

Tecogen Inc. (TGEN)

Company Report – December 5, 2015

Tecogen designs, manufactures and sells industrial and commercial CHP (combined heat and power), or cogeneration, systems that produce combinations of electricity, hot water, and air conditioning. The main drivers for end users to opt for a CHP system are a significant reduction in energy costs, a potential governmental incentive, and the fact that it provides a safe and reliable backup in case of a utility grid blackout.

With an installed base of more than 2,300 machines, Tecogen is a well-established and respected Company in the industry. Its revenues continue to grow thanks to both increased product sales and recurring service activity. Revenue for the most recent trailing four quarters is at record levels.

Next to three types of CHP systems, the Company also markets the Ultra low emissions technology, which dramatically reduces an engine’s emissions. In fact, thanks to Ultra, CHPs can now meet the strictest emission regulations worldwide. More recently, with the Volkswagen emissions scandal in mind, Tecogen started researching if Ultra can be applied to gasoline fueled engines. First results look promising.

Based on the intrinsic value of Tecogen’s shares derived from our model, we issue a buy recommendation for the Company with a price target of \$8.87, which is 141% above today’s stock price.



- ❑ The Company’s patented Ultra kit could be retrofitted to the more than 80,000 natural gas generators that are sold in North America annually, lowering NOx and CO emissions to near-zero levels.
- ❑ The backlog at the end of the third quarter grew to \$11 million, in line with the Company's goal of consistently delivering quarter-end product backlog greater than \$10 million.
- ❑ Tecogen has a solid balance sheet with close to \$4 million in cash at the end of the September quarter.
- ❑ There are vast market opportunities for CHP units with customers that include hospitals, colleges and universities, health clubs and spas, hotels and motels, food service and multi-unit residential buildings, etc.



Market Data	
Price	\$3.68
Sector	Technology
52-Week Price Range	\$2.80 - \$7.80
Shares Issued (m)	17.59
Market Cap (m)	\$64.73
Listings	TGEN (NASDAQ)
Website	www.tecogen.com

THE COMPANY

Tecogen was formed in the early 1960s as a research division of Thermo Electron Corporation, which is now Thermo Fisher Scientific (NYSE: TMO), a \$53 billion company. The division was charged with developing cogeneration technologies and released its first major product, a 60 kW combined heat and power module, in 1982.

In 2000, Tecogen was sold to a group of private investors, including Thermo Electron's original founders, Dr. George Hatsopoulos and John Hatsopoulos.

Tecogen designs, manufactures and sells industrial and commercial cogeneration systems that produce combinations of electricity, hot water, and air conditioning using engines that have been specially adapted to run on natural gas. This technology is called cogeneration, or Combined Heat and Power (CHP).

Cogeneration systems are efficient because they drive electric generators or compressors, which reduce the amount of electricity purchased from the utility. Plus they use the engine's waste heat for water heating, space heating, and/or air conditioning at the customer's building, vastly improving fuel efficiency.

The main drivers for end users to opt for a CHP system are a significant reduction in energy costs, fuel efficiency, emissions reduction, and backup power generation and Microgrid capabilities that allow for participation in demand response and load shaving incentive programs.

Tecogen manufactures three types of products:

- ❑ Cogeneration units that supply electricity and hot water;
- ❑ Chillers that provide air-conditioning and hot water; and
- ❑ High-efficiency water heaters, developed and distributed through the Company's subsidiary Ilios.

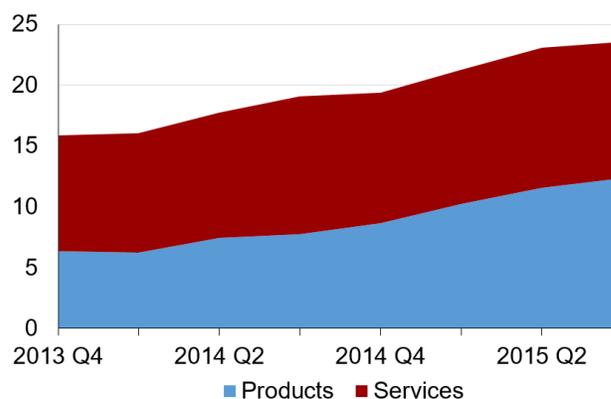
Existing customers for these CHP systems include hospitals and nursing homes, colleges

and universities, health clubs and spas, hotels and motels, office and retail buildings, food and beverage processors, multi-unit residential buildings, laundries, ice rinks, swimming pools, factories, municipal buildings, and military installations.

Next to the three above mentioned products, the Company markets the Ultra low emissions technology. Ultra is a muffler-like kit that dramatically reduces an engine's emissions. In fact, in 2012, a 75 kW CHP unit equipped with the Ultra system became the first unit to obtain a conditional air permit in Southern California under the new air quality standards, an area with one of the strictest emissions regulations worldwide.

A couple of months ago, following Volkswagen's emissions scandal, Tecogen started researching the feasibility of adapting the Ultra technology for gasoline engines. First results looks promising. If progress continues to be made in this area, or if a research collaboration with an automotive company can be closed, Tecogen's value will dramatically surge.

The Company's financials continue to increase. In the third quarter, ended September 30, 2015, it reached revenues of \$4,676,042 compared with \$4,175,863 for the same period in 2014, an increase of 12%. Moreover, total revenue for the most recent trailing four quarters is \$23.5 million, the highest in the Company's history.



Tecogen's trailing four quarters sales (in million USD) are at record levels.

When a potential customers lacks the necessary funds to purchase a Tecogen unit,

or when it prefers not have such a unit on its balance sheet, Tecogen will refer that customer to American DG Energy (NYSE MKT: ADGE), an on-site utility provider. In Europe, Tecogen cooperates with EuroSite Power (OTCQB: EUSP), which offers similar services as American DG Energy.

Both American DG Energy and EuroSite Power offer customers a “no cost, no responsibility, no risk, just savings” approach for making savings from on-site energy solutions, such as Tecogen’s CHP units. On-site utility customers only pay for the energy produced by the systems and receive a guaranteed discount rate on the price of the energy. All system capital, installation and operating expenses are paid by American DG Energy or EuroSite Power.

Keeping pace with growing revenues, sales backlog of equipment and installations grew to \$11 million, in line with the Company's goal of consistently delivering quarter-end product-related backlog greater than \$10 million.

Tecogen constantly enhances its intellectual property position through patent, trademark and licensing in its field. Several patents and patent applications directed to emissions control, power generation, controls, inverters and related technologies have been lodged and granted to Tecogen in the US and abroad.

The Company is supported by an established network of engineering, sales, and service personnel across the United States. Tecogen has 72 full-time employees and 3 part-time employees, including 6 sales and marketing personnel and 31 service personnel.

Case Study – Toren Tower

The Company’s business model, and benefits for all parties involved, will become even clearer on the basis of a case study.

Toren, designed by Skidmore, Owings and Merrill, an architectural firm known internationally for their cutting edge skyscrapers, is an iconic glass landmark that has forever changed downtown Brooklyn. The 37 story building offers 240 condominium

homes with breathtaking floor-to-ceiling views of the Manhattan skyline and New York Harbor as well as the opportunity to live in the most environmentally advanced high-rise residential building in New York, perhaps even in the U.S.

Toren was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources.



Tecogen’s cogeneration system reduces Toren’s carbon footprint by more than 2000 tons of CO2 each year while providing an annual energy cost savings of \$540,000.

Toren’s super-efficient, ultraclean mechanical systems, designed by Energy Concepts Engineering, uses five Tecogen 100kW cogeneration modules, located on-site, to fill much of the building’s energy needs. At Toren, the cogen modules provide electricity and the waste heat they produce is used to heat interior spaces, provide domestic hot

water, heat the pool and even run the air conditioning.

Toren's CHP plant is designed to automatically follow the building's electric demand. As demand for electricity increases and decreases within the building, the electrical output from each of the five CHP modules will also increase and decrease. Through highly sophisticated load control software built into each unit, the amount of electricity being purchased from Consolidated Edison, the electric utility in Brooklyn, can be maintained at less than 20kW. "For a building of this size, and with its luxury features, to be consuming less than 20kW from Con Edison is extremely satisfying" says Bill Cristofaro from Energy Concepts Engineering.

Another innovative, unique and very desirable feature of Toren's cogen system is that it is a "Micro-Grid" with the ability to run independent from the grid in "Island Mode", providing power for the building if New York should ever experience a blackout like the one in 2002.

Nationwide Factory Service

Besides selling machines, which in many cases are one-off deals, Tecogen generates plenty of revenues through service contracts. This is a reliable and growing part of the Company's total sales. In fact, as of year end 2014, 68% of Tecogen's installed units have a service contract.

Tecogen's experts are available to provide a wide array of useful services to its customers:

- ❑ **Application Support** – Tecogen can help a potential customer decide if the facility is a good fit for CHP, by analyzing the current utility bills and loads. It can also quantify the environmental and economic benefits, so that the end user knows exactly how much the facility will benefit. In addition, assistance can be given with the engineering and permitting process.
- ❑ **Full "Turnkey" Installation, or Just Partial Installation Support** – Tecogen's 25+ years of practical application and installation experience means that it can

provide a completely installed and working system, including all engineering, and utility interface. Tecogen's turnkey capabilities ensure that a facility gets the full benefits of CHP at the best possible price, with single-point responsibility and expert management of the entire process.

- ❑ **Factory Service** – Tecogen's expert factory technicians will ensure that a customer's equipment is properly taken care of throughout its lifetime.
- ❑ **Parts Support** – Tecogen provides a full range of spare parts for all the equipment it sells.

Most of the service revenue is in the form of annual service contracts. Customers are invoiced in level, predictable amounts without unforeseen add-ons for such items as unscheduled repairs or engine replacements.

Tecogen offers service support on all its CHP products nationwide through a network of eight well-established field service centers in California, the Midwest, and the Northeast. These centers are staffed by full-time Tecogen technicians, who exclusively work on Tecogen products.

This unique and established service infrastructure has been an essential part of Tecogen's growth and success through the years. Good factory support options from Tecogen allow its customers to focus on their core missions and businesses. Factory service also keeps Tecogen in close touch with its customers and their specific site issues.

Competition

Tecogen's products fall into the broad market category of distributed generation systems that produce electric power on-site to mitigate the drawbacks of traditional central power and the low efficiency of conventional heating processes.

The Company's CHP products use reciprocating engines originally designed for gasoline fuel and modified to run on natural gas. Diesel-fueled reciprocating engines will remain prominent in the CHP market, but only

in larger, custom-designed systems (one MW or more), so these products don't really compete with Tecogen's.

In smaller CHP sizes, competitors have been able to duplicate Tecogen's older designs, where an engine is coupled to a single-speed generator and where controls and heat recovery systems are added. Tecogen, however, is confident that no other company has developed a product that competes with its inverter-based InVerde CHP, which offers UL-certified grid connection, outage capability, and variable-speed operation.

And if competitors wanted to do so, product development time and costs would be significant. In addition, certain Tecogen patents and licenses for microgrid software will keep others from offering certain important functions.

Also the issued patents and applications relating to the Ultra low-emissions technology are expected to make the development of alternative emission reduction technologies by competitors difficult.

In the growing microgrid segment, neither fuel cells nor microturbines can respond to changing energy loads when the system is disconnected from the utility grid. Engines inherently have a fast dynamic response to step load changes, which is why they are the primary choice for emergency generators. Fuel cells and microturbines would require an additional energy storage device to be utilized in off-grid operation.

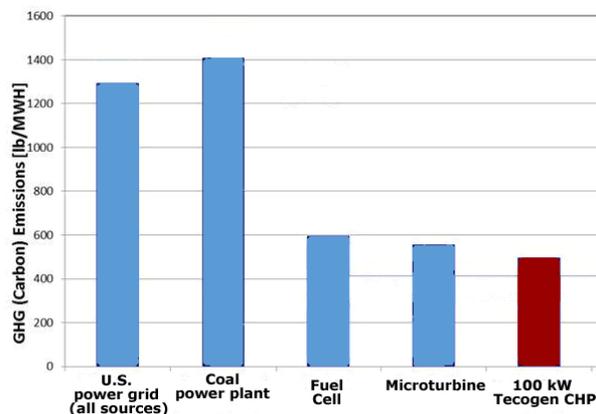
TECHNOLOGY

Combined Heat & Power (CHP) is truly a way to get "two for the price of one". It makes the electricity or cooling power that a customer needs, and it captures much of the thermal energy that is normally lost during the energy conversion into power. With CHP, the "waste" thermal energy gets captured and put to good use on site, for heating water or building spaces. Waste heat captured from the cogeneration system can even be fed into a device called an absorption chiller, which is able to convert the waste heat into cooling. As such, a normally very energy intensive task,

such as heating and cooling, is now accomplished at no additional cost to the customer or environment.

Tecogen's products also address the global objective of reducing greenhouse gas emissions. When burned to generate power, natural gas produces lower carbon emissions per unit of energy than any fossil fuel, according to the EPA combined heat and power emissions calculator.

The Company's products, in addition to using the lowest amount of carbon fuel, further reduce CO2 emissions (greenhouse gases) because of a CHP's higher efficiency. The graph below compares the CO2 output of a Tecogen product to that of the national electric grid and other generation technologies. It's clear that the Tecogen systems are far superior to the grid and even outperform the CHP technologies of fuel cells and microturbines at a fraction of the cost.



Comparison of carbon emissions for various sources including Tecogen's CHP and chiller products. Source: Company Filing.

Furthermore, one Tecogen 100-kW CHP unit will reduce carbon emissions by 390 tons per year (based on 8,000 run-hours), which, according to the EPA website's calculator, is the equivalent of 64 cars on the road. A microturbine of the same size would reduce carbon emissions by only 245 tons per year, the equivalent of 41 cars, which is less than two-thirds the emissions reduction of our CHP product.

In addition to reducing greenhouse gases, the Tecogen CHP's with Ultra low-emission

controls improve air quality by reducing such pollutants as NOx and CO. The annual output of emissions of the InVerde unit equipped with the Ultera technology is extremely low and compares with alternative energy technologies producing the equivalent energy output on an annual basis (100 kW, 670,000 Btu/hr).

Tecogen offers three types of CHP systems that are each discussed below. Also, the highly efficient Ultera system that makes CHPs meet the most stringent emissions standards is detailed below.

Combined Heat and Power

Tecogen's premier cogeneration product is the InVerde, a 100-kW CHP system that not only provides electricity and hot water, but also satisfies the growing customer demand for operation during a utility outage, commonly referred to as "black-start" capability. The InVerde's black-start feature addresses a crucial demand from commercial and institutional customers who are increasingly concerned about utility grid blackouts and brownouts, natural disasters, security threats, and antiquated utility infrastructure.



CHP reduces greenhouse gas emissions, normally associated with electricity and hot water production, by as much as 50%. This efficiency helps customers cut their utility bills significantly.

The InVerde incorporates an inverter, which converts direct current, or DC, electricity to alternating current, or AC. With an inverter,

the engine and generator can run at variable speeds, which maximize efficiency at varying loads. The inverter then converts the generator's variable output to the constant-frequency power required by customers (50 or 60 Hertz).

Multiple InVerde units can operate collectively as a stand-alone microgrid, which is a group of interconnected loads served by one or more power sources. The InVerde is equipped with software that allows a cluster of units to seamlessly share the microgrid load without complex controls.

The best applications for Tecogen cogeneration systems are in facilities that have consistent electrical and thermal needs, including: hospitals, nursing homes, colleges, schools, recreational facilities, government buildings, large residential facilities, industrial facilities, hotels, and ice rinks.

Chillers

TECOCHILL natural gas engine-driven chillers provide building owners with a reliable, proven, efficient, and cost-effective alternative to conventional electric motor-powered chillers. It's the only natural gas powered chiller on the North American market.

This technology was developed in 1987. The engine drives a compressor that makes chilled water, while the engine's free waste heat can be recovered to satisfy the building's needs for hot water or heating. This process is sometimes referred to as "mechanical" cogeneration, as it generates no electrical power, and the equipment does not have to be connected to the utility grid.

A TECOCHILL's benefits are significant. It cuts a building's cooling costs in half, by eliminating most of the electrical demand (kW) associated with providing cooling. In addition, it offers optional "waste" heat that is always available at the same time. This high-quality heat source (up to 230°F hot water) literally comes for free, whenever the chiller is running.

The TECOCHILL chillers are available in capacities ranging from 25 to 400 tons, with

the smaller units air-cooled and the larger ones water-cooled. They are ideal in facilities where new chilling capacity is desired, where the local electric utility's kW demand charges are high, or where the site's electrical capacity is limited.



TECOCHILL chillers are powered by TecoDrive 7400 engines, industrial versions of the General Motors Mark V 7.4L V8, modified to Tecogen specifications.

Basically, they make sense wherever large chillers are needed, including hospitals, colleges, schools, office buildings, aquariums, government buildings, large residential facilities, industrial facilities, hotels, and ice rinks.

Ilios High-Efficiency Water Heaters

The Ilios water heater product operates like an electric heat pump but uses a natural gas engine instead of an electric motor to power the system.

The Ilios high-efficiency water heater, uses a heat pump, which captures warmth from outdoor air even if it is moderately cool outside. Heat pumps work somewhat like a refrigerator, but in reverse. Refrigerators extract heat from inside the refrigerator and move it outside the refrigerator. Heat pumps extract heat from outside and move it indoors. In both cases, fluids move the heat around by flowing through heat exchangers. At various points the fluids are compressed or expanded, which absorbs or releases heat.

The gas engine's waste heat is recovered and used in the process, unlike its electric

counterpart, which runs on power that has already lost its waste heat.

The net effect is that the efficiency of Ilios' heat pump efficiency far surpasses that of conventional boilers for water heating. This translates directly to lower fuel consumption and, for heavy use customers, significantly lower operating costs. Gas engine heat pumps can deliver efficiencies in excess of 200%.

The Ilios market continues to expand both geographically and into different end-market segments. The high-efficiency water heater is ideal for locations with a gas demand of at least 4000 Therms/month, such as water parks, swimming pools, hotels, hospitals, apartment buildings and recreation centers. The Ilios system also attracts customers that consistently have the simultaneous need for heating and cooling, such as manufacturing and R&D type facilities.



With an Ilios High Efficiency Water Heater, free heat from the engine is added to water-source heat or air-source heat for twice the efficiency of a traditional boiler.

Ultra

In 2008 there was a dramatic change in the air quality regulations in Southern California. At that time no technology could meet the new, stricter, emission standards.

The Ultra breakthrough technology was developed in 2009 and 2010 as part of a research effort funded by the California Energy Commission and Southern California Gas Company. The objective was to bring emissions from natural-gas engines and CHP systems into compliance with California's standards, which are now the most stringent in the United States.

Other manufacturers apply a three way catalyst to simultaneously get rid of NOx compounds, CO and hydrocarbons. Tecogen instead, decided to look at the chemistry of emissions instead of the mechanical controls of the engine. They broke the catalyst process into two steps and tried running each step at a different temperature.

By controlling the temperature in the first stage, the system could achieve very low NOx. The second stage process needed to be configured to oxidize the remaining pollutants, such as carbon monoxide and various hydrocarbons. This was achieved by injecting a little air between the first and second stages and altering the process conditions.



The Ultra Emissions System mounted to a CHP unit. The Ultra is designed to deliver simple, cost-effective solutions for natural gas engines to meet stringent emissions standards.

The first commercial CHP units, equipped with the Ultra low-emissions technology, were shipped in 2011 to a California utility.

Tecogen conducted three validation programs for its revolutionary technology:

- **Third-party laboratory verification** - The AVL California Technology Center, a long-standing research and technology partner with the international automotive industry, confirmed Ultra's results in their state-of-the-art dynamometer test cell, which was outfitted with sophisticated emissions measurement equipment.
- **Verifying longevity and reliability in the field** - One of Tecogen's 75-kW units, already operating at a customer location in Southern California, was equipped with the Ultra low-emissions technology and a device to monitor emissions continuously. To date, the Ultra low-emissions system has operated successfully for more than 25,000 hours (approximately 3 1/2 years) and has consistently complied with California's emission standards. This field test remains ongoing.
- **Additional independent tests** - During the field test, two companies, licensed in California to test emissions, each verified the results at different times. The results from one of these tests (obtained in August 2011) enabled the Company to qualify for New Jersey's fast-track permitting for low emissions equipment. Virtually every state nationwide requires some kind of permit related to local air quality, but New Jersey allows an exemption for systems such as Tecogen's that demonstrate superior emissions performance. This certification was granted in November 2011.

In 2012, a 75 kW CHP unit equipped with the Ultra system became the first unit to obtain a conditional air permit in Southern California since the strict regulations went into place in 2009. A state-certified source test, administered in January 2013, verified that the emissions levels of the system were well below the new permitting requirements,

and the final permit version was approved in August 2013.

After a successful field test of more than a year, the Ultera technology was commercially introduced as an option for all of Tecogen's products under the trade name Ultra, which was recently changed to Ultera.

This technology was patented in the US in October 2013 with many foreign patents granted or applications pending. The Ultera low-emissions technology repositions the Company's engine-driven products in the marketplace, making them comparable environmentally with emerging technologies such as fuel cells, but at a much lower cost and greater efficiency.

Tecogen originally developed and patented the Ultera-low emission control technology for its own CHP products and has since decided to make the technology available for retrofit on non-Tecogen applications.

The Ultera retrofit kits deliver simple, cost-effective and robust solutions for meeting even the most stringent emissions standards. The patented system provides peace of mind to its customers by lowering NOx and CO (criteria pollutants) to near-zero levels without the need for complex additional controls or frequent maintenance. (Also see 'Recent Events').

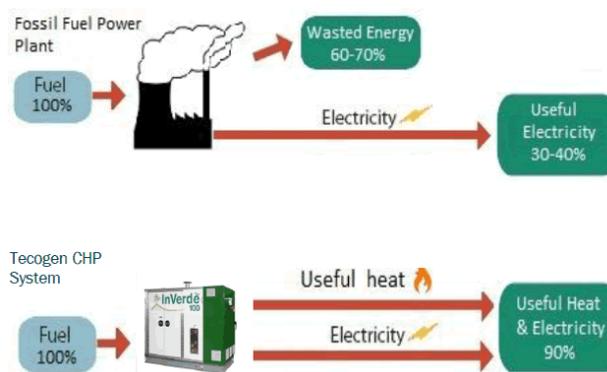
Adapting the Ultera technology to gasoline fueled engines, represents an exciting and game-changing new market for Tecogen. The prospect of vehicle and stationary engines, with standard engine technology, but realizing fuel cell like emissions is tremendously compelling from a policy and market standpoint.

The Volkswagen emissions scandal obviously provides an excellent opportunity for Tecogen to prove that its technology is the best way to meet these stringent standards. Initial research indicates that the Ultera technology may work for gasoline fueled engines as well. Current regulations for automobiles are considerably above the current standards for stationary applications. (Also see 'Growth Drivers').

THE MARKET

During the 20th century, fossil-fuel power plants worldwide evolved toward large, complex central stations using high-temperature steam turbines. This technology, though steadily refined, reaches a maximum efficiency of about 40%. According to official numbers by the US Environmental Protection Agency (EPA), the average efficiency of fossil-fuel power plants in the United States is 33% and has remained virtually unchanged for four decades.

CHP, which harnesses waste energy from the power generation process and puts it to work on-site, boosts the efficiency of energy conversion to nearly 90%, a better than two-fold improvement over the average efficiency fossil fuel plant. The implications of the CHP approach are significant. If CHP were applied on a large scale, global fuel usage might be curtailed dramatically.



Fossil fuel power plants reach a maximum efficiency of about 40%, while CHPs approach 90%.

A majority of potential customers in the U.S. require less than 1 MW of electric power and less than 1,200 tons of cooling capacity. This is ideal, as Tecogen's systems have a capacity exactly suited for these types of customers.

The Company's products are sold directly to end-users by its own sales team and by established sales agents and representatives, who are compensated by commissions, including American DG Energy and EuroSite Power. Various agreements are in place with distributors and outside sales representatives for certain territories and product lines.

Tecogen has shipped more than 2,300 units, some of which have been operating for almost 25 years. This is a well-established and respected company in the industry.

GOVERNMENT REGULATIONS

Several kinds of government regulations affect the Company's current and future business, such as:

- ❑ Air pollution regulations, which govern the emissions allowed in engine exhaust;
- ❑ State and federal incentives for CHP technology; and
- ❑ Electric utility pricing and related regulations
- ❑ Electric grid interconnection regulations

Strict regulations that control **air quality and greenhouse gases** increasingly favor Tecogen's low-emission products. In some states that have strict emissions regulations, such as California, the pollution from natural gas engines presents a challenge.

However, the development of the Ultera low-emissions technology has addressed this issue. In January 2013, a state-certified source test at a customer's site verified that emissions levels of a CHP equipped with the Ultera technology, were well below the new permitting requirements.

Likewise, in New Jersey, where emissions regulations are trending towards California levels, the Company has already established its Ultera CHP as a certified technology; a unique status that separates it from the competition.

In addition, there are currently 23 states that recognize CHP as part of their Renewable Portfolio Standards. New York and New Jersey, for example, have **incentive programs** that rebate a significant portion of the CHP project cost. Similar incentive programs also exist in Massachusetts, Rhode Island, and Maryland albeit with different structures and terms. Massachusetts has an additional CHP incentive in the form of an

annual rebate proportional to the carbon savings versus conventional technology.

Finally, the Company is also targeting customers in states with **high electricity rates** in the commercial sector, such as California, Connecticut, Massachusetts, New Hampshire, New Jersey, and New York. These regions also have high peak demand rates, which favor utilization of modular units in groups so as to assure redundancy and peak demand savings.

RECENT EVENTS

Ultera Retrofit Project Advances

So far, Tecogen has received three important orders from California-based customers to retrofit engines with an Ultera emissions system.

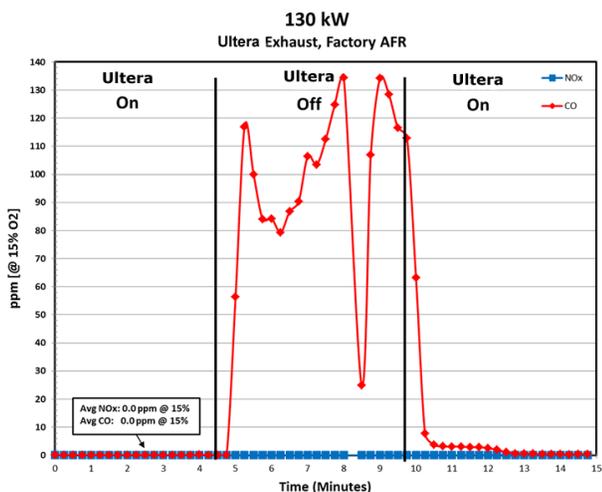
A little over a year ago the Company sold an emissions reduction system to the Eastern Municipal Water District (EMWD) in Perris, California.

The system used is somewhat a larger scale version of a regular Ultera, as it is applied to a 48-liter engine, which is fueled by biogas that's being extracted from an anaerobic digester at the District's Moreno Valley Regional Water Reclamation Facility. This is the first time that the Tecogen Ultera system is utilized for a biogas (or biofuel) application.

Biogas is a significant byproduct of wastewater treatment plants, whose chemical energy is often reclaimed by its utilization as a fuel for generating renewable power in the form of electricity or as mechanical water pump drive. By 2017, however, digester gas (biogas) engines in the region will be mandated to operate to the stricter pollution standards currently in place for natural gas engines.

The second order, was in two phases from a Fortune 500 industrial customer for the application to a 130 kW natural gas emergency generator. This is an important order for the Company because standby generators are currently prohibited in many cases from extended use beyond the 200 hour

exemption for peak shaving or demand response programs.



The Ultra system’s impact on emissions when switched on and off. NOx emissions (blue) and CO emissions (red).

The first phase of the order, which was to demonstrate the merits of the technology, went very well. The testing included running the unit at a wide variety of loads and simulated load swings. Under all test conditions, the unit maintained compliance with the strictest emissions regulations and presented an overwhelming proof of the system’s effectiveness.

A couple of weeks ago, the Company received the second phase of the order. The multi-unit retrofit contract is valued at nearly half a million dollars, more than all prior combined sales of retrofit emissions kits to date.

Speaking about the project, Tecogen President, COO and an inventor of the patented ultra-clean emissions technology Robert Panora noted, "The receipt of a phase two order further validates the effectiveness of our emissions technology. I am confident that this order is among the first of a number of successful applications of our emissions technology."

The third order is for the Gage Canal Company in Riverside, California, which supplies water for irrigation and other uses in the area. The emissions after-treatment system will be applied to an existing 15 liter natural gas-fueled Caterpillar engine that pumps below-ground well water to the canal.

Furthermore, the Company is currently in negotiations with several other water companies for similar projects and with CHP operators in California and Massachusetts.

Let there be no misunderstanding, the Ultra retrofit market has tremendous potential for Tecogen.

The very strict emissions regulations that began in Southern California in 2008, require regular self-testing of the equipment. When a test fails, it essentially only requires some paperwork, and a few adjustments to the engine and the unit can continue to run.

Regulators, however, have started the process to remove this loophole. They've proposed rule amendments that include fines and if tests continue to fail, the permit to run the unit can be revoked.

Moreover, a simple natural gas generator that can be permitted without any use restriction has real value in a very large market. Current sales of natural gas engines in the 50 to 500 horsepower range in North America are over 80,000 units, many of which are for backup power. Owners in emission-sensitive areas would be able to utilize their otherwise inactive back-up generators to peak shave their electric use, removing the most punitive kilowatt-hours from their monthly utility bill. This type of proactive load shedding, referred to as Demand Response, is increasingly popular and incentivized by many US utilities.

Engineering Contract for 14 CHP Units

In July of this year, Tecogen was awarded a contract to engineer construction of multiple CHP systems for a school district in Long Island, New York. The engineering project will consist of 14 Tecogen CHP modules applied to six schools, two of which are high schools and four are middle schools.

The 14 units are comprised of a mix of two Tecogen CHP models: the CM-75 (75 kW) and the InVerde INV-100 (100 kW). All units will incorporate Tecogen's patented low emissions technology Ultra.

The CHP systems will be sized for the energy requirements of each individual school by

grouping modules to maximize efficiency and savings. The smallest two schools will utilize a single CHP unit and the largest, a high school, will use five units.

The engineering contract was awarded by a construction firm under subcontract by a large multi-national energy services company (ESCO) which is providing a broader range of efficiency services to the district. Upon completion of the engineering design, a final review with the construction firm, ESCO, state and local officials will determine approval for construction.

"We are optimistic that this project will proceed to construction," said Robert Panora. "We have recently completed other public school projects with the same construction firm and Energy Services Company (ESCO) with positive results utilizing an identical, multi-phase process. This project is also on the heels of a similar project announced several weeks ago from the same ESCO that reached approval for construction.

Because this is not a purchase order yet, the 14 CHP units haven't been included in Tecogen's already attractive backlog of approximately \$11 million.

Multiple replacement TECOCHILL Order

Early December 2015, Tecogen received an order worth over half a million dollars from a returning customer to replace multiple TECOCHILL chillers. Newport East's 366-unit coop, located on New York City's Upper East Side, includes retail space as well as a heated rooftop swimming pool.

The consistent heating and cooling needs of the site, make it well suited for Tecogen's equipment as waste heat from the engine and exhaust are recycled to provide domestic hot water for residents. First installed in 1989, the original Tecogen equipment has reliably supplied central air-conditioning to the 19-floor building for over 25 years.

The new contract includes replacement of the aging units along with a renewed long-term

service agreement for complete ongoing equipment maintenance.

Speaking about the project, Robert Panora added, "Receiving replacement orders from longtime customers is a validation of Tecogen's equipment and servicing model and a testament to the compelling value proposition we offer the market."

GROWTH DRIVERS

Ultra Gasoline Engine Application

Early October 2015, following the outbreak of the Volkswagen emissions scandal, Tecogen formed an advisory group to explore market applications of its patented Ultra technology for the gasoline vehicle market.

Mr. Panora will lead the initiative. Other members include Angelina Galiteva, Chairperson of Tecogen's Board of Directors, Chairperson of the World Council for Renewable Energy (WCRE), and a member of the Board of Governors of the California Independent System Operator (CAISO); Ahmed Ghoniem, Tecogen board member, MIT professor, and director of the Center for 21st Century Energy; Charles Maxwell, Tecogen board member and retired energy sector analyst; and Dr. Yiannis Monovoukas, chemical engineering expert and former chairman and CEO of TEI Biosciences.

"Our emissions technology systems have been installed and operate successfully for both natural gas and biogas-fueled stationary engine applications for several years now," said Mr. Panora. "We look forward to working with the members of the newly-formed advisory group to explore the potential applications of this game-changing technology to automotive gasoline engines and to focusing on developing a path for its rapid commercialization."

Because of the Company's strong belief in the value of its emissions technology, patent infringement insurance has been secured by Lloyds of London to defend unlicensed use of Tecogen's intellectual property.

It's clear that any breakthrough in the billion dollar automotive industry immediately puts Tecogen in another category.

FINANCIALS

Product revenue is derived from the sale of the various cogeneration and chiller units. Because the equipment is built to last 20 or more years, most of the product sales are to first time customers. Recurring sales also occur to ESCO partners or long time customers, such as the recent TECOCHILL contract mentioned under 'Recent Events'.

The sales cycle for each module varies widely, and can range from as short as a month to as long as a year or more. The cogeneration and chiller modules are built to order and revenue is recognized upon shipment.

The Company's **service revenue**, however, lends itself to recurring revenues from particular customers. For the last two fiscal years, close to one third of Tecogen's revenues were generated from long-term maintenance contracts, which provide the Company with a somewhat predictable revenue stream.

The service revenue has grown each year since 2005, with New York City/New Jersey, New England and to some extent California experiencing the majority of the growth. This growth is consistent with the sale of new units into those territories.

Amounts in \$000's	09/30/15	09/30/14
<u>Products</u>		
Cogeneration	6,592	3,200
Chiller & Heat Pump	2,152	1,847
Total Product Sales	8,744	5,047
<u>Services</u>		
Service Contracts	5,829	5,503
Installations	2,590	2,381
Total Services Sales	8,419	7,884
Total Sales 9M	17,163	12,934
Net sales by product line and services for the nine months ended September 30, 2015 and 2014. Source: Company Filing		

Revenues in the third quarter of 2015 were \$4,676,042 compared to \$4,175,863 for the same period in 2014, an increase of \$500,179 or 12.0%. Product revenues in the third quarter of 2015 were \$1,860,860 compared to \$1,094,529 for the same period in 2014, an increase of \$766,331 or 70.0%.

This increase was the aggregate of an increase in cogeneration sales of \$867,112 and a decrease in chiller and heat pump sales, which include the Ilios products, of \$100,781. Service revenues in the third quarter of 2015 were \$2,815,182 compared to \$3,081,334 for the same period in 2014, a decrease of \$266,152 or 8.6%. This decrease in the third quarter is due to a decrease in installation activity of \$379,895 and an increase of \$113,743 in service contracts.

Amounts in \$000's	09/30/15	09/30/14
Net Sales	4,676	4,176
Cost of Sales	3,007	3,086
Operating Expenses	2,593	2,545
Loss From Operations	924	1,455
Total Other Expenses	66	26
Net Loss	949	1,448
Diluted Shares Outs.	17,154	15,448
Diluted EPS	(0.06)	(0.09)
Most important income statement data for the quarters ending September 30, 2015 and September 30, 2014. Source: Company Filing		

Revenues in the first nine months of 2015 were \$17,163,307 compared to \$12,931,477 for the same period in 2014, an increase of \$4,231,830 or 32.7%.

Product revenues in the first nine months of 2015 were \$8,744,306 compared to \$5,047,231 for the same period in 2014, an increase of \$3,697,075 or 73.2%.

This increase was the aggregate of an increase in cogeneration sales of \$3,392,002 and an increase in chiller and heat pump sales of \$305,073. Service revenues in the first nine months of 2015 were \$8,419,001 compared to \$7,884,246 for the same period in 2014, an increase of \$534,755 or 6.8%. This increase in the first nine months of 2015 is due to an increase in installation activity of \$208,461 and an increase of \$326,294 in the service contracts.

Noteworthy is that despite the solid sales growth in the third quarter, cost of sales in the third quarter of 2015 declined \$79,281 to \$3,007,111 compared to \$3,086,392 for the same period in 2014. During the third quarter of 2015 the overall gross profit margin was 35.7% compared to 26.1% for the same period in 2014, an increase of 36.8%. Improvement in gross margins was driven by a combination of upgraded manufacturing processes, better vendor relationships, and overall productivity increases at the Company's facility. **Management expects growth in sales volume to continue to improve gross margins going forward.**

Speaking about the quarter, co-Chief Executive Officer Benjamin Locke noted, "Third quarter is our seasonally weakest quarter historically and this year followed that same pattern. Despite the challenges we delivered both year-on-year top line growth and margin improvement to produce our best third quarter to date, a solid result."

Balance Sheet as of September 30, 2015

Tecogen finished the third quarter of 2015 with close to \$4 million in cash. The Company, in its recent history, has proven that it can finance its growth.

Amounts in \$000's	09/30/15	12/31/14
Cash and Cash Eq.	3,970	1,186
Accounts Receivable	4,331	4,750
Unbilled Revenue	1,801	697
Inventory	4,700	4,090
Total Current Assets	16,451	12,308
Property & equipment	565	658
Total Assets	18,173	14,122
Accounts Payable	2,842	2,416
Accrued Expenses	1,138	1,008
Deferred Revenue	556	1,667
Total Current Liabilities	4,537	5,091
Convertible Note	3,000	3,000
Total Liabilities	7,953	8,298
Total Stockholder Equity	10,221	5,823
Most important balance sheet data for the periods ending September 30, 2015 and December 31, 2014. Source: Company Filing		

In June 2015, it secured a two year \$2 million line of credit from its founder and Co-Chief Executive Officer, John Hatsopoulos. And in August of this year it sold in a single transaction 1.25 million shares of common stock at \$4.00 for a total raise of \$5,000,000. Thanks to these funds, Tecogen is well positioned to fund ongoing operating expenses and future growth initiatives.

Consolidated working capital at September 30, 2015 was \$11,914,160 compared to \$7,217,583 at December 31, 2014, an increase of \$4,696,577.

The Company's inventory increased to \$4,699,913 as of September 30, 2015 compared to \$4,090,221 as of December 31, 2014, an increase of \$609,692. Management expects inventory to not vary significantly from the level at year end.

Tecogen has a very solid current ratio of 3.63.

OUTLOOK & VALUATION

Tecogen Inc. continues the tradition of combining ground breaking research with successful technology application and product advancement. The Company's systems are designed to deliver efficiency, reduce energy costs, nearly eliminate greenhouse gas emissions, and alleviate congestion on the national power grid.

These products produce electricity, or mechanical power, while capturing the waste heat that is normally lost. This waste heat is used on-site for heating water or building spaces at no additional cost to the customer or environment. The result is significant energy and cost savings, as well as proportional decreases in carbon footprint and greenhouse gas emissions.

Tecogen has shipped more than 2,300 units, some of which have been operating for almost 25 years. Its systems are supported by an established network of engineering, sales, and service personnel across the United States. This is a well-established and respected Company in the industry.

The InVerde Ultra 100 CHP module, is the first and only natural gas engine-driven CHP

system able to operate within the extremely low levels of regulated pollutants allowed by the distributed generation regulations for 2007 set by the California Air Resources Board (CARB). The InVerde Ultra 100 emissions not only meet, but exceed the stringent CARB 2007 regulations!

A simple natural gas generator that can be permitted without any use restriction has real value in a very large market. Current sales of natural gas engines in the 50 to 500 horsepower range in North America are over 80,000 units, many of which are for backup power. By retrofitting an Ultra, owners in emission-sensitive areas would be able to utilize their otherwise inactive back-up generators to peak shave their electric use, removing the most punitive kilowatt-hours from their monthly utility bill.

While that is a growing and reliable part of Tecogen's business, its Ultra low-emissions technology truly is the key to catapult the Company into another category.

Moreover, the Volkswagen emissions scandal provides an excellent opportunity for Tecogen to prove that its technology is the best way to also meet these stringent standards. Initial research indicates that the Ultra technology may work for gasoline fueled engines as well.

Adapting the Ultra technology to gasoline fueled engines, represents an exciting and game-changing new market for Tecogen. The prospect of vehicle and stationary engines, with standard engine technology, but realizing fuel cell like emissions, is tremendously compelling from a policy and market standpoint.

Tecogen continues to grow its revenues and move closer to profitability. Its stable service revenue has grown each year since 2005, with New York City/New Jersey, New England and to some extent California experiencing the majority of the growth. This growth is consistent with the sale of new units into those territories.

All this capital will support Tecogen's growth as it expands its sales and marketing team, accelerates commercialization of the Ultra

emission retrofit system, and bolsters the capacity of installation services.

Valuation

Given the still emerging nature of Tecogen's earnings, a multiple-based valuation is challenging. Instead, we apply a Discounted Cash Flow (DCF) model.

The intrinsic value of Tecogen Inc.'s shares derived from our model is \$8.87.

Based on these numbers, we issue a buy recommendation for Tecogen Inc. with a price target of \$8.87, which is 141% above today's stock price.

SHARE DATA & OWNERSHIP

As of September 30, 2015, Tecogen had 17,588,782 common shares outstanding.

In addition, the Company has 1.26 million options outstanding with an average exercise price of \$3.06. Finally, Tecogen has \$3 million convertible debt, which is convertible into 625,000 shares of common stock.

The principal owners of the Company's common stock are John Hatsopoulos (21.1%), George Hatsopoulos (20.2%), Joseph Ritchie (5.1%), Michaelson Capital Partners (4.9%), and Clear Harbor Asset Management (4.0%).

MANAGEMENT

▣ DR. JOHN N. HATSOPOULOS – CO-CHIEF EXECUTIVE OFFICER

Dr. Hatsopoulos has been the Chief Executive Officer of the Company since the organization of Tecogen in 2000. He has also been the Chief Executive Officer of American DG Energy Inc. since 2000, and the Chairman of EuroSite Power Inc. since 2009. Mr. Hatsopoulos is a co-founder of Thermo Electron Corporation, which is now Thermo Fisher Scientific (NYSE: TMO), and the retired President and Vice Chairman of the Board of Directors of that company. Mr. Hatsopoulos graduated from Athens College in Greece, and holds a bachelor's degree in history and mathematics from Northeastern University, as well as honorary doctorates in business

administration from Boston College and Northeastern University.

▣ BEJAMIN LOCKE – CO-CHIEF EXECUTIVE OFFICER

Mr. Locke was named Co-Chief Executive Officer in October, 2014. He joined Tecogen in June, 2013 as the Director of Corporate Strategy and was promoted to General Manager prior to his appointment as Co-CEO. Previously Mr. Locke was the Director of Business Development and Government Affairs at Metabolix, responsible for developing and executing plans for partnerships, joint ventures, acquisitions, and other strategic arrangements for commercializing profitable clean energy technologies. Mr. Locke has a B.S. in Physics from the University of Massachusetts, an M.S. in Electrical Engineering from Tufts University, and an MBA in Corporate Finance from Boston University.

▣ ROBERT PANORA – CHIEF OPERATIONS OFFICER

Mr. Panora has served as President of Tecogen since 2000. He had been General Manager of Tecogen's Product Group since 1990 and Manager of Product Development, Engineering Manager, and Operations Manager of the Company since 1984. Over his 27-year tenure with Tecogen, he has been responsible for sales and marketing, engineering, service, and manufacturing. Mr. Panora contributed to the development of Tecogen's first product, the CM-60 cogeneration module, and was Program Manager for the cogeneration and chiller projects that followed. Mr. Panora has B.S.

and M.S. degrees in Chemical Engineering from Tufts University.

▣ DAVID A. GARRISON - CHIEF FINANCIAL OFFICER

Mr. Garrison has been the Chief Financial Officer, Treasurer and Secretary of Tecogen since August of 2014. Prior to joining Tecogen, Mr. Garrison was Executive Vice President and Chief Financial Officer of Arrhythmia Research Technology, Inc. and its subsidiary Micron Products, Inc. since 2002. Leading the finance department of this NYSE listed company, Mr. Garrison oversaw all aspects of SEC compliance, internal controls and raising capital through debt in a capital intensive medical device manufacturing business. Mr. Garrison hold a B.S. in Finance from Miami University and a Master in Business Administration from Boston University.

▣ JOSEPH GEHRET - CHIEF TECHNOLOGY OFFICER

Mr. Gehret is Tecogen's Chief Technical Officer. He is responsible for leading technology development at Tecogen and defining the Company's research and development efforts. With an expansive depth and breadth of classic as well as cutting edge technology, he has been integral in the development of all Tecogen products and technology for 30 years. He is the primary author on all of Tecogen's major patents. He has a B.S. in Mechanical Engineering as well as an M.S. in Nuclear Engineering, both from the Massachusetts Institute of Technology.

ANNUAL INCOME STATEMENT FY 2012 – 9M 2015

All numbers in thousands

PERIOD ENDING	FY 2012	FY 2013	FY 2014	9M 2015
Total Revenue	15,254	15,850	19,343	17,163
Cost of Revenue	9,389	10,820	12,944	11,129
Gross Profit or (Loss)	5,865	5,030	6,399	6,035
Operating Expenses				
General & Administrative	6,643	5,931	7,265	5,942
Selling	1,226	1,424	1,796	1,340
R&D	-	1,087	1,041	611
Total Operating Expenses	7,869	8,700	10,102	7,893
Operating Income or (Loss)	(2,004)	(3,670)	(3,703)	(1,858)
Other Income or (Expense)				
Interest & Other Income	48	4	10	12
Interest Expense	(71)	(141)	(177)	(129)
Income or (Loss) attributable to the non-controlling interest	389	357	125	46
Net (Loss) attributable to Tecogen Inc.	(1,637)	(3,449)	(3,746)	(1,929)

Annual Income Statement FY 2012 – 9M 2015. Source: Company Filings



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