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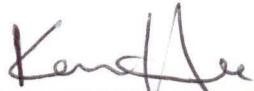
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BA680: Masters Project

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Executive Summary

A team at Hawthorne Cat recently enlisted a group of five students from the California State University San Marcos (CSUSM) Fully Employed Masters of Business Administration (FEMBA) program to conduct research on the backup power generation system market in San Diego County. The team was tasked with identifying the current market position of Hawthorne Cat and its competitors, as well as possible market trends likely to manifest in the next 3-5 years. After exploratory research, the team decided on a number of different strategies to accomplish the objectives: website research, telephone interviews, an online web based survey, data analysis, and consultation with a wide variety of industry organizations. Ultimately the team had six recommendations for the Hawthorne Cat leadership: focus on early project development, focus on projects requiring generators of 1MW and greater, focus on lowering price while maintaining superior service, consider moving complex maintenance services in house, continue to develop the sales force, and keep an eye on the long term future.

Introduction

As Fully Employed Masters of Business Administration (FEMBA) program students at California State University San Marcos currently enrolled in BA680: Masters Project, we have been tasked with helping our client, Hawthorne Cat, perform market research regarding the backup power generation systems market in San Diego County. Hawthorne Cat would like to assess the reasons for their current market share as well as to understand the near-term future of the market, specifically within the next 3-5 years. The data and information that is collected will be examined for key themes and insights, and recommendations will be made to base upon the analysis of the information.

Project Understanding

While Hawthorne Cat has a large amount of industry data relating to a number of their different product segments, information regarding the power systems generator market has traditionally been difficult to come by. Understanding of historical market trends, current market share, and future market potential are all based on conjecture and best guesses, rather than on specific and actionable intelligence and insight. Hawthorne Cat's major competitors in the power generation systems market are Kohler and Cummins, and it is feared that the Hawthorne Cat market position has eroded over the past few years, but validity of that assumption and the reasons for such potential erosion are largely unclear.

Project Objectives and Methodology

The current project for Hawthorne Cat features two main objectives related to the backup power generation systems market in San Diego County.

Objective #1:

To conduct an assessment of the current power systems generation market in San Diego County, paying particular attention to the companies with the greatest current market share: Hawthorne Cat, Cummins, and Kohler.

Objective #1 Methodology

Preliminary research was conducted by visiting company and industry websites as well as other resources for secondary data. Follow-up research included interviews with four Hawthorne Cat sales and services department staff members. Feedback has also been collected from sales customers by phone interview and service customers by a web-based survey. In-depth analysis on

the past ten years of APCD data has been conducted in an attempt to identify historical trends that may give potential indications for future market trends.

Each year, the APCD provides an Excel spreadsheet with detailed information on each generator for which a permit was obtained. The spreadsheet provides details such as what the type of engine, kilowatt-hour rating, and location of each generator installed in San Diego County. This spreadsheet was essential to the research for this project, providing sales and locations of all backup power generators since 2009.

While the spreadsheet was vital to the project, the information needed significant revisions in order to provide any useful insight into the current backup power generator systems market in San Diego County. While much of the significant data was contained in the cells, it was not in a format that would be beneficial for analysis. In order to get the data ready, several steps were performed.

Selecting the Proper Categories

First, the equipment types of interest were isolated from other types of equipment. Since the analysis was focused on backup power generators, other categories of machines were excluded from the selection. Equipment types 23C (Emergency Standby Engine) and 23H (California Certified Emergency Standby Engine) were deemed relevant for the purposes of this report, providing a total of 2191 records.

Isolating Engine Manufacturer

While some generator manufacturers, such as Caterpillar, use their own engines in the back-up power generators that they produce, other companies, such as Kohler, marry parts from other manufacturers in order to produce a working genset. In these cases, the engine type must

first be isolated in order to identify the manufacturer of the generator. The spreadsheet data was queried for the engine type of each generator listed. Once the engine type was identified, it was compared to a list provided by Hawthorne. This list detailed which engines were used in which manufacturers' generators and a generator manufacturer was assigned to each permitted generator.

Identifying kWh Rating

In addition to the generator manufacturer, it was important to identify the kWh range for each genset, in order to break the list down in the product node ranges provided by Hawthorne Cat. While most of the entries provided the information somewhere in the body of the permit description, approximately 17.8% of them (391/2191) did not. The absence of these generators would have presented a significant absence in the data so a solution was needed. In order to accommodate this dynamic, the data was sorted by horsepower, and a kWh range was assigned based on the horsepower of the associated engine. While there may be minimal units that were incorrectly assigned through this method, any such assignments were likely to be less than 1% of the overall total.

Exclusion of 2009

Analysis of the APCD data revealed a wildly inconsistent amount of requests for generator permits in 2009. The difference was so dramatic that it necessitated an inquiry into the potential factors for such an occurrence. For more insight and information, the team contacted Russell K. Yangihara, Air Pollution Control Engineer at San Diego APCD. He believed generator market was heavily impacted by two major components in 2009.

First, the Airborne Toxic Control Measure (ATCM) for portable engines rated 50hp and greater started in 2009 and was effective on December 31, 2009. (The full description of this

regulation is provided in Appendix B.) Ultimately, many generators that did not require permits up to this point had to be registered within 2009 in order to continue operation. As a result, a sudden influx of permits was recognized in 2009.

Second, Yangihara noted a very significant blackout occurred in 2009 and could have heavily contributed to the sales of generators as companies took steps to prepare for any future potential power outages. Given the outlying nature of the data for 2009, a decision was made to exclude the information from the analysis of the APCD data. Data for 2009 has been included in the raw data and Appendix C Table 1 for reference purposes.

Survey Process and Limitations

In order to assess the potential reasons for Hawthorne Cat's current market position, a series of surveys was conducted. First internal surveys were conducted with three members of the Hawthorne Cat sales team and one member of the Hawthorne Cat service team to get their input on a wide range of questions regarding customer preferences, concerns and overall factors within the broader market. These answers were then compared to customers from both the sales and the service segments in the following manner.

Hawthorne Cat provided the names and contact information of six electrical subcontractors who they considered to be solid customers for the generator sales department. Three of these subcontractors responded to team inquiries and they were asked the same questions as the sales staff. Hawthorne Cat also provided a list of 126 current service contract customers and their email addresses. A web-based survey was sent to this list three times during the week of November 12th. After subtracting a total bounce back rate of ten addresses the nine respondents represented an

eight percent response rate. Although the responses were limited and any conclusions drawn should be moderated, the data provided some useful information.

Objective #2

To assess likely future trends in the power systems generator market for San Diego County. In order to help Hawthorne Cat identify the right focus for their developmental efforts, the research will focus on categories of generators rather than individual products in order to provide insight in terms of which types of generators will likely see growth in the short to midterm future.

Objective #2 Methodology

The research included website articles related to the market, interviews with industry experts, analysis of current and potential future legislation, and forecasting based on current market size and directions. Further research was conducted using information from the City of San Diego five-year plan, Building Industry Association and the National Association of Industrial and Office Properties. Additional areas of focus were the role and impact of renewable energy, emissions, and other potential state and federal regulations, and the total market size represented in San Diego County.

Expert Interviews

Kirk Fowkes and Kyle Farmer

With more than three decades of combined experience in the backup power generator industry, Kirk Fowkes and Kyle Farmer provide a unique perspective on the market both broadly and as it relates to San Diego County specifically. Not only has the awareness of the need for backup power generation grown, but so have the industries that require reliable power in all circumstances. While traditionally hospitals, hotels, and other public buildings have needed

backup power generators for safety, there are also an increasing number of industries whose sensitive products require an uninterrupted source of power to avoid huge losses during power outages. These industries include data centers, bioscience companies, and even 3D printing centers. While the buildup of health care facilities that were a steady source of sales over the past 10 years appears to be slowing, there are also other categories of building that will likely be crucial for the backup power generation system market in the next 3-5 years. Kirk cited infrastructure projects, commercial building, and military initiatives as areas that are likely to see consistent if not increased spending on backup power generation systems in the next half decade.

Fred Risse

As the Cummins General Manager of Power Generation on the west coast, Fred Risse has spent 15 years in the power generation industry. While the focus of his responsibilities lies largely on the service side of the equation, he does not think that the scope of service has changed that much during that time frame. California is broadly known as a state that has a multitude of regulations, but now customers are also interested in maintaining their generators because there have been some vivid examples of the damage that a failed generator can cause. In the near term future, Fred envisions increasing emissions control standards, a race among large generator manufacturers to build the biggest, best, most power dense generators, and reliance on diesel generators for backup power: “There is no way a hospital can run without diesel back up.” Be that as it may, Cummins has also invested heavily in what it sees as the future, an example of which is a battery company that spends heavily in R&D and already has contracts with some cities to provide 100% battery powered transportation buses in the mid-term future.

Conclusions

Historically it has been difficult to gain insight into the backup power generation market in San Diego County. A wide variety of reasons account for this dynamic, including the presence of strong competitors, a multitude of potential and sometimes unknown projects across a wide range of industries, and a lack of clear and directive resources regarding historical trends that may help provide understanding for future developments.

While the research conducted for this report provided some basic vision for both the historical and the future market, it also resonated with the past experience of Hawthorne Cat. San Diego County is still difficult to quantify. At the same time, this report provides some solid data with which to move into the future. The team at Hawthorne Cat now has another resource with which to approach the many variables that exist within this segment. Combining this information with their industry experience, their product knowledge, and their customer relationships will give them an opportunity to capitalize on the rich history of Caterpillar, leveraging the key competencies of the parent company and of Hawthorne Cat itself in a way that will continue to expand their opportunities and returns in the San Diego County market.

Recommendations

Given the key objectives and the research done for this project, we have several courses of action to recommend to the Hawthorne Cat team:

1. **Focus on early project development:** In several different research channels, a need for working with project designers was highlighted. This role allows Hawthorne Cat to give their products an advantage through favorable specification parameters, providing flexible, cost effective, customizable solutions such as onboard paralleling for the project needs,

and an ability to develop project understanding early, which will provide an advantage for future work with both the subcontractor and end user customers.

2. **Focus on projects requiring generators of 1MW and greater.** As the overall number of generators needed in San Diego County seems to be on the decline, each project will become more significant for the Hawthorne Cat team. Most importantly will be the projects that provide opportunities that fall within the core competencies of the company and maximize the return on their investment reflected in profit margin. Fortunately, a clear overlap exists for Hawthorne Cat in projects that require a generator of greater than 1MW of power, traditionally a very strong segment for Caterpillar.
3. **Focus on lowering price while maintaining superior service.** While Hawthorne Cat has a great reputation with subcontractors due to their historical reliability, their superior service and support, and their high quality products, product cost is unsurprisingly an increasingly significant consideration in every step of the construction project process. In order to maintain and expand their strong position in the market, Hawthorne Cat will need to find ways to communicate the value of their products in long term financial benefits, while also finding ways to lower the purchase cost of their generators and related equipment.
4. **Consider moving complex maintenance services in house.** As a recurring source of revenue, ongoing service contracts could be a significant area for growth. Currently, Hawthorne Cat's reputation with subcontractors is that they are not as strong in complex projects and repairs, a reputation that is reflected in the results from the service contract customer survey. Depending on the costs and benefits involved, it may be advisable to

invest significant resources into developing this area of the business. These skills can be exercised not only on Caterpillar generators, but on competitor models as well.

5. **Continue to develop the sales force.** Given the fluid and developing nature of the market and customer needs, those in sales roles will continue to need training and development in order to most effectively meet the needs of customers. This applies to the representatives that interact with the subcontractors as well as those who interact with the end users. Potential areas for development include technical training, product training, and new technology development such as a monitoring app for service concerns.
6. **Keep an eye on the long-term future.** While there are not major shifts anticipated in the near term future, there is a large amount of uncertainty regarding the long-term shape of the backup power generation market not only in San Diego County but across the nation. Increased regulations, further renewable technology development, and other developments could provide not only opportunities but also threats to the backup power generation market.

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