil & Gas, Pipe Tong Rig (Gearing)



Construction, Road Grader (Transmission)



Military, Tactical Armor Patrol Vehicle (Drivetrain Components)



Forestry, Log Skidder (Drivetrain Components)

Mining, Drill Rig

(Gears and Shafts)



Automotive (Transfer Case Planetary Assembly)



Material Handling, Electric Forklift (Drivetrain Components)



Locomotive (Train Drive, Gearing)

# Space Division



JUNO ROVER in the Apollo Valley, Hawaii

ObG's involvement in the space exploration industry began in April 2008 with an invitation to join a team of technology companies working on lunar and Mars rover concepts for the Canadian Space Agency (CSA) and NASA. The first concept was a novel approach to lunar rovers and was quite different from all previous planetary vehicles. This vehicle was well received at the CSA.

Based on the positive feedback, ODG was called again to help with another project, this time working with both CSA and NASA on a mountain worksite in Hawaii. A considerable amount of hardware was produced for use during two deployments including a specially modified ARGO Avenger which helped with moving equipment around, but the real star of the show was an ODG rover named Juno. This simple and rugged rover was so well received that ODG produced twice as many as the original order.

The success of the Juno rover paved the way to another rover contract. The new vehicle, called Artemis, was twice the size of the Juno and approximately the same size of a Centaur. Two of these innovative rovers were built and delivered to the CSA.

# Space Division



Dr. Steven MacLean, President of the Canadian Space Agency and former astronaut (3rd from left, foreground) and the ODG Space Robotics Team.

Artemis Jr., ODG's most sophisticated rover, holds great promise for future missions. These rovers can be equipped with customized lunar wheels or special track solutions resulting in very low ground pressure and increased traction.

In three short years, the Space Robotics Team produced a total of fifteen lunar rover prototypes for the CSA. Moreover, the development of the rover technology continues to instill great pride within the company and the larger business community of Waterloo Region. It has also been significant towards improving the technology of our

### ARGO and Centaur vehicles.

Scheduled for completion in 2012, the fourth generation rover will be even more sophisticated and lighter than its predecessors, yet still be adaptable to a variety of terrains, and easily configured to accommodate a wide variety of payloads.



2011: JUNO ROVER in tandem configuration in Sudbury, Ontario



JUNO ROVER demonstration at NASA's Johnson Space Center



Tandem rover carrying NASA's RESOLVE payload



JUNO ROVER blading during a NASA field test in Hawaii



Terrain testing in dormant volcano



Initial DARTH CRATER rover concept



Tracked rover built for Canadian Space Agency



Large 8-wheel rover called ARTEMIS

# The Journey Continues...

This year, our 50th anniversary year, we look back with pride at the people and events that have shaped Ontario Drive & Gear Limited. In this book, we reflect on the contributions of our leaders and employees over the years, and we review our customers' and suppliers' impact on ODG. The common thread evidenced in this rich history is one of commitment to people, recognizing their creativity and contributions to the success of this company.

After over twenty years with Ontario Drive & Gear, I am proud to have been asked to lead this organization into its next semi centennial, and into a world that is quite different from the past. Today the world is changing rapidly. Trade barriers are being reduced. Competition from faraway places is putting pressures on productivity. Communication is instant. And customers are demanding unprecedented levels of quality, delivery and price. To some, these pressures are challenges they have to overcome. We, however, see the opportunities inherent each of these changes. Lower trade barrier means more opportunities to sell our products, new customer demands require more creativity, and more competition means better and smarter production lines. I believe that all of these can lead to more meaningful work and greater job satisfaction for our employees.

The dedication and professionalism of our teams is second to none and we are well positioned to take advantage of the rapidly changing times. As our history has shown repeatedly, our success is predicated on our flexibility and our willingness to try new things. Back in 1967, a small workshop in Kitchener decided to build an all-terrain vehicle. Today we have built more non-military amphibious vehicles than anybody else in history. In 1994, our machine shop decided to take on a forklift transmission. Today, we are supplying some of the world's best known OEMs with thousands of gears and transmissions. Flexibility and smart risk taking are nothing new to Ontario Drive & Gear, and the world will demand much more of it in the next 50 years.

Already we have taken on the design of a vehicle that is literally for out of this world – the lunar rover. NASA has asked for it by name. The Gear Division is well on its way to develop in-house design capabilities that will rival the best in North America, with focus on noise reduction and noise modulation. The Argo Division is moving ahead with new commercial market strategies that will open opportunities far beyond our traditional hunting markets in Canada and around the globe.

The journey of the next 50 years will be an exciting time of discovery of new markets, new products, new opportunities, new ideas, and new people to welcome into our family. I am happy to serve this team and this company on their first steps towards ODG's 100th anniversary.

Michael Eckardt, CEO

## ARGO Models 2000-2012













Argo 8x8 XTI

CENTAUR.

Argo 8x8

Argo 8x8

Argo 8x8 HD

Argo 6x6



Argo 6x6 Frontier sea



Argo 8x8 Avenger 190 EH



Argo 8x8 Avenger 700



Argo 8x8 Frontier and



Argosx6 Frontier #58



Argo 6x6 Frontier 480



ATTO 8x8



Argo 8x8 CONQUEST



Argo Conquest



ГЭД БХБ ВІСЕРООТ



AT GO 6x6



ATSO 6x6



