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July 2008

# Interview with Edward J. Connors

## Global Director, New Products and Technology
## Aqualon, a Business Unit of Hercules Incorporated

Dr. Edward Connors is the Global Director of New Products and Technology for Aqualon Incorporated. He is responsible for leading new product programs and providing overall leadership for the global innovation strategy of Aqualon. Prior to his current position, Ed held R&D leadership roles with BetzDearborn, GE Water and Process Technologies, and Hercules Paper Technologies and Ventures Division. Ed received his PhD in Polymer Chemistry from Drexel University in Philadelphia, PA. Ed can be reached at econnors@herc.com

Interviewed by Doug Berger, managing partner, INNOVATE Llc. doug@innovate1st.com

Doug: We are going to be discussing the game-change at Aqualon. Would you start us off with a little background?

Ed: The change was driven by a mandate from our new business unit president in late 2005, to accelerate the top and bottom line growth to twice its historical rate from the previous five years. Within the recently consolidated Hercules corporate structure, a large part of the growth was expected to come from Aqualon.

The best way to describe the Aqualon business prior to 2006 is as a set of specialty chemical ingredients that went into coatings, construction and regulated industries, as well as touching a little on the oil field area. We managed the products and ran the division around maximizing the output of our physical assets on a global basis. That was very successful and that part of our business continues to be successful and relatively profitable. That type of approach, however, was not going to produce double-digit, bottom-line growth consistent with our new mandate.

We realized we would not only have to change the business, but our mental model of the business, as well.

We reorganized the entire business. Rather than having global strategic business units organized around our product lines, we organized around industry. We created a general manager structure with full profit-and-loss accountability across the four major industries of coating additives, construction, regulated industries (food, personal care, and pharmaceutical), and energy and specialties solutions. We started by having a dedicated team specifically calling on one industry in order to understand their needs, as opposed to trying to sell them the existing product line.

In our view of products and technologies, the ‘before’ was providing individual ingredients to a particular industry, such as pharmaceuticals. The ‘after’ resulted from a shift in focus to specialty blends of ingredients, which provided a more valuable product, and something that we positioned as more of a solution. This idea came out of our construction business, where we primarily sell blended polymers that the customer mixes with basic materials, such as aggregate or sand to produce their final product.

Another change was in how we defined our market and the market opportunity. The previous definition of our market space was primarily around cellulose, ethers and resins. Based on our market analysis, this is a $5 billion market space. In 2006, Aqualon was just shy of a billion dollar business, owning about 20 percent share in that space. There was skepticism regarding accomplishing double-digit growth within that space starting from such a large market share.

The game change around the market opportunity was to expand that core market. We did it in two ways. The first step was to ask, "What are we really good at?" and "What does that mean to our customers?" We are good at water-soluble polymers, and water retention and control for aqueous systems. There were classes of materials other than our current technology that customers might use in solving the same types of problems. We broadened our market definition to include those markets, which were equally as large. We went from a total market opportunity of $5 billion to almost $15 billion, by broadening our thought process around the types of products and chemistries that might solve problems for our customers.

Doug: So you weren't saying, "We'll take our core products and go into different markets." You were saying, "Now we're going to play as a business from a technology, manufacturing, and marketing perspective, in the space of these other technologies." You were going after new customers.

Ed: New customers. New markets. If, for whatever reason, the optimized solution was not cellulose ether, we were no longer going to rule ourselves out of solving that problem. We would consider these other chemistries, or blends of other chemistries, for a potential addition to our products.

The other expansion of market space is what we called 'one-step adjacencies'. These are more product and technology adjacencies than market adjacencies. In our coatings business, for example, we provide ingredients for water control in paint. The ingredient may be 5% of cost and less than 1% of volume. There are additional ingredients that go into that can of paint. We had never really considered offering some of those products to our customers as part of a more total solution from Aqualon.

There were many of these adjacent chemistries, which our customers were already buying and formulating, right along side of our polymers that we now said we wanted look at for growth opportunities.

Doug: In that regard, you redefined Aqualon from the previous core to the expanded core, to the one-step adjacencies.

Ed: In the previous model, we viewed ourselves as a $1 billion naturally derived, water-soluble polymer supplier in a $4 billion space. Having gone through this expanded core and one-step adjacency market opportunity process, we've redefined Aqualon as a $9 billion space of water-soluble polymers plus attractive one-step adjacencies, which gives us much more of a runway for growth and profits in the future.

Doug: It is now two years later into this strategic shift. What results have you achieved?

Ed: The most significant results are around our growth metric of new product sales, which are less than five years old. Those products, as a percent of or our total turnover, have gone from historical rates ranging from 10-15% over the last 10 years, to above 20%. Our ultimate goal is to drive that growth to as close to 30% as we can by 2012. We've really seen a lot of traction around this expanded core and adjacency mindset.

Doug: As the game change has taken root in people's thinking, what do you notice as you walk around the business?

Ed: In the past, we didn't talk much about growing the business. The business grew, but a lot of it, as you said earlier, was riding the wave and not aggressively going out and taking share or going into new areas with our technologies. Walking around the business and talking to people now, you hear a lot more discussion around growth from new products and new customers.

Doug: With this expanded marketplace, how did you make decisions regarding the market areas in which you were going to play?

Ed: It was an interesting process, to say the least. We did it on an industry basis. We have four core industries, underneath which we have seven sub-industries. We formed a team, comprised of a general manager, a technology leader, a technology manager and a new product leader. They created a growth roadmap of the specific adjacent technologies that complement our core and can provide profitable growth. At the end of the process, we had seven maps that defined how we wanted to grow in each one of the industries.

What we learned in the process was probably more important. What we left off the maps is as important as what we put on them. It really helped us to rule out some places where we didn't think we had a right to play, or those that we didn't think would be a good strategic fit with our business. One of our concerns about broadening this market definition was that we would lose focus and chase some unprofitable opportunities. We didn't want to have any technology projects or business development activities, which didn't align with or support the growth maps for one or more industries. This market mapping process, which took us six to eight months to get through, really helped to get the organization focused around those two or three growth opportunities in each industry that were going to drive this model.

The way to describe it is as a multi-step process. We went through a series of screens. We started very broadly and then tried to filter the opportunities down. Ultimately, you get to a point where you really have to go to the customers, engage the global organization, even some of your supply base, to try to understand where these best opportunities will be.

Doug: The kinds of changes that Aqualon made would take more than an intellectual understanding for people to enact. How did you go about winning over the hearts and minds of people?

Ed: Communication was key. This was a dramatic change for the people who had worked in the business for a long time. We did a fair amount of hiring during this time, so we also brought in people and outside thinking, which was unconstrained by our previous mental model.

In the end, we had to get a couple of wins up on the board early and show people in the organization and even ourselves, that the model worked … that we could go out and participate in some of these new areas that traditionally we did not think were really core to our capability and our skill sets.

We also looked across the business for some examples. We'd had a very successful launch of a new synthetic-based polymer technology. We pointed to that as an example of being unlimited in our definition of this market.

Doug: Earlier, you mentioned several ways in which you embedded this game change. Organizationally you made a structural change, and actually had people who were general managers of the various market industries that you were going after. Going for some quick wins was another way that you went about embedding the game change. How else did you embed the game change into the processes and the thinking of everyone in the business?

Ed: We observed that the percentage of our technical resources focused on short-term issues, whether they be cost issues or minor, incremental improvements to the existing product lines, was too great. We decided to physically separate the global technical service laboratories around the world from the R&D organization. This created more focus within the R&D group to spend almost all of their time thinking about longer-term growth and new products. That was really a key step in the organization, which drove an entirely different focus in the R&D organization than had existed in the previous business model. It was not without pain, but it was highly effective.

We consolidated the R&D teams, each aligned to one of our general managers. Ultimately, they report to me, the central technology director, but each of these leaders also has dotted line accountability to that general manager. This creates a lot of connection and accountability back to the business to deliver on this new product vision in a relatively short period of time.

Doug: What changes were the general managers making in marketing and sales to have a future focus into new areas?

Ed: A significant change was the creation of some new positions, which we called New Product Leaders. Each of the general managers went out and hired a dedicated New Product Leader or selected someone from within their organization. Their fulltime responsibility was to go out and get voice of the customer (VOC) around new product opportunities for that particular industry, bring them back to the organization, ultimately prioritize them, get the projects resourced, build a business plan, and then be responsible for launching new products in the development phase.

Those individuals aligned with the technology managers. We used the term 'joined at the hip' with the technology managers, which helped to drive our development process and make sure that we stayed aligned with customer needs, primarily through VOC interviews.

Doug: What else made the difference in embedding this future state into the way the organization operated?

Ed: We created some platform teams, which was also significant for us. We realized that not all of these adjacencies would align neatly with our newly created industry structure and market orientation. In order for us to get some scale around additional technologies, we were going to have a separate platform technology team that would develop a capability and drive these new chemistries across the industry R&D groups. A key step in that process was naming the leader of these platform areas. New technology investment went into hiring scientists who had prior experience in those chemistries and those industries so that we could very quickly build that internal capability and expertise.

Doug: What were the lessons learned for you personally?

Ed: One of the biggest lessons was that although we did really transform the business over a relatively short period, we probably should have gone even faster. We spent a lot of time convincing the organization that this was the right thing to do. In hindsight, we could have moved faster. R&D went through a fairly radical reorganization. However looking back, that was probably the single most important thing that we did to get the people focused on this new strategy. We should have made the organization changes sooner.

The second lesson was around balancing internal and external expertise. We set out on this journey with a mindset of getting into some of these new areas, primarily through the relationships we have with our customers and our suppliers, and through hiring existing industry talent from outside of our company. We did not think enough about external collaboration and various types of partnerships, such as joint development agreements or licensing agreements. Those have really turned out to be big enablers, two years later. They are driving some of our more exciting programs right now.

Thirdly, even if we didn't have the market maps entirely right, getting the people aligned was probably a more important step than was deciding entirely whether one particular bubble was going to be profitable for us. The map was ultimately going to shake out of the programs themselves.

Doug: Do you have any words of wisdom for other companies in the shaping of the new aspects of their portfolio?

Ed: When you're going to step into a new space and you're going to add some kind of a new business or a new adjacent product line, it has to be big. It has to have scale because it's going take a lot of work and a lot of effort to get even the back-office processes ramped up around these new product lines. You cannot try to do it in a small way.

The programs that really take you into those adjacent areas must be big bets and you have to resource them appropriately. They have to have scale and really be transformational in terms of the total dollars that they're going to deliver to the business. If they're incremental, like some of your core product line projects, you'll probably never really change your project portfolio.

Doug: How did you think about such bets so that they were big, but not overly risky?

Ed: We believe that we have a strong sales channel. If you think about our adjacent areas, in many cases we're talking about our existing customer base. For the most part, we were serving a known demand and a relatively known customer base where we already had relationships and understood the market fairly well. We were just getting a larger share of the pie with the existing customers. So we did not perceive as much market risk in some of these big bet programs as we did technical risk entering into areas that were not core to our existing capability.

First, we relied on our stage gate process to help us manage some of that risk. Then we learned from our customers about some best practices around new product development, specifically multiple contingencies and multiple development paths. Although some of the projects we were working on were fairly risky, we were able to manage that risk by having multiple fallback positions and making sure that ultimately, we were going to enter that space, but we had multiple entry points available to harness.

Doug: Are there any concluding remarks you would like to make?

Ed: My only other comment is this ... regardless of our new technologies or the markets that we're going to serve, like all companies, we need to be cost effective. We need to be competitive. The third leg of the stool, which we did not at all ignore, was making sure that we had the manufacturing base to support the growth strategy. We have made significant investments in some low-cost regions to support that and ultimately, I think that piece will be equally as important in the overall growth of the business.