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CYCLE TIME MANAGEMENT INC. BUSINESS ASSESSMENT

Mott Manufacturing

EXECUTIVE SUMMARY

Mott Manufacturing (Mott) contracted with Cycle Time Management Inc. (CTM) to perform a detailed Business Assessment of their manufacturing operations.

As a result of this assessment CTM was engaged by Mott to assist in the process of developing CTM educational and facilitation requirements to support the CTM 12 Step Program and evolve Mott toward further improvement levels in the following 4 business loops:

- Strategic Business Development
- New Product Development
- Supply Management
- Make/Ship Management

During the CTM 12 Step process, a cultural change started to occur among the employees at Mott Manufacturing that has continued to be embellished by senior management support.

It was at this time that Mott made a historic decision to change its distribution from a single distributor to multiple distributors. This was a risky move as the original distributor threatened to stop dealing with Mott if they appointed other distributors. Thus, Mott could have lost their total exposure to the marketplace.

Mott was determined to take control of their destiny and moved forward with the distribution changes. It was during this period, in conversation with new distributors, that Mott began to realize that they had to change the way they approached the marketplace. Although their primary business was manufacturing, they realized that they had to address the needs of their customers as a service company.

To become the leader in their industry Mott had to provide better service, on-time delivery and manufacture their products in a cycle time that reflected marketplace expectation. As these items became the driving force of change at Mott, the cultural changes instilled by the CTM 12 Step program continue to be influenced by new market demands

From this time forward right up to today Mott has been implementing the lean manufacturing strategies, techniques and procedures taught by CTM. This has resulted in five consecutive years of 20% plus growth.

The seed planted by CTM may have taken a while to grow, but today Mott is a leader in their industry. They have accomplished this feat by providing superior service, on-time delivery and an industry setting cycle time that does reflect marketplace expectations.

COMPANY BACKGROUND

For 4 decades, Mott Manufacturing has designed and manufactured quality steel laboratory furniture and fume hoods for numerous research, diagnostic, quality assurance, and process development laboratories in market segments such as:

- Pharmaceutical, biomedical, food and beverage, industrial
- University and colleges
- Government
- Hospitals and other health care

Eventually, Mott relocated to its new 120,000 square foot manufacturing and office facility. This new facility is situated on 12 acres of land in Brantford's new Northwest Industrial Park. It has excellent access to the 403 expressway, which provides a direct link to the US markets through Buffalo, New York and Detroit, Michigan.

Mott serves its customers by integrating a comprehensive and adaptable product line with lean manufacturing processes certified to the quality management standard ISO 9001:2000.

The result is a high-quality product that can be readily adapted to meet each installation's specific requirements. The Mott facility also includes a fume hood test laboratory that can verify fume hood performance to the ASHRAE 110-1995 protocol.

Mott's Sigma Systems™ laboratory furniture is distributed through a network of dealers. Mott's market leading order cycle times and on-time shipment performance combine with its dealers' planning and project management skills to deliver high value to the laboratory owner.

“Our growth results from our commitment to quality product and service. We deliver this quality through competent employees and dealers. It is these people who not only "make it all work"; they are a "joy to work with”.

Bill Stover (P. Eng. Chairman/CEO)

Ed Seegmiller (C.A. President)

PHASE I - THE BUSINESS ASSESSMENT

At the time of the Business Assessment Mott's business focus was the production of steel laboratory and medical cabinets; fume hoods, community mailboxes, K.D. Kitchen cabinets and miscellaneous case goods.

Mott was a supplier to the Canadian and U.S. marketplace. However, Mott had only one customer, that being Norlab.

There were two manufacturing plants. The K.D. cabinet plant was located in leased facilities and the lab and medical cabinet plant was located on land owned by Mott. Facility manufacturing space on the owned premises was approximately 45,000 square feet.

The Objectives of the Business Assessment

1. Act as a communication tool between Mott and CTM
2. Act as input to the CTM 12 Step Program at Mott
3. Detail immediate CTM facilitation and education needs (short and long term)
4. Provide a specific cycle time improvement projection and related cost benefit analysis for Mott

What does the Business Assessment provide?

- Determine the potential for improvement in business process cycle time
- Review all aspects of the business to achieve productivity advantages
- Highlight and increase awareness of problems in areas such as quality, process and product reliability, new product introduction cycles and manufacturing cycle time
- Evaluate the capability for a continuous improvement and participative team approach philosophy throughout the whole corporate business unit

These improvements lead to:

- Improved competitiveness
- Improved cost and margin performance
- Improved flexibility
- Improved productivity and therefore profitability
- Improved customer satisfaction

Other related improvements and changes will be:

- Emphasis on the customer, not the corporate system
- Stronger corporate culture through people
- Reduced "cost of poor quality" in all forms
- A stronger supplier base with partnership relationships
- Problem solving and successful product quotation/prototype cycle
- Focused company vision and planning

Business Assessment - Procedures

CTM has found the following approach to determining implementation support requirements very effective.

1. Through extensive interviews with key management and employees gain an insight to the "as is position" on:
 - o operating practices and performance levels
 - o present and future projects
 - o issues and concerns
2. Determine management's strategy, goals, objectives and tactics for operating the business.
3. Build a rapport with a broad section of the employee team.
4. Determine whether people really understand what is required and expected of them during the evolution toward continuous improvement.
5. Gather information that will help to customize education recommendations. This information not only provided an understanding of the level of Mott's knowledge, but the data gathered was an investment for future educational and facilitation activities.
6. Also, Mott got an opportunity to obtain feedback on how it is perceived from an outside source, which provided an impartial look at how Mott is operating against benchmarks for similar industries.
7. As well, Mott's management team gets an opportunity to get information (sometimes very open and honest) on how the company is perceived by all levels in the company.

Business Assessment - Conclusion

- We found the Mott office operations to be clean and business like! A sense of cohesiveness and closeness was evident which is a positive sign for successful CTM implementation.
- Due to the physical layout of the three main plant production departments (Press Shop, Weld and Paint line/Final Assembly), the closeness exhibited in the office was partially present. However, many during the interview process indicated a lack of total teamwork between these shops.
- We found the plant facilities to be relatively clean and functional (some attempts at housekeeping were evident). However, excess material inventory congestion made the area appear crowded.
- However, pride of ownership for the product (operations done in each department) and an existing commitment to Mott at all levels were clearly transmitted throughout many of the interviews.
- Many of the interviewees believe that Mott must evolve from a strictly one customer supplier to "make it" in the world market place.
- Many believe that change is necessary to insure the future viability of Mott. However, many long service Management employees (greater than 5 years) are uncomfortable about the degree of the necessary impending changes and the effect on the old culture.
- Most people interviewed believed that the CTM concept and principles would help Mott (also that Mott, in terms of its people, is ready in general to learn and then apply these CTM principles).
- Many long service employees perceived a decline in the "family atmosphere" over the past several years. However, the vast majority of those interviewed believed that employees were being reasonably treated.
- The long service salaried employees expressed a significant degree of "uncertainty" regarding the new Mott management. Hourly employees openly embraced the more open, growth-oriented style of new management. Facility
- We found most people had a positive attitude towards Mott; however, some deep concerns were expressed. All those interviewed tabled their concerns and responses in an honest and positive manner, with the common theme being – "I like working here and have pride in what we have accomplished in the past, but we can and must do things better to grow and ensure our future survival". Emphasis on the customer, not the corporate system

Top 8 Problem Areas Identified

1. Systems
2. Documentation / Information
3. Communication
4. Cultural / Teamwork
5. Defective Process / Method
6. Decision Making
7. Organization / Accountability
8. Education

Opportunities to Realize

- Acquisition of broader customer base
- Improve focus on mission statement and strategies
- Improvement of product margins due to elimination of waste
- Reduce inventory levels
- Reduced new product submittal time to customer
- Reduce cost of poor quality

Threats to Overcome

- De-motivation of workforce (all levels)
- Perceived lack of direction by some long service employees – "We've always done it this way mentality"
- Apparent lack of teamwork and organizational integration at new product introduction level
- Equipment not suitable for high volume production

The Business Assessment - Recommendations

1. Mott must develop a 12 Step Evolution Plan. This plan, with supporting strategies, must be clearly communicated and understood by everyone in the organization.
2. The senior management team needs to develop a strong message of commitment to address the morale and communication issues.
3. The senior management must commit to developing the necessary mission and organizational realignment statements as part of 12 Step – Step 1.
4. Mott must address the broad issues of education.

An organization's people are its strongest asset!

5. A "TEAM APPROACH" culture needs to be further developed by Mott to ensure a successful 12 Step implementation so that Mott can focus on:
 - o Developing the organizational changes
 - o Managing the business differently
 - o Solving problems and continuously improving toward the competitive edge
6. Mott must commit to a "CTM APPROACH" for its future success.

Cycle Time Improvement Benefits

Many companies have found that, by adopting CTM operating practices, they can achieve significant improvements.

In the case of Mott, once CTM education and facilitation support is complete and the CTM evolution plan successfully implemented, the cycle time improvements will result in:

- 81.0% reduction in business performance cycle time (standard)
- 90.0% reduction in work-in-process (WIP/Stores)
- 50.0% reduction in scrap and re-work costs

PHASE II – CTM 12 STEP IMPLEMENTATION

Change, risk assessment, new vision, restructuring, employee empowerment, reduction of non-essential activity and a significant increase in working capital are all a part of, and a result of a reduction in an organization's cycle time.

To achieve such results, an organization must have systematic, step-by-step methodology to which it can relate all activities and through which it can involve all employees - a means of integrating change and continuous improvement into the very fabric of the organization.

The CTM 12 Step Process can install a comprehensive approach to the reduction of cycle time and build the foundation for continuous improvement. It initiates a whole way of doing business that can produce dramatic results in less than a year through education, facilitation and a company's commitment to change organizational structure and traditional operating practices.

The CTM 12 Step Process can generate a business-wide evolution plan, which focuses directly on the reduction of the largest opportunity for cost savings in any organization - cycle time. Steps 1 through 7 are planning steps, steps 8 and 9 are the execution steps, and steps 10, 11, and 12 are maintenance and control steps:

Steps 1 through 6 are planning steps:

STEP 1: Establish the CTM Approval Team:

- The role and function of these members is quite distinct from their regular role and responsibilities.
- They delegate throughout the organization the responsibility for planning change and implementing the CTM Process.

STEP 2: Set up the CTM Planning Forum:

- This is made up of many cross-functional teams who develop the positional analysis on existing opportunities for reducing cycle time and establish an evolutionary plan to focus on these opportunities.

STEP 3: Educate and Facilitate Continuous Improvement:

- An in-depth process that enables all team members to identify, assess and develop means to eliminate non-value adding activities throughout the organization.

STEP 4: Set the Scope and Mandate, Expose the Impediments and Initiate the CTM Mapping Process:

- This allows each team to document, identify and detail each specific opportunity and its corresponding corrective or improvement action, and the role and function of these.

STEP 5: Formalize the Program Structure by Problem Area for the Most Effective Management of Change:

- Accomplished through a rationalizing process of the cross-functional projects (ranging from 100-150 projects) and the setting of the cycle time reduction time frame and milestones.

STEP 6: Achieve Full Management Approval of the Evolutionary Plan and a Commitment from Top to Bottom:

- Based on proposed definitive action programs aimed at cycle time reduction, cost saving improvements, greater responsiveness, more flexibility and quality improvements

STEP 7: Reaching Every Corner of The Organization:

- through a series of custom-tailored communications that invariably generates the same response - everyone wants to know how and when they can participate.

Steps 8 and 9 are the execution steps:

STEP 8: Kicking Off the Programs:

- This starts with each team leader beginning the active implementation improvements and the elimination of impediments.

STEP 9: Kicking Off the Projects:

- As the process reaches further into the organization, the leadership, by employees, swings into action with a detailed and specific series of activities.

Steps 10, 11, and 12 are maintenance and control steps:

STEP 10: Controlling the Total CTM Process:

- It is essential to results, and it rests with the Approval Team, but responsibility and action remains empowered with the teams of employees.

STEP 11: Reviewing the Evolutionary Progress:

- This is a key monthly event that allows the Approval Team to make decisions relative to realignment of resources, activating new projects, reviewing status of current projects and ensuring that the process moves forward.

STEP 12: Comprehensive Communications:

- This is not the last step, but rather a continuing step that utilizes a full range of tailored, internal communications and a structured quarterly assessment.

SUMMARY

An Eight Year Journey

Mott began manufacturing steel laboratory furniture in 1961 and a few decades later over 90% of its \$6.3 million sales involved steel laboratory furniture sold to one dealer who installed laboratories primarily in Canada.

Today, the company's customer and market base has shifted significantly with approximately 70% of its \$32 million sales being sold to US dealers who install Mott's Sigma Systems™ product line.

The 30% balance of the company's sales are to MottLAB, Mott's Canadian dealer, of which Mott holds a two thirds equity interest. Since MottLAB was incorporated it has established itself as the major laboratory furniture dealer in the Canadian market.

While Mott had a limited reputation and no brand recognition in the Canadian and US markets in the past, it has become the major source of steel laboratory furniture in Canada and the third largest source, through it US dealers, in the US market.

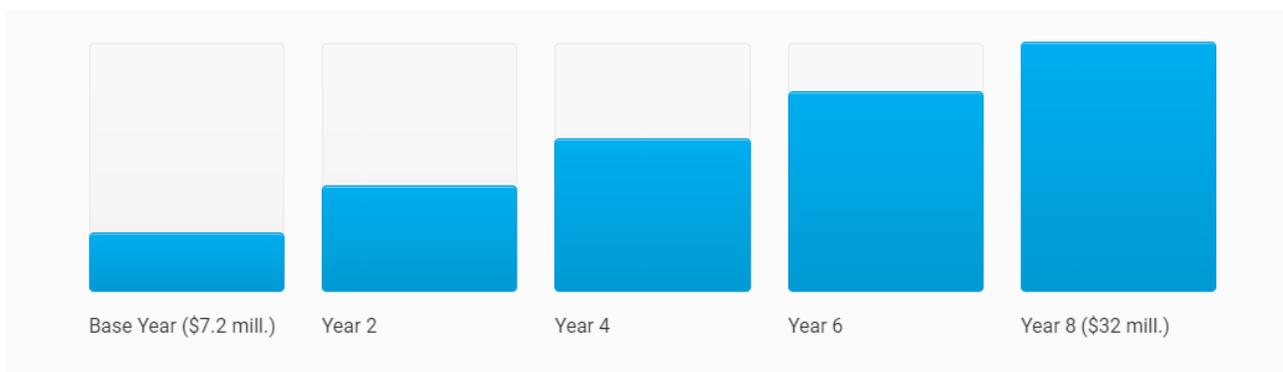
The reorganized distribution network and the revitalized product offering have resulted in Mott's consolidated sales (Mott and MottLAB) increasing approximately 4.4 times from \$7.2 million to \$32 million in the past eight years. Pretax profit has moved from 2% of sales to 13% which is PTL from \$140,000 to 3.9million. A 27-fold increase.

This growth was realized, in part, by adhering to the CTM 12 Step principles, practices and procedures implemented at Mott.

Mott relocated to a new 102,000 square foot manufacturing and office facility– this would never have been done if it were not for CTM and cycle time.

The new plant layout and setup followed the CTM Lean Manufacturing Methodology utilizing cell and continuous flow. Employee empowerment, quick change over, quality at source and a total focus on the customer are just a few of the Lean Manufacturing Tools that have made the Mott plant a state-of-the-art facility.

Figure 1: Increase in Sales



Pretax profit increased from 2% of sales to 13% (from \$140,000 to \$3.9 million)

The industry standard for order cycle time is 8 – 10 weeks. Mott has established a maximum order cycle time of 6 weeks as a critical requirement.

Currently cycle time achievement is:

- 70% of orders are delivered within 4 weeks
- 95% of orders are delivered within 6 weeks – approximately 5% of orders are held past 6 weeks at the dealer's request
- The remaining 5% are delivered within the industry standard of 8 – 10 weeks

Critical Success Factors

Mott considers the following to be their four critical core competencies that they must retain and further develop using the CTM Lean Manufacturing Methodology to achieve profitable growth goals. During the last two years they have condensed their critical success factors to these essential four recognizing that service quality is a key requirement to secure dealer loyalty.

Service quality means that Mott must always have a positive, supportive, "can do" attitude to serve they dealers' needs with a high sense of urgency. They recognize that should their dealers not be able to profitably install their product, their loyalty to Mott will end. Industry leading service levels are therefore essential to expanding their distribution and attracting new dealers to achieve continued profitable growth.

- Consistent market leading product quality
- Consistent market leading service quality
- Lean Manufacturing
- Competent Market-wide Dealer Network

CTM Project started for one reason	But lead to another
<p style="text-align: center;">Clean up Shop Remove \$'s from manufacturing</p>	<p style="text-align: center;">Get product to dealers on time New look at flexibility and service On time performance Cycle Time</p>

“Mott’s profitably has grown because of the continuous improvement foundation provided by Cycle Time Management.”

“This focus changed Mott from a Manufacturing to a Service company.”

Bill Stover (P. Eng. Chairman/CEO)