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PROJECT SIGNATURE PAGE

PROJECT SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE

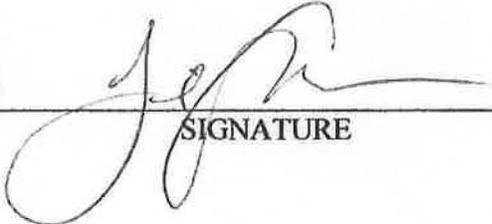
MASTER OF BUSINESS ADMINISTRATION

PROJECT TITLE: **INI Power Systems**

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THE PROJECT HAS BEEN ACCEPTED BY THE PROJECT COMMITTEE IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF BUSINESS ADMINISTRATION.

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# INI Power Systems & CSUSM Project Team



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# Section 1: Company Background

INI Power Systems supplies man-portable generators capable of converting any fuel on hand - jet fuel, gasoline, propane, etc. - to energy. The company primarily supplies the United States Department of Defense, as well as other government contractors, and international governmental agencies. Their multi-fuel generators range in size to serve a variety of tactical needs, allowing, “operators to stay on mission longer while reducing fuel load and decreasing reliance on theater logistics” (“Fine Tuning”).

INI purchases generators in bulk and modifies them to suit the needs of the DoD and other organizations needing power solutions in remote, austere conditions. INI’s competitive advantage lies in the intellectual property (IP) for the modification made to the generators. Modifying a typical generator motor by applying INI’s IP increases fuel efficiency by 20% and reduces emissions by 80%. Furthermore, the alteration allows the motor to burn any type of fuel, not just refined gasoline. In the realm of tactical generators, this allows for a more efficient use of scarce fuel during a mission.

The applicable IP falls under two technologies called KleanCARB™ and Omnivore™. KleanCARB™, the primary IP being analyzed in this report, is outlined in US Patent 9,909,534 and describes a modified carburetor setup comprising a simple engine with a single cylinder, spark plug, and carburetor with a regular air intake path connected to the cylinder. Omnivore™ technology encompasses US Patents 10,030,609, 9,995,248, 9,188,033, and 9,175,601. This technology is mostly applicable to INI’s primary DoD generator operations in that it allows a standard gasoline-powered generator to run on virtually any fuel, making truly multi-fuel generators that comply with the military’s single fuel forward policy.

# Section 2: Major Issue for Company

The primary purpose of this report is to examine the intellectual property that INI Power Systems currently possesses, perform industry, market, and competitor analysis, and develop recommendations for INI Power Systems to optimally monetize the IP through licensing or outright sale. Objective four directly addresses the primary issue that was presented to the project team. The problem statement below goes into further detail of the specific applications that were considered when developing the project team’s recommendations.

# Section 3: Problem Statement

INI is seeking to deploy this IP beyond the realm of generators and government contractors by integrating into the lawn care, landscaping, and motorcycle and scooter markets. Emissions regulations on the horizon will tighten restrictions from small, gas-powered engine, which are currently much laxer than those for motor vehicles under the United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) standards. INI sees the potential to expand into industries such as lawn and garden equipment, which primarily run

on single-cylinder, 2- and 4-stroke engines that are heavy polluters. The INI motor modification can be applied to other gas engines, such as those of lawn mowers, string trimmers, and leaf blowers with consideration for other applications on single-cylinder, carbureted motorbikes and scooters below 1000cc whose emissions have a large impact on air quality in developing countries in Southeast Asia. Both have the same impact: increasing efficiency by 20% and reducing emissions by 80%.

## Section 4: Project Objectives

The four core project objectives and resulting deliverables were determined in close collaboration with the client and company representatives. The Project Team identified one primary objective which was deemed to be critical to the project's success and shaping of the subsequent objectives that ultimately provide the client with an optimal financial recommendation to monetize the IP.

### Section 4.1: Objective One: Determine Regulatory Timing & Content (EPA & CARB)

The primary project objective which was deemed critical for discovery was the determination of the potential timing and content of the upcoming US EPA and/or CARB emissions regulations, more specifically as applicable to Small Off-Road Engines (SORE) and the INI IP.

### Section 4.2: Objective Two: Industry and Competitor Analysis

The second project objective accomplished was a full industry and competitor analysis including an overview of the most relevant industries as determined by the project team, such as the Tractors & Agricultural Machinery Manufacturing industry, a deep dive into each of the primary competitors (e.g. Honda, Briggs & Stratton, etc.) and their product lines, future fuel efficient and zero-emissions alternatives and other competing factors. Additional research was performed in the form of a thorough patent search for technologies similar to the KleanCARB™ and Omnivore™ IP to see where competitors have been investing their research and development budgets within the last decade.

### Section 4.3: Objective Three: Market Analysis for Small Off-Road Engines (SORE)

The third project objective required the team to research, review, and analyze the various market and consumer trends both from a traditional consumer and commercial user stance to better understand user preferences, manufacturer processes and product lines, and potential revenue generating applications of the INI IP.

## Section 4.4: Objective Four: Profitability Recommendation for IP

The fourth and final objective of the project was the determination of the optimal method for monetizing the intellectual property to maximize profitability and/or royalties through licensing agreements or an outright sale of the IP. The team initially determined three different courses of action that would result in monetizing the IP which are discussed in the recommendation section below.

## Section 5: Research Methodology

Given the vast availability of information online, the internet was a significant contributing source of data for the team. While online resources proved to be plentiful, some of the most impactful information was obtained through conversations with subject matter experts including David Grooms, Larry Markoski, and a few knowledgeable experts at the EPA and CARB organizations. Additional research was performed utilizing IBISWorld and SimplyAnalytics resources especially for gathering industry and market data such as consumer preferences, usage statistics, and demographic information.

The team performed extensive competitor profiling and company research through the available online resources. Each company's full product line was examined for the feasibility of application of the IP and to determine what efforts each company has in place currently or is working towards for improved fuel efficiency and/or reduced emissions. Products were analyzed based on all characteristics, including but not limited to engine type and size, fuel types, and applicable products. The patent search utilized the US Patent and Trademark Office website, searching for relevant keywords associated with achieving emissions reductions in single-cylinder engines for patents filed over the last decade.

These methodologies, combined with the data, regulatory details, product specifications, and other research obtained in analyzing each of the three research objectives ultimately enabled the team to formulate the overall recommendation.

## Section 6: Results & Summary of Findings

The results of objective one, EPA and CARB regulatory timing and content research, have determined that CARB regulations will apply significant pressures to the domestic markets and manufacturers of SORE-powered equipment in the next three to five years. These regulations will drive the need for innovative solutions at the manufacturer level which could prove to be quite costly unless existing intellectual property can be integrated (e.g. INI's KleanCARB™). Since EPA regulations are further out, likely around ten to fifteen years, this federal regulatory body would not apply direct pressure on manufacturers nationwide. However, since California is such a large economy, it is likely that manufacturers hoping to sell products in California would apply the emissions-reducing modifications to their entire product line if they are already required to do so for such an influential state.

Through industry, market, and competitor analysis, it is clear that fuel injection technologies are quickly advancing and becoming more integrated into the various tools and equipment in the lawn care and landscape industries and even more broadly within the motorcycle and scooter industries. Carbureted motorcycle models are now extremely limited within the US, such that the Project Team did not consider this industry to be a viable domestic application for the INI IP. However, there are fundamental limitations to a large segment of gasoline-powered tools and equipment that require the continued use of carbureted fuel delivery systems, including keeping costs down and minimizing the weight added to the equipment. These details warrant further pursuit of licensing agreements with global giants like Honda, Yamaha, and Stihl who stand to benefit from extending the relevance of the carbureted engine. Because Honda and Yamaha have a wide variety of gasoline-powered products spanning several industries that rely on carbureted engines, and Stihl is a parent company to one of the world's largest carburetor-producing companies, KleanCARB™ could be a very valuable asset to all three companies.

The Project Team's patent search confirmed that some companies have already invested R&D dollars into making carbureted engines run cleaner and more efficiently. Stihl has invested most heavily toward greener gasoline-powered equipment. Other companies, such as Honda and Briggs & Stratton also have patents on file with this aim in mind as well. However, they have mostly done so through a direct approach of modifying the fuel flow rate. By contrast, the INI technology adjusts the air flow to change the air-to-fuel ratio. This finding suggests that there is room in the technological space for INI's IP to offer a solution to a problem facing small engine manufacturers. Most notable, though, were the companies that had little to no IP aimed at carbureted engines, namely Yamaha, the carburetor companies Keihin and Mikuni, and Kawasaki. The findings of the patent search helped to guide the team in articulating its recommendations for the client.

International markets are also ripe with opportunity for the application of the INI technology to motorcycles and scooters. With a properly executed transfer of IP, those environments and markets would greatly benefit from improved emissions and fuel efficiency by means of modification kits for existing products and/or adoption of the IP's methodologies for future motorcycle and scooter products to be manufactured and sold in Asia, India, and similar markets. The greatest difference between international and domestic markets is that in the former, motorcycle ridership arises out of necessity as a primary mode of transportation, with figures as high as 81% of the population in some Indonesian cities (Guerra). In the US, by contrast, motorcycles are a leisure item purchased with discretionary income. Thus, the market potential for the application of INI's IP is greater in large cities in Southeast Asia in particular because of the environmental benefits and cost savings to be gained from a modified carburetor setup as compared to electric or fuel injected motorcycle and scooter models.

The market for the domestic application of the INI IP is concentrated around lawn and garden equipment. Considering the two market segments, residential and professional users, the latter is more likely to continue to rely on gasoline-powered equipment, while the former segment has shown an accelerating trend toward the purchase of electric alternatives. Since power and run

time are priorities for landscape service professionals, there is currently no satisfactory alternative to the carbureted engine. Purchase of cleaner-running carbureted machines will be driven by regulatory pressure, as previously discussed, environmentally conscious buying patterns, macroeconomic factors such as the state of the economy and housing market, and trends showing that aging baby boomers and millennials are more likely to pay for lawn and garden services than to buy the equipment and do it themselves (“Gardening in the US”). Thus, the market outlook for gasoline-powered lawn and garden equipment is positive and leaves ample room for INI to position itself within the space through strategic partnerships with companies already in the industry.

## Section 7: Conclusions

The project team has spent considerable time researching upcoming regulatory changes and pressures, relevant industries and markets, and performing a detailed competitor profiling and product line-up analysis. As result, it was determined that there is considerable opportunity both within the domestic markets as driven by upcoming CARB regulatory changes in the short term and by the pressing air quality issues that continue to persist in the Asian, Indian, and Indonesian markets. It is in INI’s best interest to quickly monetize the IP before other existing technologies, such as fuel injection, or other competitors enter the market with competing IP and become more relevant and diminish the potential value of the IP. With the looming regulatory changes and high likelihood that R&D dollars are being redirected towards fuel economy and emissions reductions efforts, the time to strike is now.

## Section 8: Recommendations

The Project Team has compiled the data and considered many different paths towards monetizing the intellectual property held by INI Power Systems. The following recommendations were developed with different tactical approaches and real-world applications of the IP in mind, though the primary objective of maximizing profitability from the IP is the main driver.

### Section 8.1: To License or Sell Outright

The decision whether to license or sell the IP held by INI would ultimately be determined by the amount offered by the potential buyer. INI would have to determine the number at which it would be irresistible to sell the IP outright. The price that could be obtained for a sale may be determined by negotiating leverage, the possibility of starting a bidding war between interested parties, and decision variables known to the INI board and stakeholders. This information has not been shared with the Project Team.

However, unless a significant dollar amount could be negotiated for the outright purchase of the INI IP, the Project Team recommends licensing rather than selling the IP. From an examination of competitors’ product lines and IP, there is no alternative currently on the market that affordably reduces emission for small, hand-held, gasoline-powered, carbureted engines. With the

recommendation to license in mind, there are several routes to consider, as contained in the following strategies.

## Section 8.2: Target Licensee(s) for Necessity

Strategy 1: Target buyer(s) for the licensing of the IP as a means to provide new and/or additional product fuel efficiency and/or emissions reductions as required by the looming regulatory changes. Licensing the IP to multiple companies such as Briggs & Stratton, Husqvarna, and Toro would result in multiple sources of revenue, in the form of licensing fees and royalties, and increased exposure. These companies are ideal because of their limited application of fuel injection technologies, and they have few if any existing product lines and less recent IP aimed at or capable of achieving the forthcoming emissions standards. For these target companies, R&D costs associated with developing new methodologies for achieving the regulatory emissions standards are likely to be significantly costlier than a licensing agreement with INI. Due to the widespread adoption of fuel injection technologies, time would be a critical factor here, so any licensing agreements in this category would need to be established quickly.

## Section 8.3: Target Licensee for Widest Application

Strategy 2: Target buyers with the widest array of engines, meaning Yamaha or Honda. Neither Honda nor Yamaha patent research showed significant R&D aimed at reducing emissions for carbureted engines, so they would also be excellent targets under the premise of Strategy 1. However, the distinction is that these companies offer the widest application for the IP because: 1) they manufacture products in the two major industries under consideration (motorcycles and lawn and garden equipment); and 2) in the case of Honda, their engines are utilized by many other companies and competitors such as Toro, Husqvarna, and Briggs & Stratton, thus further expanding the footprint of the application of the IP and driving up royalties from sales of products. Both companies are international giants, meaning that royalty figures would be much higher than those from the domestic lawn and garden sector alone.

Targeting both Yamaha and Honda could trigger a bidding war if both companies are interested in the technology and do not want to see it in the hands of a company that competes with them in the US and internationally. This rivalry could work in INI's favor.

## Section 8.4: Target Licensee or Buyer for Strategy

Strategy 3: Target a buyer for the license or outright sale of the IP whose aim would be to park it on a shelf to provide the buyer with extended control of the market or prevent others from having it. Doing so would allow the procuring company to obtain and/or retain additional market control and mitigate any potential risk to their existing or future business strategy. However, as stated in Strategy 1, the goal for INI should be to establish as many licensing agreements as possible to maximize revenue.

## Section 8.5: Project Team's Overall Recommendation

The project team recommends that INI pursue the following course of action:

- 1) First target Honda and Yamaha as they have the greatest applicability for the INI IP and potential to maximize revenue from a licensing agreement. This includes the possibility that either company would develop mod kits to maximize the monetization of the IP for INI. If either demands an exclusive licensing agreement or outright purchase, the price negotiated must substantially exceed the value of all other offers on the table. Otherwise, avoid exclusive agreements.
- 2) While pursuing Honda and Yamaha, implement Strategy 1 to see if other companies in the lawn and garden and small engines industry are interested in the IP. Seek to maximize the number of licensing agreements. Indications of interest or offers on the table could drive up the price to be obtained from Honda or Yamaha.
- 3) Since INI is also working with Zama for its carburetors for another product, separate from the purview of this report, cultivate the relationship to assess the level of interest from Stihl, the parent company. If a strategic buy is on their mind, ensure maximum price for licensing or purchase. This motive, to exclude others from access to the technology and protect Zama's future relevance, may carry higher value and importance for Stihl and lead to maximum revenue for INI. If exclusivity or outright sale is a stipulation, and a satisfactory price is negotiated, cease further negotiation as outlined in points 1 and 2.

## Works Cited

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