

alphaDIRECT MANAGEMENT SERIES

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IN FOCUS: WESTPORT FUEL SYSTEMS AND THE DEVELOPING GLOBAL LPG MARKET

This report focuses on Westport Fuel Systems, Inc. (TSX/NASDAQ: WPRT) and the developing global LPG market.



Source: Westport Fuel Systems, Inc. <https://wfsinc.com/>

THE alphaDIRECT INSIGHT

This alphaDIRECT Management Series focuses on Westport Fuel Systems and its role as a global leader in gaseous fuels for transportation, including LPG and its comprehensive set of products and systems. The report also touches on the European LPG market, along with regulatory issues and key economic drivers for LPG fuel versus gasoline. Liquefied petroleum gas (LPG) fuel is the most common unblended alternative vehicle fuel, with an estimated 27 million LPG vehicles in use globally, according to Management. LPG is used in passenger vehicles since it is relatively easy to store in cylinder tanks or toroidal tanks under the vehicle or in the spare wheel compartment. When compared to other fuels such as compressed natural gas (CNG) and liquefied natural gas (LNG), LPG has a lower cost structure and conversion costs. Key LPG market drivers includes fuel cost savings, wide availability, relatively low investment for infrastructure, low installation costs and reduced GHG emissions. Markets with government support such as Turkey, Poland and Italy have a long-term deployment strategy and taxation benefits, which have encouraged growth and high penetration rates.

WPRT Business Snapshot

Founded: 1995
Headquarters: Vancouver, Canada
Ticker: WPRT (TSX/NASDAQ)
Stock Price: \$1.02*
Market Cap: \$128.21M*
Website: www.wfsinc.com
 *As of May 6, 2020



About alphaDIRECT Advisors

alphaDIRECT Advisors is an Investor Intelligence firm that creates and implements digital content and programs to help investors better understand a company's key drivers including industry dynamics, technology, strategy, outlook and risks as well as the impact they could have on the stock price. alphaDIRECT's expertise encompasses a variety of sectors including Clean Transportation, Emerging EnergyTech, Energy Services, Smart Buildings, Solar, Water Value Chain and Industrial. alphaDIRECT was founded by Wall Street veteran and research analyst, Shawn Severson, after seeing a significant shift in the investment industry that resulted in less fundamental research conducted on small cap companies and a significant decline in information available to all investors. alphaDIRECT's mission is to bridge that information gap and engage companies and investors in a way that opens information flow and analytical insights.

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ABOUT WESTPORT FUEL SYSTEMS INC.

At Westport Fuel Systems, we are driving innovation to power a cleaner tomorrow. We are inventors, engineers, manufacturers and suppliers of advanced clean fuel systems and components that can change the way the world moves. Our technology delivers performance, fuel efficiency and environmental benefits to address the challenges of global climate change and urban air quality. Headquartered in Vancouver, Canada, we serve our customers in more than 70 countries with leading global transportation brands. At Westport Fuel Systems, we think ahead.

For more information, visit
www.wfsinc.com.



*Mr. Bart Van Aerle, VP of Strategy & Product Planning,
Westport Fuel Systems, Inc.*

Participants

Mr. Bart Van Aerle
Vice President, Strategy and Product Planning
Westport Fuel Systems Inc.

Bart van Aerle was appointed Vice President, Strategy and Product Planning in 2020 after previously serving as Vice President Prins, one of Westport Fuel Systems material subsidiaries and key brands in the Netherlands. As Vice President Prins, Mr. van Aerle led the strategy and operations of the branch in Eindhoven and the Prins brand, expanding sales of high-quality LPG, CNG, and LNG aftermarket systems and components for automotive and transportation vehicles worldwide. Mr. van Aerle served as President Cummins Westport from January 2018 to July 2019 where he oversaw the launch of the first heavy-duty Class 8 truck with near-zero emissions. With almost 25 years of automotive industry experience he has held various leadership positions including sales management, operations, and quality. Mr. van Aerle holds a Bachelor in Business Administration and Engineering from Fontys University in Eindhoven.

Mr. Shawn Severson
Founding Partner
alphaDIRECT Advisors

Mr. Severson is the Founding Partner of *alphaDIRECT Advisors (ADA)*, a division of EnergyTech Investor, LLC (ETI). He has over 20 years of experience as a senior research analyst covering the technology and cleantech industries. Prior to founding *alphaDIRECT Advisors*, he led the Energy, Environmental and Industrial Technologies practice at the Blueshirt Group. Mr. Severson was frequently ranked as a top research analyst including one of the Wall Street Journal's "Best on the Street" stock pickers and multiple awards as Starmine's top three stock pickers.

Shawn Severson: First, I'd like to thank you, Bart, for taking the time to speak with us today. The last time that we spoke with Westport Fuel Systems we discussed the European heavy-duty carbon dioxide emissions standards and regulatory environment with CEO, David M. Johnson. Today, our focus will be on the global LPG market. I understand you've been working in the alternative fuel systems industry since 1998. Can you share a bit about your background and your insights on how the global markets of alternative fuels have evolved over time?

Bart van Aerle: I started working in the alternative fuel industry directly out of school and I completed my thesis with a small company in the Netherlands who was importing propane/liquified petroleum gas (LPG) systems. In 1999 I started working for Prins Autogas Systems in Eindhoven, the Netherlands. And in 2014 Prins was bought by Westport Innovations and became Westport Fuel Systems in 2016. In North America, we use the term propane but in Europe people refer to LPG or GPL or even Autogas when talking about the transportation fuel.

Technology has changed a lot over time. When I started, there were still cars with carburetor engines and then we moved on to cars with single-point injection fuel systems and then to multi-point injection (MPI) systems. Now, we are using direct injection engine technology as well as direct injection with MPI technology. Actually, the new direct injection engines are better suited for LPG than for gasoline because LPG has a higher-octane number than gasoline which enables us to create better efficiency in the engine.

We are reducing both emissions and fuel costs, which is a unique investment proposal. When you are investing money in a propane system, you're not only saving money, but you're also contributing positively to the environment. I cannot think of anything else that works like that and this is what has kept me in the business for approximately 22 years.

Shawn Severson: Great, thank you, Bart. Westport Fuel Systems is a global leader in gaseous fuels for transport and that includes LPG. Tell us a bit about the state of the global LPG vehicle market and outlook for growth. What are the market drivers for LPG and how is that different from CNG and LNG? What market segments are compelling for LPG and why?

Bart van Aerle: Absolutely, Shawn. We do indeed have the technology, systems, and components for a wide range of fuels. LPG is the most common unblended alternative vehicle fuel in use in the world today. The LPG fleet continues to grow unabated; there are almost 27 million LPG vehicles in use around the world.

LPG is a waste product as about 60% of the LPG in the world comes from the extraction of natural gas and 40% from the refinery of crude oil. In the old days, you saw refineries flaring off LPG. Perhaps they captured a small amount for heating etc., but the rest was just flared off because it was more expensive to capture than to burn it. At this time, LPG started to be used for transportation but also for heating and cooking.

The major differences between LPG versus compressed natural gas (CNG) or liquified natural gas (LNG) are the lower cost of the

LPG-infrastructure, the lower conversion costs, and easy storage of LPG in a cylinder tank or toroidal tank in the place of the spare wheel or under the car. LPG is stored under 7 bar, CNG under 200/240 bar, and LNG needs to be stored at -162 degrees Celsius in a special coated tank. LNG is a commercial solution for heavy-duty trucks due to their driving range while LPG and CNG are commercial solutions for passenger cars and trucks.

The main drivers for LPG are fuel cost savings, wide availability of the fuel, relatively low investments for infrastructure, comparable performance as driving on gasoline, low installation costs of the LPG system, and reduced GHG emissions. The markets vary greatly for LPG, CNG and LNG and depend on the natural resources of a country and regulations for both natural gas and LPG.

Markets can grow rapidly when the government has a long-term vision. We have seen this in countries like Turkey, Poland, and Italy as they now have a large market penetration rate for LPG because the government has realized that this is a good fuel option and provides cost savings. The government made the right long-term strategy on taxation to encourage growth.

Shawn Severson: You're based in the Netherlands. What are the capabilities of the Westport team there and who are your major customers in the European region?

Bart van Aerle: We are located in Eindhoven very near the airport and in a convenient location for customers. Eindhoven is about 1.5 hours from Amsterdam, 1.5 hours from Brussel (Belgium) and one hour from Dusseldorf (Germany) so

geographically a perfect location. With major companies like Philips, ASML, High Tech Campus, Automotive Campus, Prodrive, and DAF truck we have strong manufacturers nearby with very high levels of technology.

We have an entrepreneurial and innovative team. The team brings quality, innovation, and customer care through all aspects of our organization. We have many people who work for Prins for a very long time and we continue to add young and talented new people.

Our major customers are in Germany, Turkey, Poland, Russia, The Netherlands, Belgium, and Italy but also in over 70 countries worldwide.

Shawn Severson: Thank you, Bart. Product choice is an important driver for alternative fuel's adoption. What is Westport Fuel Systems' LPG product offering?

Bart van Aerle: We offer a comprehensive set of products and systems. We deliver systems for Carburetor engines in for example Africa and India, Multipoint injection, Direct injection and Hybrid, with 3 cylinders up to 16 cylinders. Westport Fuel Systems LPG products cover a whole range; from passenger cars like Ferrari, Bentley, and Porsche to the smaller vehicles like Fiat 500 and even three-wheeler tuk-tuks.

Shawn Severson: Looking at Europe specifically, can you talk about some of the other new regulatory issues that are coming into place as well as the economic drivers of LPG versus gasoline? What are the things that you think are going to be important over the next couple of years for Europe, specifically?

Bart van Aerle: The current talk is about Euro 7 and today we are at Euro 6. First of all, compared to gasoline and diesel, we have lower emissions; up to 21% CO2 emission reduction and up to 98% particle emission compared to gasoline, and up to 74% less NOx emission compared to diesel (source WLPGA). What we have seen is that diesel has been hammered, which is to our advantage because people were typically using diesel for long distance driving because it was cheaper. Now we are seeing that there's a total shift again back to gasoline and this means that more consumers driving longer distances are starting to use LPG. At the moment, there are no other products that offer the same or more range and power for the same investment.

As you know, governments are exploring options for next generation fuels and I think a lot of politicians at the moment like to talk about EV's but they are increasingly realizing that, although this will clearly be part of the market, there is no way this can be the only solution. With the energy resources we have in the world we should determine how to use those in the most effective way and if we look to natural gas and biomethane and bio-propane we are actually carbon-negative because we capture emissions that would otherwise have been released to atmosphere.

I hope more people begin to understand LPG is a better option than EVs for fast commercialization as the fuel is widely available, it costs less, and it delivers emission reductions. Another advantage is that we don't have any waste materials because basically everything can be recycled. We just have a steel tank, which can be melted along with other metal parts

and plastics which are recyclable. We have an economically viable and environmentally friendly solution.

When I talk about the Netherlands specifically, the government was putting a lot of subsidies into EV's and now recognize the demand for electricity to power all those vehicles. So that's why we will have a mix of fuels in the future with different technologies for different applications and duty cycles. And let's not forget to look at full well-to-wheel emissions and not just tailpipe emissions.

Shawn Severson: Let's talk about economics again. In the U.S. gasoline is relatively cheap but in Europe a significant portion of the pump price of the liter of gasoline is due to taxation. How is LPG treated in Europe and compare with the cost of the liter of gasoline and why that's so expensive relative to LPG?

Bart van Aerle: Within the European Union, taxation is decided country by country, but as we are located close to the German border and Belgium border I can make a comparison relative to the Netherlands. A liter of LPG now is about 0.74€ and gasoline is about 1.57€ depending on if you fill up on the highway or off the highway. However, if you cross the border in Belgium the propane price is 0.39€ and gasoline is approximately 1.20€. In Germany, gasoline now is 1.20€ and LPG is around 0.60€ so you can see there is variation between the countries.

Another important factor to consider is that countries such as Germany have a road tax that is included in the fuel cost. In the Netherlands we pay a separate road tax but gasoline is still more expensive based

solely on taxation. So, on average you will see a 50% to 70% and sometimes even 75% price difference between a liter of gasoline and a liter of LPG.

Shawn Severson: Let me conclude with a question about innovation. Clearly LPG has been around for a very long time as a transportation fuel. So, my question is if there is still room for innovation and where does the technology stand today?

Bart van Aerle: LPG has been available in the market for more than 40 years; it is both a mature and an evolving technology. When new engine technology does come into the marketplace, we start developing our systems on those platforms. OEMs invest millions and millions of dollars in developing a fueling strategy for their engines because they need to meet regulations. We develop based on their software strategy our LPG systems including the suitable software strategy for driving on LPG that lower emissions further and at the same time operate at -40 degrees Celsius and still operate when it's 80 degrees under the hood.

Shawn Severson: Alright, excellent. That will conclude the session for today. I appreciate your time and if you have any closing remarks otherwise, we'll wrap it up?

Bart van Aerle: The demand for transportation and energy around the world is expected to increase. Our near-term future fuel mix will include fossil fuels and renewable fuels. Fuel suppliers are developing very ambitious sustainability road maps and Westport Fuel Systems products and technologies are cost competitive, commercially available, and deliver environmental benefits.

Shawn Severson: Thank you, Bart.

Bart van Aerle: Thank you very much, Shawn.

SHAWN SEVERSON FOUNDING PARTNER

Mr. Severson founded *alphaDIRECT* Advisors, a division of EnergyTech Investor, LLC in 2016 after seeing a significant communication and information gap developing between small and micro-cap companies and the financial community. Mr. Severson has over 20 years of experience as a senior research analyst covering the technology and cleantech industries. Previously, he was Managing Director at the Blueshirt Group where he was the head of the Energy, Environmental and Industrial Technologies practice. Prior to the Blueshirt Group, Mr. Severson was at JMP Securities where he was a Senior Equity Research Analyst and Managing Director of the firm's Energy, Environmental & Industrial Technologies research team. Before joining JMP, he held senior positions at ThinkEquity, Robert W. Baird (London) and Raymond James. He began his career as an Equity Research Associate at Kemper Securities. He was frequently ranked as a top research analyst including one of the Wall Street Journal's "Best on the Street" stock pickers and multiple awards as Starmine's top three stock pickers.



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