

# Management's Discussion and Analysis – Quarterly Highlights

For the three months ended June 30, 2019

Contact Information : dynaCERT Inc. 501 Alliance Avenue, Suite 101 Toronto, ON M6N 2J1 Contact Person: Mr. Carmelo Marrelli, CFO Email: info@dynacert.com

## MANAGEMENT'S DISCUSSION AND ANLAYSIS

### **THREE MONTHS ENDED JUNE 30, 2019**

The following Management Discussion and Analysis ("MD&A") of the financial condition and results of operations of dynaCERT Inc. ("dynaCERT" or the "Company") has been prepared by management as of August 28, 2019 and was reviewed and approved by the Audit Committee, and is intended to supplement and complement the condensed unaudited interim consolidated financial statements and notes thereto, prepared in accordance with International Accounting Standard 34 Interim Financial Reporting ("IAS 34") as issued by the International Accounting Standards Board ("IASB"), for the three months ended June 30, 2019 (collectively, the "Financial Statements"). The following discussion of performance, financial condition and prospects should be read in conjunction with the audited consolidated financial statements for the year ended December 31, 2018 and the MD&A for the year ended December 31, 2018. The information provided herein supplements but does not form part of the financial statements. All amounts are stated in Canadian dollars unless otherwise indicated. Additional information related to the Company is available for view on SEDAR at <u>www.sedar.com</u>.

#### CAUTION REGARDING FORWARD LOOKING STATEMENTS

Certain statements contained in this document constitute forward-looking statements. When used in this document, the words "may", "would", "could", "will", "intend", "plan", "propose", "anticipate", and "believe", used by any of the Company's management, are intended to identify forward-looking statements. Such statements reflect the Company's forecasts, estimates and expectations, as they relate to the Company's views with respect to future events and are subject to certain risks, uncertainties, and assumptions. Many factors could cause the Company's performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. The Company does not intend and does not assume any obligation, to update any such factors or to publicly announce the result of any revisions to any of the forward-looking statements contained herein to reflect future results, events, or developments.

#### NATURE OF BUSINESS

dynaCERT Inc. is domiciled in Canada with its registered head office at 501 Alliance Avenue, Suite 101, Toronto Ontario, M6N 2J1. The Company is listed on the TSX Venture Exchange (DYA), the Frankfurt DAX (DMJ) and the OTCQB (DYFSF).

dynaCERT is a growing energy sector Company that specializes in delivering Carbon Emission Reduction Technologies to the global diesel engine marketplace. Throughout our years in business, we have worked to provide a reliable and effective electrolysis unit that would generate hydrogen and oxygen on demand to: (a) address the growing requirements to reduce toxic emissions; and (b) provide lower operating costs including an increase in fuel economy.

The Company is engaged in the design, engineering, manufacturing, testing, and distribution of a transportable hydrogen generator aftermarket product, currently in use in the heavy Class 6-8 tractor trailer industry, the smaller Class 2-5 trucks, stationary power generation and off-road construction machinery, and targeted for use in refrigerated trailers and containers, mining and forestry industries, with potential for application in the ocean shipping and trans-continental rail industries. The system is a patented and patent pending retrofit product that provides performance enhancements by introducing hydrogen and oxygen into the air intake manifold resulting in greater fuel efficiency and reduced carbon emissions. In 2014 the Company acquired the intellectual property (including all patents and patents pending) of the HydraGEN<sup>TM</sup> Technology.

#### **Technology Validation, Certifications and Advancements**

In 2016, the Company commissioned a program within Canada to test and validate the HydraGEN<sup>TM</sup> Technology at University of Ontario Institute of Technology ("UOIT"), which verified the testing, under simulated road and traffic conditions, that trucks using the HydraGEN<sup>TM</sup> Technology experienced up to 19.2% fuel consumption reductions. As well the HydraGEN<sup>TM</sup> Technology reduced greenhouse gas emissions by up to 40% for the tested Class 8 diesel truck engines. Particulate matter was reduced by up to 65%, significantly reducing black smoke being emitted into the environment by trucks using the HydraGEN<sup>TM</sup> units.

The independent testing with HG1 units now having the new DYA Smart ECU began in June 2017 at the North American-accredited PIT Group in Quebec, (See **PERFORMANCE MILESTONES AND VERIFICATION UPDATE – PIT Testing** below).

As reported in the news release dated November 20, 2017, the PIT Group report finds that the HydraGEN<sup>TM</sup> Technology HG1 unit provided a 5.9% improvement in fuel consumption. Testing also proved that emissions were reduced significantly - CO by 48.1%, THC by 50.0%, and NOx by 46.1%, all of which exceeded our estimates.

The PIT Group wrote to dynaCERT in an email separate to the report: "...for any kind of automotive technology, 5.9 % fuel savings is a result to be envied".

In May 2018 the Company began testing for the Homologation Certification process of the Transport Ministry of Germany, Kraftfahrt-Bundesamt ("KBA"), in cooperation with TUV NORD and TUV SUD in Germany to Euro standards for an Allgemeine Betriebserlaubnis ("ABE") (the general operating permit) that is required for all equipment used on pan-Euro road vehicles. As reported in a Press Release dated September 24, 2018, while the dynamometer test showed an 8.9% fuel savings, separately, during the on-road break-in period after the baseline test, the on-board diagnostic (OBD) record of the 2018 MAN TGX 18-460 long haul truck with an HG1-45B showed a 20.1% average fuel savings for the 188 hours of tests, travelling through the mountainous terrain of southern Germany in a heavy load commercial operation.

On August 26, 2019 the Company announced that it had received the ABE Homologation from KBA. (See **PERFORMANCE MILESTONES AND VERIFICATION UPDATE – European Homologation** below.)

The dynaCERT team has worked closely with Ontario-based NeuronicsWorks and other technical consultants to finalize the electronic interface, design and manufacturing of the "Smart ECU". Certain corresponding provisional and PCT patent applications have now been filed for worldwide coverage of the Smart ECU technology. Please see the section below entitled "Patent Status" for more information.

The "Smart ECU" has shown significant advantages and improvements over the older version of the ECU in several key areas: reading, collecting, storing and transmitting of data pertaining to fuel efficacy and emissions reduction; communicating with the engine's onboard computer; learning and altering the flow of gases produced; GPS capability; providing General Packet Radio Service ("GPRS") capability for remote access and allowing for future tracking and monitoring of Carbon Credits. This capability is aimed at providing users and *dynaCERT* with accurate data for which to promote, collect and use the carbon credits to a competitive financial advantage.

## PRODUCTS

# HG1

dynaCERT's product offering for the HG1 line includes the HG125 for the 5 to 10 litre diesel engines, the HG145 which targets the 10 to 15 litre diesel engines, the HG145-4C targeted for 40 to 60 litre engines, and the HG145-6C targeted to 60 to 90 litre engines. These HG145 units are now in production and are outfitted with the latest SMART ECU2 controller. The Company has initiated a Continuous Product Improvement (CPI) program that is focused on making enhancements to the manufacturing operation to improve product quality. When operating at capacity, it is anticipated the Company will be able to produce 6,000 HG1 units per month in its Toronto assembly facilities. New assembly line equipment has been engineered and is ready to be implemented.

# <u>HG2</u>

On August 21, 2019 the Company announced that it had officially launched the marketing of its new HG2 line of on-board on-demand hydrogen injection system for diesel engines. After approximately two years of R&D, testing, verifications, modifications and re-designs, the first HG2 units of HydraGEN<sup>™</sup> Technology products are now available to dealers and distributors of dynaCERT for their clients.

The HG2 unit is much smaller in size than the HG1 unit. The new HG2 unit is suited for smaller diesel engines than those that are specifically suited to the HG1 line of HydraGEN<sup>™</sup> Technology. The HG2 unit is designed to be appropriate for those smaller displacement diesel engines used in Buses, Class 2 to Class 7 trucks, Refrigerator Trailers and Containers, Mobile Construction Equipment, Small Generators and Smaller Trucks commonly found outside of North America, such as in European countries and in India and Pakistan. This market size represents approximately 20 million applications in North America and similar sized market opportunities in each of the European and Asian markets.

dynaCERT's engineers were successful in combining the benefits of two prototype HG2 models into one single more advanced and powerful model. The new HG2 model includes a completely newly developed HydraGEN<sup>™</sup> reactor design, a built-in water tank, a climate control system and dynaCERT's Smart ECU2. Under normal operating conditions, the HG2 unit will produce hydrogen (H2) gas flows suitable for diesel engines from 1 to 5 litres in displacement.

# SALES

In the second quarter of 2019 ended June 30, the Company shipped forty-three upgraded HydraGEN<sup>™</sup> units compared to twenty-nine upgraded HydraGEN<sup>™</sup> units in the first quarter of 2019 ended March 31 to dealers and clients world-wide in accordance with dynaCERT's policy of maintaining the highest performing units for all its customers. The Company continues to work with all clients to exchange the older versions of HydraGEN<sup>™</sup> units. During the second quarter ended June 30, 2019, the Company recognized sales of \$45,638 compared with \$3,240 in the first quarter of 2019. The Company recognizes revenue in accordance with IFRS 15 *Revenue from Contracts with Customers* which specifies a number of criteria that must be met in order to recognize revenue. As a result, in accordance with IFRS 15, Deferred Revenue of \$ 297,631 was recognized as at the end of the second quarter of 2019.

## Trade Shows:

In early 2019, the company attended several trade shows such as PDAC, the Prospectors & Developers Association of Canada Convention in Toronto held March 3-6; MATS, the Mid-America Trucking Show in Louisville, Kentucky held March 28-30; Hannover Messe in Hannover, Germany held April 1-5; bauma in Munich, Germany held April 8-14 and ExpoCam in Montreal held April 11-13. This marketing effort on the part of dynaCERT has resulted in many new opportunities and leads with interests from major OEM and potential customers globally.

## Newport Fleet Sales:

On April 11, 2019, the Company announced that it had received a purchase order for ten (10) HG145B units (rugged black case) of its HydraGEN<sup>™</sup> Technology from a Toronto area business, Newport Environmental Technologies ("Newport"), a member of the Sparta Group (TSXV: SAY).

## **Above Ground Mining:**

In the Press Release dated August 2, 2019 - dynaCERT announced significant progress in 2019 in conjunction with its dealer H2 Tek, and that many new important mining initiatives are advancing favourably.

The Company initiated discussions with producing mining companies operating mines globally to employ the customized larger versions of its HydraGEN<sup>™</sup> Technology, the HG145-4C and HG145-6C models, on their equipment, machinery and mine-site generating stations. Subsequently, the Company has completed the design, engineering and procurement process to build three HG145-6C units and two HG145-4C units and is currently assembling this newest design.

With purchase orders accepted with deposits by dynaCERT, H2 Tek is already deploying dynaCERT's HydraGEN<sup>TM</sup> Technology with installations at two large mining companies operating in South America. One such installation is in Brazil with a major mine operator, while another is upcoming in Argentina with a different international mining company. A third international mining operator is earmarked for Brazil. All installations are aimed not only at reducing mining operating costs but also simultaneously enabling major miners to enhance their sustainability commitments to local governments and their international pledges by host countries in South America under the Paris Accord on the reduction of Greenhouse Gas Emissions. dynaCERT's HydraGEN<sup>TM</sup> Technology is enabling H2 Tek to advance and make further inroads to outfit fleets in the mining sector.

## **Underground Mining:**

On April 11, 2019 dynaCERT announced that it has entered into an agreement with Total Equipment Services Inc. ("TES Inc."), an underground mining equipment manufacturer, to adapt its HydraGEN<sup>TM</sup> Technology to build a safe, healthy and positive environment to the underground mining industry and its personnel. The agreement with TES Inc. provides for collaboration to penetrate markets with innovative products aimed at the reduction of NOx, THC, Particulate Matter, Carbon Dioxide and Carbon Monoxide on existing fleets of equipment (Caterpillar, Komatsu and others) in such underground mining environments, globally, and including the integration of HydraGEN<sup>TM</sup> Technology into new equipment manufactured by the TES.

The first underground mining equipment trials are scheduled to begin in September 2019.

#### New Dealers:

The Company announced a new dealer in Chile, where an initial focus is expected for the trucking and power generation applications of the Company's HydraGEN<sup>™</sup> Technology. Also, the Company has secured, in advance of KBA Homologation, a dealer in Lithuania for the Baltic States (Lithuania, Latvia and Estonia) and in Norway for Scandinavia (Norway, Sweden, Finland and Denmark).

#### Subsequent Sales

On July 2, 2019, dynaCERT announced that it has received a purchase order with a deposit for 100 HydraGEN<sup>™</sup> HG145B units destined for trucking in Mexico from KarbonKleen LLC ("KarbonKleen"), a covering Mexico, the USA and Canada. KarbonKleen's purchase order is intended to supply trucking equipment to one of the largest federations of labour unions in Mexico. The 100-unit order is expected to be a precedent for a potential exponentially larger market in Mexico estimated to be 1,000,000 trucks and buses. On August 20, 2019 the Company received purchase orders from KarbonKleen for an additional 300 HydraGEN<sup>™</sup> Technology units, for total orders from KarbonKleen, to date, of 400 units, including the 100-unit order previously announced on July 2, 2019. KarbonKleen has paid in full for the first 150 units in order to accelerate immediate delivery of the first of such 400 units to its clients and it has paid the required deposit on the next 250 units. Of the 400 HydraGEN<sup>™</sup> units, 250 are destined for KarbonKleen clients in Mexico.

## LEGAL MATTERS

The Company has filed a Statement of Claim with the Ontario Superior Court of Justice to recover costs associated with the loss due to the defective components, the work related to the redesign, and the delays in income related to business interruption in the total amount of \$47.7 million. Included in the amount claimed is \$46.8 million relating to the opportunity loss on potential sales of \$70.8 million to June 30, 2017. The defendant has filed a Statement of Defense and the action is proceeding to discovery, with examinations anticipated to be conducted in September 2019.

#### **BUSINESS DEVELOPMENTS**

#### HydraLytica<sup>TM</sup> and Telematics

During the quarter, the Company made significant advances of its telematics software in order to better demonstrate the effectiveness of its products to end-users.

On July 4, 2019, dynaCERT announced that it has formally launched its new vehicle telematics device and software ("HydraLytica<sup>TM</sup>") enabling easy access to fuel savings and carbon emission reduction reports from diesel-powered vehicles and machinery equipped with the Company's HydraGEN<sup>TM</sup> Technology. Now the Company, its dealers, and clients such as construction companies, truckers and fleet owners equipped with the HydraGEN<sup>TM</sup> Technology, can easily monitor from their computers an automatically-calculated savings of diesel and carbon emissions with HydraLytica<sup>TM</sup> updated periodically while a truck is travelling.

HydraLytica<sup>TM</sup> reads data directly from a truck's on-board-diagnostic port (the "OBD port"), and communicates this data to dynaCERT's cloud server remotely through the Company's patented Smart ECU which is integrated into the HydraGEN<sup>TM</sup> Technology unit on vehicles. At the time of activation of a HydraGEN<sup>TM</sup> Unit the new software records, from the OBD data, the total lifetime mileage and lifetime hours used and calculates fuel consumed. Once the HydraGEN<sup>TM</sup> Unit is operational, HydraLytica<sup>TM</sup> determines fuel consumption, average speed and distance traveled, and calculates fuel savings and reductions of polluting emissions in kilograms of CO2 equivalent ("CO2e").

The HydraLytica<sup>™</sup> software allows dynaCERT to provide documented proof to the market of the effectiveness of the HydraGEN<sup>™</sup> Technology as stated. Since the data used and processed is taken from a vehicle's OBD port, HydraLytica<sup>™</sup> removes any doubts about the performance of the HydraGEN<sup>™</sup> Technology as it does not rely on any human interpretation which could possibly be biased. With HydraLytica<sup>™</sup>, dynaCERT expects users will receive viewable and written confirmation direct from their own diesel engines that its HydraGEN<sup>™</sup> Technology is working and have peace of mind regarding performance.

HydraLytica<sup>TM</sup> software also enables a user to access telematics information from any location equipped with an internet connection. The HydraLytica<sup>TM</sup> software also clearly displays historical daily and weekly travel data after the HydraGEN<sup>TM</sup> Technology has been installed on a vehicle. HydraLytica<sup>TM</sup> continuously maps the routes and locations of vehicles, both in real time and historically, and displays when the vehicle is moving or stationary or when its ignition is off. The intuitive user-friendly software

of HydraLytica<sup>™</sup> allows truckers and fleet owners to review historical and current performance of their on-road and off-road vehicles.

#### **Government Support Programmes and Initiatives**

The Company is working with governmental representatives of Ontario and Quebec to have dynaCERT's products recognized for greenhouse gas emission reductions. As well, senior management continue to attend multiple Canadian Federal Government meetings with the objective of gaining support of its technology for federal ministries aiming to reduce their fuel consumption and to lower their net carbon emissions. In addition, the Company has retained senior consultants to assist with Provincial Government relations matters and Aboriginal relationships.

On May 16, 2019, the Company hosted notable Ministers and Members of the Provincial Parliament of Ontario's Government at a welcoming Head Office and Plant tour of its Toronto facilities. The then Ontario Transportation Minister, Honourable Jeff Yurek (currently Minister of the Environment) and Ontario's Environment, Conservation and Parks Minister, Honourable Rod Phillips (currently Minister of Finance) together with local Ontario Member of Provincial Parliament Kinga Surma, Parliamentary Assistant to the Minister of Transportation (currently Associate Minister of Transportation (GTA)) expressed their pleasure to participate and learn about dynaCERT's accomplishments at the mediacovered event and learn about the Company's advanced technology.

## Patent Status

Below are some of the key patents and patent applications in dynaCERT's patent portfolio:

The Company has been granted on April 9, 2019 a very key US Patent, i.e. patent number 10,253,685, called "Method & System for Improving Fuel Economy & Reducing Emissions of Internal Combustion Engines". The Canadian version i.e. patent application number 2882833, of this patent was granted on June 4, 2019. The required fee has been paid and dynaCERT is currently awaiting the issuance of the patent from the Patent Office. A continuation application with additional claims to US Patent number 10,253,685, was filed on February 20, 2019 and is currently pending.

In addition, dynaCERT has several other patent applications filed in the US, Canada and other parts of the world, and patents pending for different aspects of the HydraGEN<sup>™</sup> Technology. These are progressing through the normal patent application process. The Company's R&D team is currently working on improvements to the existing HydraGEN<sup>™</sup> Technology, and it is the intention of the Company that patent applications capturing such improvements would be filed in due course. Some of the significant patent applications are described below.

The Company received the Notice of Allowance on May 2, 2019 on US patent application number 15,298,783 "Management System and Method for Regulating the On-Demand Electrolytic Production of Hydrogen and Oxygen Gas for Injection into a Combustion Engine" referred to by the Company as the "Smart ECU patent". The application is expected to issue as US Patent number 10,400,687 on September 3, 2019. The embodiments of the US Patent relate to a management system and method that can simultaneously reduce polluting emissions and improve the performance of an internal combustion engine by: determining dynaCERT's reactor performance level or calculating the

amount of gas being generated by dynaCERT's on-demand electrolytic reactor; monitoring the engine performance level, determining whether the engine performance level would change, i.e. decrease or increase, or remain the same to forecast a future engine demand level; adjusting the reactor performance level to improve the engine performance ahead of the forecast future engine demand level materializing to minimize parasitic loss associated with reactors operating continuously, i.e. reactors that are not capable of adjusting their performance level or the level of produced gas according to the real time engine performance level; and, thereby, improving the engine performance and reducing emissions. Following PCT applications in 2017, patent applications have been filed in Canada and other countries and are awaiting review.

Two continuation applications i.e. number 16,514,460 and number 16,514,543, claiming the benefits of the US Patent number 10,400,687 ("Management System and Method for Regulating the On-Demand Electrolytic Production of Hydrogen and Oxygen Gas for Injection into a Combustion Engine") were filed on July 17, 2019.

dynaCERT has also filed in 2018, a PCT Application entitled "Systems and Methods for Tracking Greenhouse Gas Emissions Associated with an Entity". This application PCT/CA2018/051235 is a method to securely and accurately capture and transmit data on greenhouse gases associated with the following: Residential Entity (single-family residence, townhouse, condo, apartment building), Industrial Entity (factory), Commercial Entity (medical building, educational institution), Power Generation Entity, Railway Entity, Marine Entity, Aviation Entity, On-Road & Off-Road Entities (trucks, cars, buses, ATVs), Agricultural Entity (tractors, combines, barns). The Company also included fertilizers, pesticides and other chemicals and carcinogens in its patent scope. dynaCERT's data collector, the Smart ECU, when attached to the emission source by way of sensors or any other measuring devices, can directly measure emissions output. When the data is collected for the first time, it goes through a series of validation processes in order to determine an emission offset measurement based on an emission baseline. The output data is encrypted and then transmitted to a portal or platform where the data is analyzed to determine any changes in emissions output to validate compliance, determine amount of greenhouse gas credit or offset such as Carbon Credits required for trading.

## **Carbon Credits**

While in England at the London Stock Exchange Studios, in May 2018, the CEO of the Company met with the principle of "International Environmental Partners Limited" which is a Sustainability Advisor/Consultant, Carbon & Biomass trader with relevant knowledge and data of over 15,000 carbon credits from all over the world. As a result, dynaCERT has commenced working with these consultants to place its products in the front line of capturing certified Carbon Credits for the transportation industry, a world-wide leading origination that has not been previously possible. As a first step, the Company's patent pending "Smart ECU" can allow the receipt of allocated Carbon Credits through a European platform which is consistent with the requirements resulting from the Paris Accord. In addition to transportation that includes diesel-powered farm equipment, the Smart ECU technology can be used in many different applications including construction machinery, power generation, mining, marine and locomotive uses. Management believes that this type of opportunity to monetize carbon credits from the HydraGEN<sup>TM</sup> Technology operating on diesel engines exists within Europe, Canada, India and the

Middle East where the Company is already working and is discussing with its consultants and regulatory bodies the methodology to employ in order to capture, verify and trade those carbon credits.

In recognition of the importance of Carbon Credits, the Company has engaged the following outside experts:

On March 1, 2019, as reported, dynaCERT has nominated to its advisory board successful FinTech entrepreneur Brian Semkiw, P. Eng. and has more recently engaged his organization to further develop software that will enable the tracking of carbon credits generated by dynaCERT's HydraGEN<sup>TM</sup> Technology. In addition, Mr. Semkiw will oversee that such carbon credits be validated, audited and digitally accepted in international markets. Mr. Semkiw's company, 3rdGP, is the world's first third-generation processing payments company with emphasis on Blockchain and IOT payments processing solutions.

dynaCERT has entered into a contractual agreement with International Environmental Partners Limited of the UK and its President, Ms. Monika Wojcik, to manage two different but significant dynaCERT applications in the certification of the carbon reductions generated by its HydraGEN<sup>TM</sup> Technology: (a) VERRA a highly recognized international certification organization based in Washington, DC for trading in the European marketplace where the trading of carbon credits is very active and which has been established as a major initiative of the Kyoto Protocol in 1997; and, (b) the Clean Development Mechanism (CDM) for developing countries which has been administered globally since April 6, 2007 by the United Nations offices in Bonn, Germany, and which bases its criteria as a result of an EU Directive 92/57/EEC (OJ L245, 26.8.92) in the Kyoto Protocol (see Press Release dated June 7, 2018).

In its Press Release dated March 26, 2019, the Company announced that it had engaged International Environmental Partners Limited and FinTech entrepreneur, Brian Semkiw of 3rdGP, to oversee that such carbon credits are properly and effectively validated, audited and digitally accepted in international markets.

#### **Global Product Support Manager:**

On May 27, 2019 dynaCERT announced that it had appointed Steven Christou as Global Product Support Manager to provide effective product support to both the Company's clients and its dealers, internationally. Mr. Christou will be heading dynaCERT's Field Service Technician programme and will act as Technical Training Instructor. Mr. Christou is training both DYA staff and clients' technicians on the installation of HydraGEN<sup>TM</sup> units, scheduling first-order installations and handling queries from customers. Mr. Christou holds some of the highest credentials and licences as a technical expert in numerous diesel applications including for CAT and Mercedes Benz. He is a highly regarded professor at Conestoga College where he delivers a topmost curriculum at the level of Ontario ministry standards.

#### **European Product and Sales Support Manager**

On July 10, 2019 dynaCERT Inc. announced that it has appointed Mr. Michael Mayer, M.Sc., Dipl. Ing (FH) as Product and Sales Support Manager and the field service technician & technical training Instructor based in Germany working for dynaCERT GmbH, dynaCERT's subsidiary in Germany. As the Head Engineer from TÜV SÜD in Lahr, Germany (TÜV SÜD) Mr. Mayer oversaw the testing of dynaCERT's HydraGEN<sup>TM</sup> Technology for the purposes of ABE certification for Germany. After being originally skeptical about the technology and after overseeing the rigorous and successful testing four different times at TÜV SÜD, Mr. Mayer has concluded that the opportunity to work with dynaCERT and implementing the HydraGEN<sup>TM</sup> Technology is the future of diesel.

#### **International Awards:**

In conjunction with dynaCERT, H2 Tek has recently received the top award for our HydraGEN<sup>TM</sup> Technology at the 2019 Mining Cleantech Challenge in Colorado. HydraGEN<sup>TM</sup> Technology was chosen by mining executives and investors in the industry as the best among a competitive field of 12 total companies representing the U.S., Canada and Israel. An international team of judges involved in global mining reviewed and voted on the winners (see Press Release of March 22, 2019). Such judges were representatives from Newmont Mining, Fresnillo, as well as Jolimont Global, Ausenco, Resource Capital Funds and the Consulate General of Canada in Denver, to name a few.

On May 29, 2019 dynaCERT announced that it's HydraGEN<sup>TM</sup> Technology had received, from the German Design Council, the prize for Energy Solutions in 2019 in the Business-to-Business category at the German Innovation Awards ("GIA") competition.

#### PERFORMANCE MILESTONES AND VERIFICATION UPDATE

New trial programs were started in the quarter to further verify the HydraGEN<sup>TM</sup> technology to satisfy potential customers on their own transport, equipment and power generation systems in Canada, Europe, India, Pakistan, South America and parts of the USA. These programs are continuously ongoing.

#### <u>India</u>

India testing at ARAI and iCAT was conducted under several phases over the course of 2018. The Company has received certification for the HydraGEN<sup>TM</sup> technology and is in discussions with many different government authorities in order to pursue next steps towards widespread adoption of the technology.

*dynaCERT* has installed HG145B units as reported in the Press Release dated January 19, 2019 in two of India's provincial transportation authorities. The series of trials were expected to be ongoing until the end of July 2019 however as a result of Government requests, additional trials on older generation mechanical-engine powered diesel vehicles is now underway.

#### **European Homologation**

As reported in the press release dated August 16, 2018, the Company has received from KBA UN-ECE R10 approval for, and successfully completed, the Electro-Mechanical Interference test and also for the Material Certification of the HydraGEN<sup>TM</sup> Technology. Final performance testing of the HydraGEN<sup>TM</sup> Technology was completed in August 2018 and submission of the ABE license application to the KBA has been completed.

On August 26, 2019 *dynaCERT* announced that its wholly-owned European subsidiary, *dynaCERT GmbH* had obtained from Kraftfahrt-Bundesamt ("KBA"), the Transport Ministry of Germany, the Allgemeine Betriebserlaubnis ("ABE") National Type Approval ("Homologation"). ABE Homologation, which emanates from KBA, permits the marketing, sales, installation and use of *dynaCERT's* HydraGEN<sup>TM</sup> Technology in Germany and is utilized throughout the entire European Union.

Applications for ABE Type Approval must meet stringent testing and validations required by rigorous and exacting regulation in Germany. *dynaCERT's* HydraGEN<sup>TM</sup> Technology is the only hydrogen gas supply system that has ever been approved by KBA and received Homologation for the ABE Type Approval. This unique advantage gives dynaCERT a lead in hydrogen-based technology and provides a strong market benefit as well as a barrier to entry for imitators and possible competitive technologies. The addressable market of *dynaCERT's* HydraGEN<sup>TM</sup> Technology has expanded significantly and globally with the addition of this first-in-kind ABE Homologation.

As a result of its reputation for excellence, the acceptance of an ABE Homologation is monitored by other countries on every continent of the globe. In regulating their transportation industry, many countries and jurisdictions world-wide rely on the ABE Homologation as the unequivocal standard of due diligence and excellence for the regulated use of new expertise, such as dynaCERT's HydraGEN<sup>TM</sup> Technology.

*dynaCERT's* HydraGEN<sup>™</sup> Technology underwent thorough testing to obtain ABE Homologation. Moreover, the ABE Homologation from KBA required approximately 26 months of proofs of concept, testing, validations, verifications, confirmations, authentications, rigorous trials with strict protocols, scientific analysis, exacting reviews using both on-road and in-laboratory methods and accompanying certified reports. Numerous engineers, combustion specialists and automotive experts, including world-renowned authorities in Europe such as Continental EMITEC, TÜV Nord, TÜV Süd, were consulted and relied upon by KBA which granted the ABE. (See Press Releases dated August 16, 2018 and September 17, 2018).

#### Austrian Adoption

In advance of receiving KBA Homologation ABE for Europe, dynaCERT secured permission to install units on government-owned vehicles in Austria. As reported in a Press Release of the Company dated December 20, 2018, the Province of Carinthia in Austria is partnering with dynaCERT in a large-scale pilot project. In 2019, the Province of Carinthia ordered and installed two of four HydraGEN<sup>TM</sup> HG1-45B units on diesel-powered heavy-duty road service vehicles owned by the Province of Carinthia. The pilot project is to operate for several months and each vehicle is being tested weekly by a stand-alone system to record changes to the engine emissions while the HydraGEN<sup>TM</sup> Technology is in use. The Company awaits further action by the Carinthia provincial government.

#### Marine Applications

The Company continues the process to obtain Marine Classification for Type Approval. A Risk Assessment report has been completed and received from Lloyds Register. Risk Assessment defines the technical criteria that the new HG1 Marine unit is to meet for use under the Safety Of Life At Sea (SOLAS) protocol. The report has been submitted to Transport Canada for general review. The next step to build the HG145M prototype is in process for testing in Halifax. Obtaining Type Approval for the HydraGEN<sup>TM</sup> Technology is to facilitate the use of the HG145M units in all marine vessels in Canada and to be used for the basis for worldwide use. Type Approval for HydraGEN<sup>TM</sup>, marine vessels opens the way to use the HydraGEN<sup>TM</sup> Technology on all marine diesel engines (propulsion and service engines) without additional local testing.

#### **RECENT HIGHLIGHTS**

The following is a select list of the significant events and transactions that occurred during the three and six months ended June 30, 2019:

For the three months ended June 30, 2019, the Company incurred a net loss of \$2,285,405 (June 30, 2018 - \$1,446,315) and had negative operating cash flows of \$5,115,464 (June 30, 2018 - \$2,734,225). During the six months ended June 30, 2019, the Company announced a private placement of units at a price of \$0.25 per unit for an aggregate of \$5,250,000. Each unit consisted of one common share and one-half of one common share purchase warrant; each whole warrant entitled the holder to purchase one common share at an exercise price of \$0.35 per share and expire December 1, 2020, subject to a 30-day acceleration clause if, for any ten consecutive trading days during the unexpired term of such warrants, the closing price of the Company's shares is greater than \$0.50 on the TSX Venture Exchange. In conjunction with the private placement, \$8,750 of financing costs were recognized.

On April 23, 2019, the Company and Urtech Manufacturing Inc., Urtech Florida LLC, Urtech U.S. Inc., and Urtech International Inc., jointly and severally (collectively referred to as "Urtech") entered into Minutes of Settlement whereby all title to inventory of dynaCERT consigned at Urtech's premises would be transferred to Urtech and all accounts payable by dynaCERT to Urtech would be replaced with a single payable secured by a promissory note whereby dynaCERT shall pay to Urtech USD\$400,000 in 24 equal monthly installments commencing May, 1, 2019. No accretion has been recorded in the six months ended June 30, 2019 as this is the first year of the liability and the amount was not significant. As a result of the settlement of accounts payable with a promissory note and inventory a loss on settlement of debt of \$575,133 was recorded in the statement of comprehensive loss. This inventory was to be used specifically for the ECU1 and its value is included in the Statement of Claim mentioned above.

|   | Three months ended<br>June 30 |           |  |
|---|-------------------------------|-----------|--|
|   | 2019                          | 2018      |  |
| Total revenue                             | 45,638                        | 8,943     |  |
| Operating expenses, excluding share-based |                               |           |  |
| compensation, & foreign exchange          | 1,667,319                     | 1,383,663 |  |
| Share-based compensation                  | 44,441                        | 71,595    |  |
| Net loss                                  | 2,285,405                     | 1,446,315 |  |
| Basic and diluted loss per share          | (0.008)                       | (0.006)   |  |
| Basic and diluted loss per share          | (0.008)                       | (0.006)   |  |

## SUMMARY OF QUARTERLY RESULTS

Quarterly results vary in accordance with the Company's research and development, financing and noncash expenses such as share-based compensation. The Company's professional fees vary in each quarter depending on financing activities being undertaken.

Research and development expenditures vary depending on amount of work being done on product development and testing. To date the Company has expensed all research and development expenditures.

#### **Results of Operations**

The following discussion addresses the operating results and financial condition of the Company for the three and six months ended June 30, 2019 compared with the prior period. The MD&A should be read in conjunction with the Company's unaudited condensed interim consolidated financial statements and the accompanying notes.

# Results of operations for the three months ended June 30, 2019 as compared to the three months ended June 30, 2018

The Company reported a net loss from operations for the three months ended June 30, 2019 of \$2,285,405 as compared to a loss for the three months ended June 30, 2018 of \$1,446,315. The primary reasons for the increase are:

- Business development and marketing expense for the three months ended June 30, 2019 was \$444,522 compared to \$124,060 in the prior period. This is a result of additional business development and marketing activities during the three months ended June 30, 2019.
- The Company reported research and development expenses of \$490,085 for the three months ended June 30, 2019 as compared to \$338,846 in the prior period. This is a result of increased focus on research and development of the product offering.
- Loss on debt settlement was \$575,133 for the three months ended June 30, 2019 compares to \$nil in the prior period. This is a result of a debt settlement agreement closed during the period.

The Company's total assets at June 30, 2019 was \$3,922,404 (December 31, 2018 - \$4,154,980) compared to total liabilities of \$2,357,682 (December 31, 2018 - \$3,623,208). The decrease in total assets of is a result of the net cash proceeds of \$5,416,350 from financing activities, which was utilized to reduce carrying liabilities from year end.

## LIQUIDITY AND CAPITAL

As at June 30, 2019, cash on hand was \$213,081 (December 31, 2018 - \$109,327). There is an HST recoverable in the amount of \$116,269 at June 30, 2019 (December 31, 2018 - \$191,518) providing additional short-term liquidity.

At June 30, 2019 the Company had accounts payable and accrued liabilities of \$1,390,244 (December 31, 2018 - \$3,129,535). The Company raises capital, as necessary, to meet its needs and to take advantage of perceived opportunities.

#### Going concern uncertainty

At each reporting period, management assesses the basis of preparation of the financial statements. These financial statements have been prepared on a going concern basis in accordance with International Financial Reporting Standards. The going concern basis of presentation assumes that the Company will continue its operations for the foreseeable future and be able to realize its assets and discharge its liabilities and commitments in the normal course of business. These financial statements do not include any adjustments to amounts and classifications of assets and liabilities that would be necessary should the Company be unable to continue as a going concern. Such adjustments could be material.

For the six months ended June 30, 2019, the Company incurred a net loss of \$5,307,134 (June 30, 2018 - \$4,200,682) and had negative operating cash flows of \$5,115,464 (June 30, 2018 - \$2,734,225). Although the Company has generated marginal revenue from customer sales, the sales volumes achieved to date have not been significant and has not generated sufficient margins to cover the Company's operating costs and research and development costs. The Company has an accumulated deficit of \$55,520,264 since inception (December 31, 2018 - \$50,213,130) and does not have sufficient cash and receivables as at June 30, 2019 to meet its expected obligations over the next twelve months.

These factors raise significant doubt about the Company's ability to continue as a going concern. The Company's ability to continue its operations and to realize assets at their carrying values is dependent upon its ability to generate cash flows from operations and to complete negotiations to obtain and successfully close additional funding from debt financing, equity financings or through other arrangements. While the Company has been successful in arranging financing in the past, there can be no assurance the debt financing or any equity offering will be successful. These conditions indicate the existence of a material uncertainty that may cast significant doubt regarding the Company's ability to continue as a going concern. These consolidated financial statements do not reflect the adjustments to the carrying values of assets and liabilities and the reported expenses and balance sheet classifications that would be necessary were the going concern assumption deemed to be inappropriate. These adjustments could be material.

While the Company has been successful in obtaining financing to date, there can be no assurance that it will be able to do so in the future on terms favorable for the Company. The Company may need to raise additional capital to fund operations. This need may be adversely impacted by uncertain market conditions, approval by regulatory bodies, and adverse results from operations.

The Company believes it will be able to acquire sufficient funds to cover planned operations through the next twelve months from anticipated revenue growth during fiscal 2019 and by securing additional financing through additional private placements if required. The outcome of these matters cannot be predicted at this time.

## OUTSTANDING SHARE, STOCK OPTION AND WARRANT DATA

As at the date of this MD&A the following equity instruments are outstanding:

|                         | Range of Exercise<br>Prices | Number of shares issued or issuable |  |  |
|-------------------------|-----------------------------|-------------------------------------|--|--|
| Common shares           |                             | 293,279,583                         |  |  |
| Stock options           | \$0.10 - \$0.94             | 25,196,306                          |  |  |
| Warrants <sup>(1)</sup> | \$.25 - \$1.00              | 30,636,039                          |  |  |

(1) 31,722,547 of the issued and outstanding warrants will be subject to a 30-day acceleration clause if, for any ten consecutive trading days during the unexpired term of such warrants, the closing price of the Company's shares is greater than \$0.50 on the TSX Venture Exchange.

#### TRANSACTIONS WITH RELATED PARTIES

The Company paid or accrued the following costs incurred on transactions with the directors and officers and companies controlled by them during the three and six months ended June 30, 2019:

|                                     | Three months ended June 30 |         |    |         | Six months ended June 30 |         |    |         |
|-------------------------------------|----------------------------|---------|----|---------|--------------------------|---------|----|---------|
|                                     |                            | 2019    |    | 2018    |                          | 2019    |    | 2018    |
| Rent                                | \$                         | 60,161  | \$ | 51,856  | \$                       | 120,322 | \$ | 103,739 |
| Consulting fees paid to consultants |                            | 45,000  |    | 59,000  |                          | 93,000  |    | 91,000  |
|                                     | \$                         | 105,161 | \$ | 110,856 | \$                       | 213,322 | \$ | 194,739 |

Key management includes directors and other key personnel, including the CEO, President and CFO, who have authority and responsibility for planning, directing, and controlling the activities of the, Company.

Included in accounts payable and accrued liabilities as at June 30, 2019 is \$nil (December 31, 2018 is \$395,685) owed to directors, companies controlled by former directors or companies having certain directors in common.

The compensation paid to these key management personnel for the three and six months ended June 30, 2019 and June 30, 2018 is:

|                          | Three months ended June 30 |         |    |         | Six months ended June 30 |         |    |           |
|--------------------------|----------------------------|---------|----|---------|--------------------------|---------|----|-----------|
|                          |                            | 2019    |    | 2018    |                          | 2019    |    | 2018      |
| Short-term benefits      | \$                         | 131,305 | \$ | 151,096 | \$                       | 206,188 | \$ | 301,428   |
| Share-based compensation |                            | -       |    | -       |                          | 412,463 |    | 916,052   |
|                          | \$                         | 131,305 | \$ | 151,196 | \$                       | 618,561 | \$ | 1,217,480 |

The Chief Financial Officer ("CFO") of the Company is a senior employee of Marrelli Support Services Inc. ("MSSI"). During the three months ended June 30, 2019, the Company paid or accrued professional fees of \$15,000 (three months ended June 30, 2018 - \$nil) to MSSI. These services were incurred in the normal course of operations for general accounting and financial reporting matters. MSSI also provides bookkeeping services to the Company. As at June 30, 2019, MSSI was owed \$5,700 (December 31, 2018 - \$nil) with respect to services provided.

#### **RISKS AND UNCERTAINTIES**

An investment in the securities of the Company is highly speculative and involves numerous and significant risks. Such investment should be undertaken only by investors whose financial resources are sufficient to enable them to assume these risks and who have no need for immediate liquidity in their investment. Prospective investors should carefully consider the risk factors that have affected, and which in the future are reasonably expected to affect, the Company and its financial position. Please refer to the section titled "Risk Factors" in the Company's Annual MD&A dated April 30, 2019 available on SEDAR at www.sedar.com.