



CUMBERLAND METAL INDUSTRIES CASE STUDY

Case Study

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Executive Summary

Over the last decade, Cumberland Metal Industries (CMI) has grown to become one of the nation's largest manufacturers in curled metal products, generating sales of over \$18,500,000 in 1979. To avoid product myopia and overreliance on one industry, CMI closely monitors opportunities for portfolio diversification and recently developed a curled metal cushion pad for use in the pile-driving process.

Prior to launching the new product, CMI must consider:

- How to effectively price the new product?
- How to properly market the product?

This report evaluates CMI's product launch goals in the pile-driving industry within the context of pricing and marketing initiatives. References on industry standards, company history, and performance tests have been made to gather a holistic view of the product.

In addition, this report also analyzes the potential market size for pile-driving cushion pads and considers the varying levels of thickness. To determine market size, data is extracted from a 1977 report by Construction Engineering magazine, estimating roughly 19,500 to 26,000 hammers were in operation. The size of projects varies greatly throughout the United States, however this report bases estimates and projections on a cushion pad thickness level of 11 ½ inches.

To affectively determine the optimal pricing strategy, CMI must consider:

- Internal strengths and capabilities of the company
- Potential external factors and adversaries threatening the company
- Market size, influences, and trajectory
- Promotional influencers
- Product differentiation values and premiums

While each factor will impact company decision making, product differentiation will have the largest impact on pricing strategy. Company strengths, external market factors, and influencers will determine how CMI approaches the market and will be vital in sustained success of the product.

Company Background

Cumberland Metals Industry (CMI) started as a manufacturer of highly technical components for chemical process filtration, generating modest sales throughout the 1960s. Fortune quickly reversed in the early 1970s, as the introduction of exhaust gas recirculation (EGR) valves in U.S. automobiles provided an avenue for change in company philosophy and prompted the company to evolve from selling curled metal as a finished product to selling products that incorporate curled metal as raw material. Automobile manufacturers placed demanding specifications for their EGR valves and preferred CMI's *slip-seal* product, as the design and material could hold elements in place and prevent the escape of hot exhaust gases.

The product was an instant success, enabling CMI to capture 80% of the market and grow rapidly throughout the mid-1970s. In just over a decade, sales grew by 7,300%, with a value of \$18,500,000 generated in 1979. Management, however, was not optimistic about sustained success and looked to diversify away from reliance on one product.

Problem Statement

Cumberland Metals Industry developed a new, curled metal-based cushion pad for use in pile driver operation. The cushion pad was tested on two separate projects and far exceeded performance expectation. When tested and compared with an asbestos pad, the most frequently used material in the industry, the curled metal pad greatly outperformed its competitor. The new pad drove piles at a rate 33% faster, reduced heat, and increased worker safety. In addition, the new pads lasted for the entire job, whereas it took 20 asbestos pads to complete the project.

Although crucial to the pile-driving process, little attention has traditionally been paid to cushion pads. No manufacturer dominated the industry and distribution was rather ambiguous. In fact, most pads came unbranded, having been cut by small, anonymous job shops. As a result, CMI must answer two large questions:

- How to properly price the curled metal cushion pads?
- How to market and distribute the pads?

SWOT Analysis



The resulting SWOT analysis indicates that internally, Cumberland Metal Industries is well positioned for success. CMI boasts a high-performance product and the technical know-how to produce varying sizes of pads, meeting the needs for all types of projects. The lack of experience in the pile-driving industry is evident and cushion pad usage is rather opaque, however the internal functions point towards success.

Externally, CMI faces the challenge of establishing distribution channels and raising awareness of the product. Traditionally, little attention has been paid to cushion pads and the industry doesn't perceive the pads as valuable products. The opportunity of providing a safer, longer lasting product, however, greatly outweighs the potential threats in the market and would provide a lucrative, high dollar option for the company.

Marketing Mix

Product

- Curled Metal Cushion Pad
- Superior shock and heat absorbtion
- Superior performance and longevity measures

Price

- Value-based Pricing Model
- Emphasize increased longevity and efficiency

Place

- Signing construction-oriented manufacturer's representatives to sell to variety of distributors and supply houses
- Initial barrier and skepticism from outlets, but management believes wholesalers and will eventually clamor for the product
- Independent Rental/Distribution companies

Promotion

- White papers with Professor McCormack of Pennsylvania A&M
- Construction oriented magazine ads
- Contractors and engineers are major influencers
- Pile hammer manufacturers
- Renting/Distributing companies need to be encouraged on premiums, as the increased efficiency will mean products are returned quicker

Product

The curled-metal cushion pad serves as a crucial component to the pile-driving process. The product is highly differentiated from the traditional asbestos pads and aims to become the industry standard. Information on popularity of product sizes is vague, however it is known that 11 ½ inches is the most popular size. Thus, we will use 11 ½ inches in our initial pricing analysis and adjust sizes when more market information is needed, production cost will not vary much between products.

Price

We will use value-based pricing in our analysis, as this value will determine the price ceiling for the product. Cost-plus pricing would provide adequate information on the base price, however due to the highly differentiated offerings, the price generation is better suited towards a customer value approach.

Place

CMI management settled on signing construction-oriented manufacturers' representatives to sell to a variety of distributors and supply houses. Pricing will have to be set in a manner that incentivizes the sale of this product, as distribution channels are currently ambiguous and fragmented. CMI can harness their experiences providing EGR valves to U.S. automobile manufactures to effectively distribute and place the products. Identifying regional hotbeds or starting as a more localized product may help alleviate the initial kinks in the distribution channel. International options are also available, as building and construction will continue to rapidly increase both domestically and internationally.

Promotion

The major influences will come from six sources, including:

- Pile hammer manufacturers
- Architectural/Consulting firms
- Soil Consultants
- Pile hammer distributing/renting companies
- Engineering/Construction contractors
- Independent pile-driving contractors

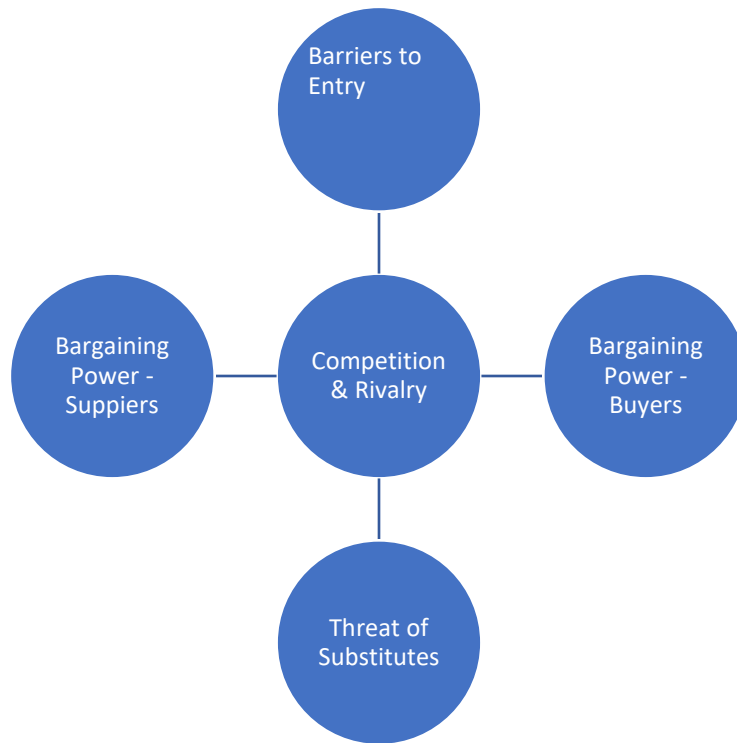
Of these influencers, pile hammer distributing/renting companies and independent pile-driving contractors would be the main targets, as they are the heavy users and frontline purchasers. These sources are both actively involved in the usage of pile-drivers and their goal is to make money.

Demonstrating the usefulness and advantages of the new curled-metal cushion pads is important in establishing a presence in the industry.

Pile hammer manufacturers and Engineers would also be very influential in the sales process, however they are not directly involved in the usage of the machinery and should be secondary targets in the promotional strategy.

Additional sources of promotion include advertisement in construction-oriented magazines, such as the *Louisiana Contractor*, and through white papers produced by Professor R. Stephen McCormack of Pennsylvania A&M University. These sources, although indirectly involved in the pile-driving process, carry significant clout and can influence processes standards. Professor McCormack is highly respected around the industry and can serve as a major endorsement at trade shows and events. He has expressed enthusiasm from initial performance tests and should be sought out in the promotional process.

Market Information



Barriers to Entry (Threat of Entrants) - High

With little industry restrictions, no history of customer loyalty or policy restrictions, new entrants are bound to enter the market if the product succeeds. Unlike the EGR valves for automobiles, this product is not highly technical and can be easily replicated by new companies.

Bargaining Power of Buyers - Low

CMI will have an easy time differentiating their product from the traditional asbestos pads. Products are highly differentiated, quality trumps price, and switching costs will be relatively high, decreasing the power of the buyers. Consumers are increasingly weary of the health risks attributed to the asbestos pads and with the added performance measures, the new cushion pads put the power with CMI.

Bargaining Power of Suppliers - Low

Cumberland Metal purchases the raw material from outside vendors and performs operations in-house to produce the final product. The raw material is low cost and contains a variety of metals, providing more sourcing flexibility and decreasing the power of suppliers.

Threat of Substitutes – Low...for now

The current substitutes are the traditional asbestos pads, which are low performing and contain well-publicized health risks. The new curled-metal cushion pads will revolutionize the industry and draw attention from potential new entrants.

Competition & Rivalry - Low

CMI's main competitor in this realm are producers of asbestos pads. These producers are fragmented, have ambiguous distribution channels, and products are typically unlabeled. As a result, the highly differentiated curled-metal cushion pad and relatively low cost to produce the product make the industry competition low in the initial stages.

Market Summary

This product is highly differentiated and is appealing due to the increased performance measures and added safety. In such, competition from the asbestos pad market is not a major concern. Moreover, profit margin will be high due to low production costs and CMI will boast a high degree of bargaining power due to the product differentiation.

However, due to the low barriers to enter and low production costs, additional curled metal manufacturers can easily enter the market and battle for positioning. To maintain a competitive edge, CMI will need to set a competitive price and utilize experience producing highly technical applications to increase product effectiveness.

Projected Market Size

Roughly 19,500 to 26,000 hammers are estimated to be in use, each requiring a set of cushion pads for production. From our calculations in table 2, we estimate that 29,000 to 39,000 pad sets are required per year, translating to 174,000 to 234,000 pads per year.

With an estimated production volume of 250 cushion pads per month, CMI can effectively produce 3,000 pads per year and capture. Due to the opaque nature of the industry, if we estimated that 1/5th of the jobs used the 11 ½ inch pads, mainly smaller construction projects, CMI could supply roughly 6.5% of the demand ($234,000/5 = 46,800$, $3,000/46,800 = 6.5$).

The market and potential for growth is substantial. CMI can capitalize on market share by investing in production processes and creating varying thickness levels for larger jobs.

Product	Estimated Base	Estimated Max	Units
Owned Hammers		13,000	Hammers
Leased Hammers	6,500	13,000	Hammers
Total	19,500*	26,000*	Hammers

Table 1

	Estimated Min	Estimated Max	Units
Operating Weeks		25	Weeks/Year
Used		30	Hours/Week
Operating Hours		750*	Hours/year
Driving distance		20	ft/hour
Annual feet per set		15,000*	ft/set/year
Annual driving distance	290,000,000	390,000,000	ft/year
Driving feet per set	10,000	10,000	ft/set
Pad Sets per Year	29,000*	39,000*	Sets/year
Pads per set	6	6	Pads/set
Pads per year	174,000*	234,000*	Pads/year

Table 2

* Denotes calculated value

Pricing Information

A customer-value pricing approach will be used to determine the upper limit price than can be considered by CMI. In this approach, we will identify a reference value based on a well-received product currently in the market. In this case, the reference value is set at \$3 for the commonly used 11 ½ inch asbestos pads. Factors that differentiate the new product from the asbestos pads are then evaluated and transformed into a premium, creating the differentiation value. Finally, the reference value and differentiation value are summed to determine the economic value of the new product.

The table below compares the cost of the job completed with the asbestos pads and the same job completed with the CMI curled-metal pads. Numbers are extracted from industry standards as well as previous asbestos vs CMI pad tests:

	Asbestos Pads (11 ½ inch thickness)	CMI Curled-Metal Pads (11 ½ inch thickness)
Cost per Pad	\$3 (industry avg)	-
Avg # pads per set	16	5.5
Cost per Set	\$48	-
Avg # sets required	35	1
Avg # pads per job	560	5.5
Total pad cost per job	\$1,680**	-
Avg # of set changes	35	1
Time required for change per set	20 min	4 min
Time lost to changing sets	700 min***	4 min
Feet driven per hour	155	200
Avg Temperature	600 – 700 Degrees F	250 Degrees F
Weight per pad	5 – 6 lbs	15 ½ lbs

Figure 3

CMI's Fazio and Colerick test procedures are similar in size and scope, so the resulting numbers are averaged to generate estimated performance of the asbestos pads.

Most contracts are awarded on revenue-per-foot basis. Cutting down on time lost due to changing sets and handling the product will greatly improve the margins for contractors and pile-driving companies.

Pricing Estimates

As previously stated, we will examine a reference price and evaluate premiums based on increased performance measures. **Table 3** displays differentiations in efficiencies between the asbestos pads and CMI's new curled-metal pads. Below, we will further estimate the premiums that should be associated with the increased efficiencies, as well as additional premiums to add for increased convenience:

	Premium %	Dollar Value
Reference Price per Pad		\$3
Adjustments		
Premium on Speed	33%	\$0.99
Premium on Performance	20%	\$0.60
Premium on Set Life (X10)	900%	\$273
Premium on Safety (Temp)	65%	\$1.95
Differentiation Value		\$276.54
Economic Value		\$279.54/pad
Switching Premium	(\$25)	
Price		\$254.54

Additional Pricing Methodology

Cost-Plus Pricing

Estimates per Pad with Existing Equipment	11 ½ inch CMI Pad
<i>Variable</i>	
Material	\$15.64
Labor	\$28.80
Total Variable	\$44.44
Fixed Factory Overhead (@360% direct labor)	\$103.68
Total Manufacturing Cost	\$148.12

Additional equipment can be added at a cost of \$75,000 per 250 pads per month of capacity, including tooling at a cost of \$50,000. If acquired, labor costs will reduce to \$11.64 and the total manufacturing cost will drop from \$148.12 to \$69.18, which is our minimum price for the curled-metal cushion pad.

Estimates with Purchase of \$50,000 of Permanent Tooling	11 ½ inch CMI Pad
<i>Variable</i>	
Material	\$15.64
Labor	\$11.64
Total Variable	\$27.28
Fixed Factory Overhead (@360% direct labor)	\$41.90
Total Manufacturing Cost	\$69.18

Therefore, to break even, price must equal production cost. This provides CMI's lower limit for pricing the new product. The two pricing mechanisms that have been used are cost-plus pricing, which generates the lower limit of pricing at \$69.18. The customer-value pricing approach translates the product differentiation into premium values and provides the upper limit pricing at \$254.54.

Lowest Price - \$69.18

Highest Price - \$254.54

Recommendations

It is our recommendation that Cumberland Metals Industries (CMI) charges a **price of \$225** for the new 11 ½ inch curled-metal cushion pads. This value accurately reflects the premiums and advantages provided by the new product, while remaining competitive and attainable for smaller contractors and distributors. Cumberland Metals Industries will face several challenges while introducing the new product, such as establishing a visible market and desire for cushion pads, implementing proper distribution channels, and promoting pads as work saving tools, however the market size and proximity to industry influencers serve as clear advantages.

We also recommend that CMI act quickly to establish promotional channels with industry experts. The barriers to enter the market are low and the product is easily replicable, increasing the need for enhanced brand imagery and recognition. This can be accomplished by reaching out to influencers such as Professor McCormick and heavy users such as independent contractors and distributors. Contractors and distributors will be attracted to the improved efficiency and safety measures, as the current industry standard is to award on a revenue-per-foot basis and bid by the estimated amount of time it takes to complete the job. The new cushion pads will greatly reduce time spent on each project. 75% of contractors own their own hammers, indicating that this will be a major group in generating sales.

Finally, an initial focus on producing 11 ½ inch pads will allow CMI to target heavy users and generate the highest number of sales during market entry. Most projects are small scale projects conducted by independent pile-driving contractors, and the most popular pad dimension is the 11 ½ inch model. Targeting this segment will enable CMI to hone distribution techniques, increase product effectiveness, and improve testing capabilities. This will serve as a major comparable advantage once additional metal manufacturers enter the market.

Conclusion

Cumberland Metals Industries (CMI) is well positioned for success. With a high performing product, large market, technical know-how, and proximity to industry leaders, CMI will overcome the initial challenges and establish themselves as industry leaders. Segmenting the market and targeting heavy users of 11 ½ inch pads will be a boon to company performance, as much of this group owns their own machinery and seek options for increased efficiency and longevity.

Value-based pricing is the optimal strategy, as product differentiation is considerable between the existing product and CMI's new cushion pad. This approach also provides the biggest benefit and will allow CMI to maximize profits.