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AMETEK, Inc.

Corporate Office

1100 Cassatt Road

Berwyn, PA 19312

Phone: (610) 647-2121

Fax: (215) 323-9337

Syncroness, Inc.

Corporate Office

10875 Dover St., Unit 200

Westminster, CO 80021

Phone: (303) 429-5005

Fax: (303) 429-5025



MEETING THE CHALLENGE OF SPEED TO MARKET – MAXIMIZING PRODUCTIVITY WITH CONSTRAINTS

AUTHORED BY ELEANOR LUKENS, AMETEK

John Gardner and Kyle Harrison, Syncroness

THE PROBLEM

Managing a larger portfolio of products requires a great deal of attention to stay relevant, on the cutting edge and ahead of the competition. Additionally, new products must be developed as well to keep the lines fresh. When such an effort is identified, we must position opportunities with other company divisions for the necessary funding for the project, identify proper resources to execute, and develop an aggressive schedule in order to hit the market window of opportunity. The core problem we face is typically: How do I take two engineers, a limited budget and get a new product developed, into production/operations and into the market space in 6 months?

EXECUTIVE SUMMARY

In an ever-changing global economy, speed to market has become more critical than ever to sustained revenues and market-share growth. We have developed a well-balanced approach to taking on speed to market issues by forming a partnership with an outsourced product development firm, leveraging in house industry expertise while using the design firm to focus on optimizing the product development process to ensure timely delivery and excellent engineering quality. Since 2009, AMETEK has partnered with Synchroness to provide product development expertise in order to support and drive time-sensitive projects to completion while maintaining expected deliverables and meeting market demands. By providing discipline with tried and true product development processes and leveraging our existing domain knowledge, we have been able to release various new and improved products, at a lower cost of goods (COGS) while increasing overall profitability. We have not impacted ongoing in house efforts, such as new product development, but rather have expanded the breadth of our team's results.

THE APPROACH

In order to meet such demands with limited resources, we have found that a key is to get in and out of the design process quickly. With Synchroness, AMETEK is able to hand off the majority of front-end design with minimal interaction, allowing Synchroness to develop solid identification of true requirements, and mitigate the risk of design creep, as well as the addition of non-value-added changes and/or features. Leveraging AMETEK expertise, Synchroness pares this requirements list down to the absolute necessities – what the market is looking for and the business needs; Synchroness works with AMETEK throughout the design process with the market top-of-mind rather than getting caught up in nice-to-haves and other features that may be raised. This approach minimizes the required time of AMETEK resources, allowing us to focus on other efforts (new product development), while encouraging a swift exit from the design process with appropriate documentation (project plans, requirements documentation, etc.), review and operations involvement.

Because Synchroness is not a product manufacturer, they are able to concentrate on the components of product development that may not always be given time when developed in house – Synchroness has the luxury to apply a consistently rigorous design process. When these items are neglected, the result is generally increased cost and time spent on the back end dealing with unforeseen issues. Synchroness is skilled at systems engineering (requirements definition, architecture design, verification/test definition and traceability), detailed design (hardware, software), test and documentation, greatly minimizing the risk of back-end deficiencies, which cause rework.

By providing this discipline and alignment of organization skills, the Synchroness-AMETEK team optimizes speed-to-market requirements and meets business goals (COGS, production throughput, etc.), with a very controlled schedule and non-recurring-engineering (NRE) cost.

BENEFITS

REDUCED TIME TO MARKET

By using this team approach, we have been able to execute the design process quickly – often in less than two months. Syncroness has been able to access core resources from AMETEK to absorb necessary information to properly design the product in alignment with AMETEK expectations. Because the in-house team is able to exit the design process quickly, we are able to concentrate on other aspects of the project, including proper implementation of the new design into operations/manufacturing. The result of these efficiency gains is predictably quick time to market, mitigation of costly design errors (because of additional time due to rework) and a resultant product that is tuned to the market need. Further, by closing on requirements early, and keeping them closed, less time is spent adding in and evaluating additional features. This keeps the project from getting into a “churn” situation and quickly moves the process along. Syncroness, working with AMETEK Chandler, was able to develop a strategy that resulted in designing a new Mixer (used for Slurry Preparation) in a timeframe of 4 months, from initial discussion to completing the design.

COMPLEMENTARY PROCESSES

It is important to point out that Syncroness does not have domain expertise in most of our fields and industries. AMETEK hosts an impressive team of world-renowned experts in their fields. Similarly, Syncroness possesses expertise in the field of product development. Rather than attempt to supplant and mimic AMETEK expertise, Syncroness relies on a solid alignment of the two corporations’ skills to quickly and efficiently execute product development. In addition to increased efficiency, this leveraging of synergies also dovetails the Syncroness and

AMETEK team and encourages a united development approach. Making it clear early that Syncroness is an additional tool for the AMETEK team, not a replacement, eliminates a lot of non-technical pitfalls other teams might encounter. Syncroness provides the talent to augment and implement the design ideation developed by AMETEK to truly “wow” the marketplace. An example of this benefit is exemplified in the recent Chatillon upgrade project (see DFX II Force Gauge webpage). In this project, the domain expertise of how to measure force, utilizing an integral load cell, was brought to the team by members of AMETEK Largo. The Largo team was instrumental in defining the flow of operations used by an operator, as well as verifying, throughout the development process, that the design met the user needs. In addition to overall project management, Syncroness was responsible for the user interface design (software for the GUI, selection of the new display, etc.) as well as redesigning a more producible and cost-effective PCB, utilizing the existing AMETEK supply chain.

CONSISTENT DEVELOPMENT PROCESS

One problem we have faced with prior projects is sometimes eliminating components from the design process, for the sake of time. Examples of this includes not completely defining requirements, not getting complete alignment of a feature set with marketing/sales and/or bypassing design reviews. With Syncroness, AMETEK counts on having a well-documented traceability of how the product was developed, sources of requirements, documented design reviews, and so forth. Syncroness discipline and experience in such processes, which is neither new nor groundbreaking, ensures the project team is aligned throughout the project and, more importantly, provides visibility

in the future when considering possible changes, updates, or issues-resolution for the product. Having a consistent process and a predictable list of deliverables has resulted in a more predictable development schedule and results.

Syncroness’ process (depicted in Figure 1, on page 4) is based on solid upfront systems engineering effort paired with consistent test methods and good design practices. By identifying requirements up front in the project, closing early on agreed-upon verification/test methods, and defining risks and components early in the process, less time is spent reworking or dealing with unexpected issues as the launch date approaches.

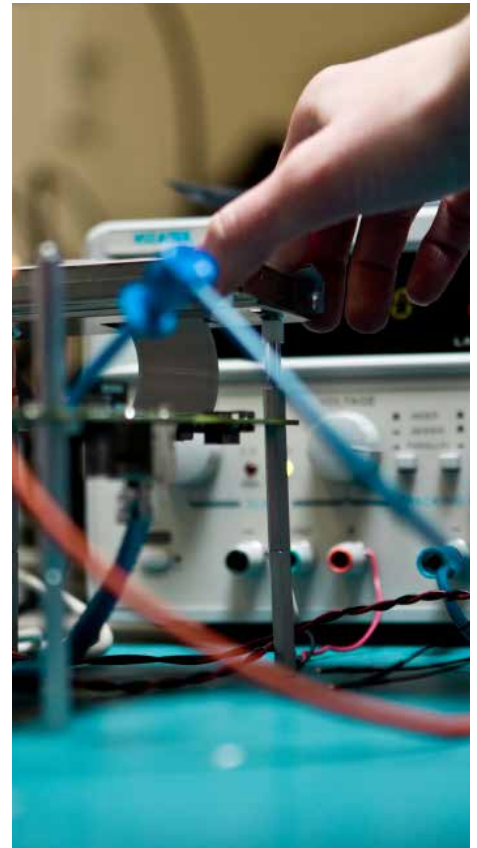
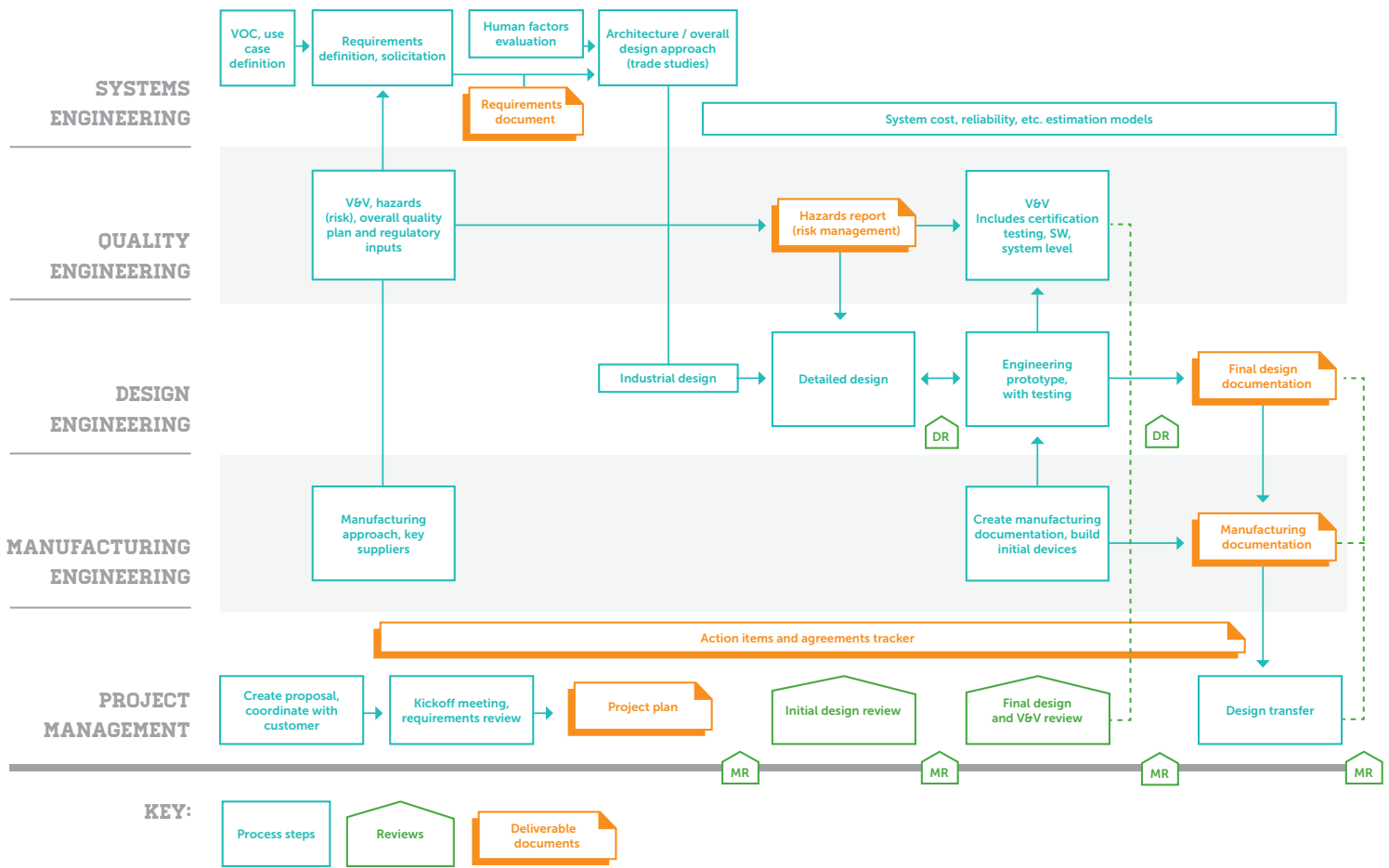


FIGURE 1. SYNCRONESS PRODUCT DEVELOPMENT FLOW



THE SYNCRONESS DESIGN PROCESS

As the project progresses, Synchroness conducts detailed design reviews with key resources on the project to ensure the design has been implemented as intended. These reviews are held on site (in Largo, Florida, for example) or via interactive Web (GoToMeeting®), with all appropriate personnel in attendance. The Synchroness Project Manager (PjM) leads the group through the material, using technical experts as needed to fully explain the aspect of the design under review. Action items are captured and tracked to closure within the team's SharePoint site. Synchroness is positioned to consistently execute in this manner, being focused on this process, without production or other demands. The intent behind these reviews is not to simply satisfy a project deliverable, but to truly determine if the team is headed in the right direction and if any other issues are possible.

Without the interruptions of production/manufacturing or other projects, Synchroness is able to consistently meet these demands and stay true to the process. AMETEK reaps the benefits by being able to commit to a solid design with minimal internal impact.

IMMERSION INTO AMETEK PROCESSES

An added benefit of our continued work with Synchroness is their immersion into AMETEK processes. Although Synchroness is skilled at adjusting and adapting to client requests and processes, when they are able to have an established relationship with an organization like AMETEK, they are able to bring much more consistency and reliable practices to the project. By entrenching themselves in AMETEK's values (what is really critical to Ametek?), they are able to not only execute and release high quality products, but do it in a way that aligns with AMETEK corporate objectives and direction. Synchroness knows the AMETEK way and can work with minimal oversight, further adding to speed to market desires and requiring less management oversight. Synchroness has been trained in the Value Engineering/Value Analysis process and has executed nine (9) projects within this initiative.

Synchroness maintains focus on AMETEK's critical aspects of this process:

- » Innovative way to reduce cost without function degradation
- » Support material availability
- » Improve manufacturability of current and future designs
- » Alternate way to reduce cost while maintaining the financial health of suppliers
- » Complements supplier negotiations and sourcing to GSO
- » Cost prevention at the design stage
- » Increase selling price through improved product value & innovative solutions

A FRESH PERSPECTIVE

Sometimes, the best part about engaging an outsourced partner, like Synchroness, is simply the fresh perspective they are able to provide. While the AMETEK team is comprised of experts in fields such as surface measurement and material hardness, Synchroness works on a wide range of projects in varying industries; Synchroness is able to provide unique design recommendations to the project team. These recommendations, paired with AMETEK expertise, can foster extremely unique and cutting edge designs that will separate their products from the competition. An example of this is in the unique approach to gas flow designed by Synchroness for the recent AMETEK Pittsburgh WDG-V product. This resulted in a more compact, more cost-effective solution that continues to provide the appropriate dynamic control of the gasses.

MEASURABLE BUSINESS BENEFITS

Perhaps the most beneficial component of engaging in this approach is Synchroness' ability to confidently and accurately analyze project cost. It is always difficult to determine true project cost since internal resources generally do not track hours to specific projects. That is, the internal team has an overall cost that is dispersed among all projects. With Synchroness, AMETEK knows the exact cost of the project and can assess many other valuable metrics from the Synchroness cost accounting and management system. In addition to clear value gains in COGS and sales increases, these value metrics allow AMETEK to make more informed decisions concerning pricing, strategy and product futures. In essence, Synchroness provides us with solid, reliable ROI figures that are accurate and contained. Using the Consistometer project

as an example, the team was able to, with a 4 month or so project duration, accomplish a measurable reduction in COGS of 41% (model 7222), while improving serviceability, structural strength and providing a common product line look and feel.

CONCLUSIONS

By aligning team strengths, accomplishing swift closure on requirements and developing cross-team cohesiveness, Synchroness and AMETEK have been able to release products sooner with fewer resources. By meeting speed to market demands, AMETEK is able to consistently stay ahead of the competition, quickly respond to emerging markets and react to industry technological and market developments. The result is better profit, stronger metrics and increased productivity.