

MOMENTIVE™

inventing possibilities



OPERATIONS OVERVIEW





MOMENTIVE

MOMENTIVE PERFORMANCE MATERIALS

Going with the flow

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Momentive Performance Materials Inc. (Momentive) is a global leader in silicones, quartz and ceramics, with a 70 year heritage of being first to market with performance applications for major industries that support and improve everyday life: we took a look at how supply chain excellence underpins its global manufacturing best practices.

Less than a year after the global silicones, quartz and ceramics specialist Momentive Performance Materials Inc. (Momentive) filed for bankruptcy, saddled by corporate debt it could no longer service, a leaner and fitter company has emerged. A balance sheet restructuring plan eliminated more than \$3 billion of debt: now instead of having to find \$345 million in interest payments every year, it now faces a \$50 million bill, which is well manageable given Momentive's level of annual turnover, in the region of \$2.6 billion.

For William Duty, Director of Momentive's Supply Chain Center of Excellence, the last year has been like a release after a period of confinement. Billy Duty has more than 20 years of supply chain experience under his belt, during which time he has passed through seven mergers or acquisitions, so he is no stranger to corporate change. He has been working in silicones since 1994, not long after the \$300 million acquisition of Union Carbide's silicone business by DLJ Merchant Banking Partners L.P. After going through the GE acquisition of Crompton's silicone division, he stayed with the business as Director of SIOP (sales, inventory and operations planning) when it was spun off by GE to Leon Black's Apollo Global Management LLC to form Momentive in 2007. In 2010, there was further adaptation as Momentive was combined with another Apollo-owned company, the specialty chemicals company Hexion, and then last year's post Chapter 11 decoupling



Mumentive's global footprint

from Hexion and corporate restructuring.

Following the restructuring, Apollo, though it remains at about 40 percent the largest single shareholder, no longer has the majority share in Mumentive, and Hexion is again a separate company with its own board and CEO.

Mumentive has what Duty refers to as an older style footprint; the three biggest of its 23 global manufacturing plants are respectively located in Waterford in upstate New York, Germany and Japan. None of these has any advantages of low cost labor or cheap utilities. Newer plants have been built strategically in China, Thailand and India, but for the time being the lion's share of production comes out of relatively high cost manufacturing locations.

One of the challenges for supply chain



***William Duty, Director
of Mumentive's
Supply Chain Center
of Excellence***

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Reducing Off-Spec Product

Minimize output during transitions that is lower grade than normal.

Learn how scheduling technology from AspenTech can help at:
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management is the very large number of different customers the company serves and the wide variety of products it sells into a range of industries. “No single customer provides us with more than three percent of our revenue,” says Duty. “We touch a little bit of everything!” The largest customer industry is consumer goods, where Momentive’s silicone elastomers products provide heat resistance, flame retardancy and moisture/dirt protection, for everything from bakeware and kitchen utensils, to keypads and infant care products.

Tire manufacturers use a lot of Momentive’s technology and patented NXT* silanes, which can help manufacturers improve tire rolling resistance and traction while improving wear by enhancing the coupling of silica to tire tread. Currently,

“No single customer provides us with more than three percent of our revenue”

– William Duty

SUPPLIER PROFILE

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Sisterville site



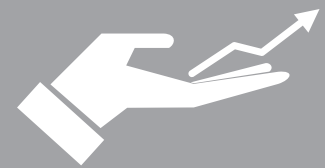
new production expansion is being planned to double supply capability of these products.

The quartz side of the business produces high purity fused quartz and ceramic materials that go into semiconductors, lighting and consumer electronics. Now free from the burden of debt, the company has money to invest, and upgrading the plants and equipment as well as growth will be a priority. The efficiencies this will deliver will go straight to the bottom line and rapidly turn Momentive into a larger more profitable organization, Duty predicts.

However, for now he is very much tied up with transforming the supply chain function throughout the company. Before the combination, Hexion had invested heavily in supply chain tools and expertise. He was able to bring these across, including a team of people thoroughly versed in the tools used within the 15-strong Momentive Supply Chain Center of Excellence that he now heads. These are the people who carry out advanced scheduling, planning, and linear programming work, alongside core process experts responsible for supply and demand planning.

This team works globally and is hired globally. Its most recent addition was hired in Japan where an advanced scheduling implementation is underway, and someone who could speak the language was needed on the ground. Every region has its own challenges, he says. "One good thing that we started a couple of years

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Growth is now a priority to Momentive Chemicals

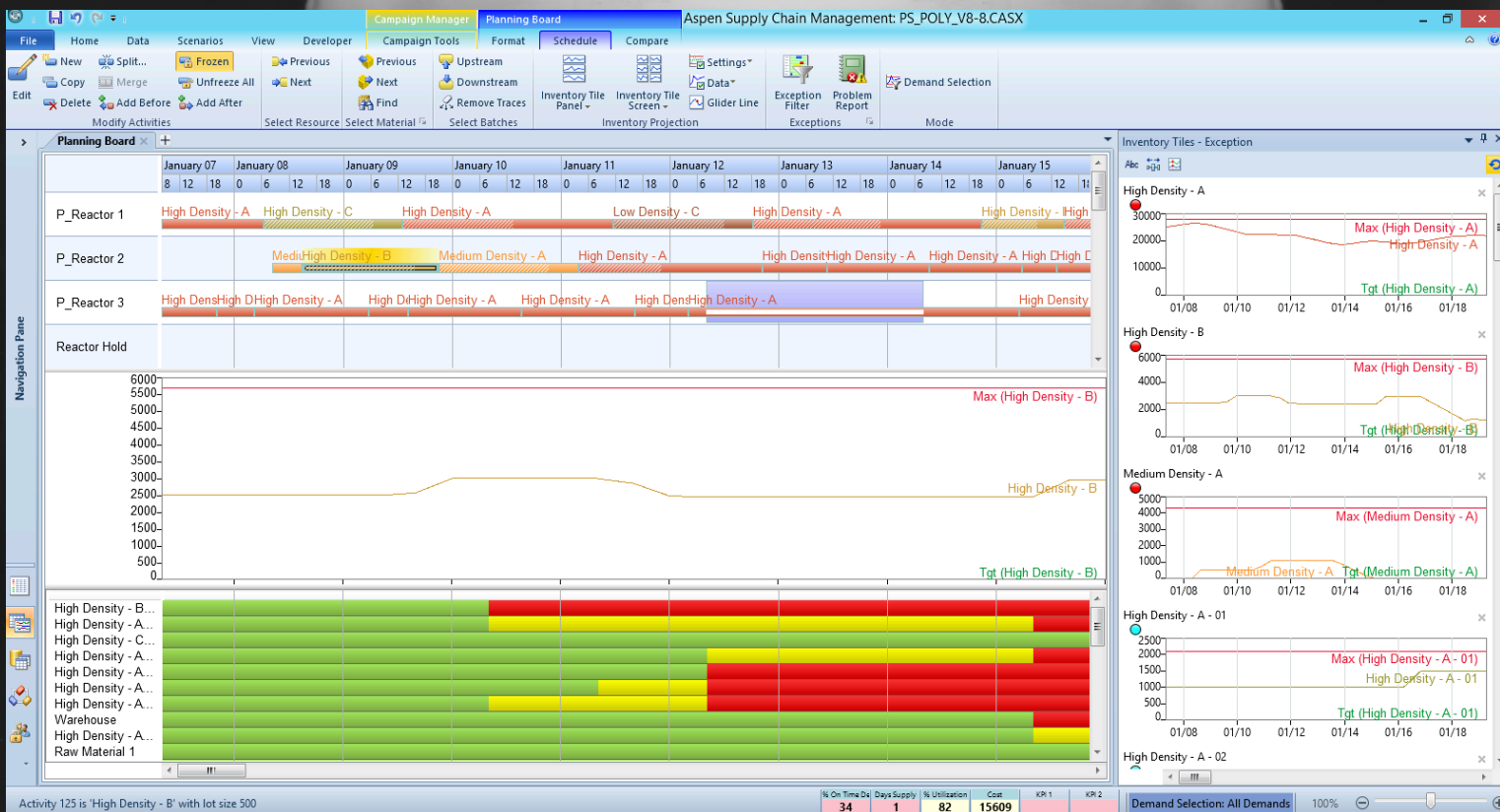
MOMENTIVE PERFORMANCE MATERIALS



**Momentive
RTV162 Silicone One
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ago was overhauling our demand planning. Then we went into our inventory analysis, and then we moved on to scheduling and advanced strategies. Because our business is very global and very complex, we are getting a lot of value out of having the right toolset, which is something we did not have in the past.”

Strategic planning used to be a headache. The ideal was to keep a rolling five-year program looking at each of the global assets. “Until last year that exercise was done via spreadsheets and it would take months of work just to prepare them, and very little analysis was possible. Last year we used Arkieva’s planning model which



Momentive’s Global Supply Chain Scheduler (GSCS) is based on AspenTech’s Aspen Plant Scheduler™ technology.

enabled us to generate literally hundreds of different scenarios, and at the touch of the button see what the effect of each of those would be on our asset base.” At last, it was possible to drill down into the results, and test the outcomes of different actions in real time. This was no plug and play exercise though, he cautions: “It took us many months to get the model right but now there’s really no limit to what we can do with it.”

“Now the supply chain team is taking on another challenge: the plant by plant implementation of the Global Supply Chain Scheduler (GSCS), based on AspenTech’s Aspen Plant Scheduler™ family of products.”

“We are over half way through the program now. By using the AspenTech tool and being able to build the logic into the tool from countless interviews with the scheduler, we have been able to generate a lot of value at our plants: minimizing changeovers, reducing inventory because of a better sequence plan, and gaining better visibility.” He hopes to finish at the end of this year or early 2016.

Implementation is a painstaking process. The schedulers start by assessing the flow of materials at the plant, the machinery, and the constraints within the entire facility. “We have to do a lot of interviews! When we have all that information, we come away from the site and the technical guys set about preparing the scheduling model. Once we have a decent solution we will go back on site, review the



RTV product range



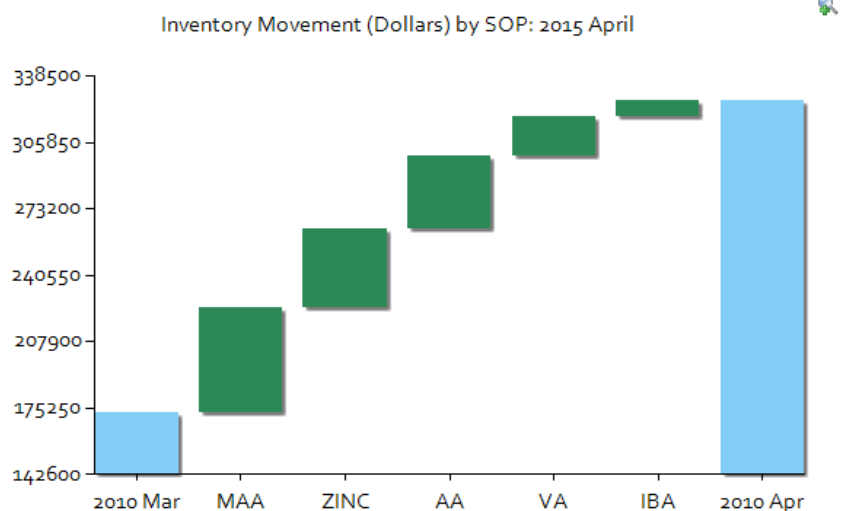
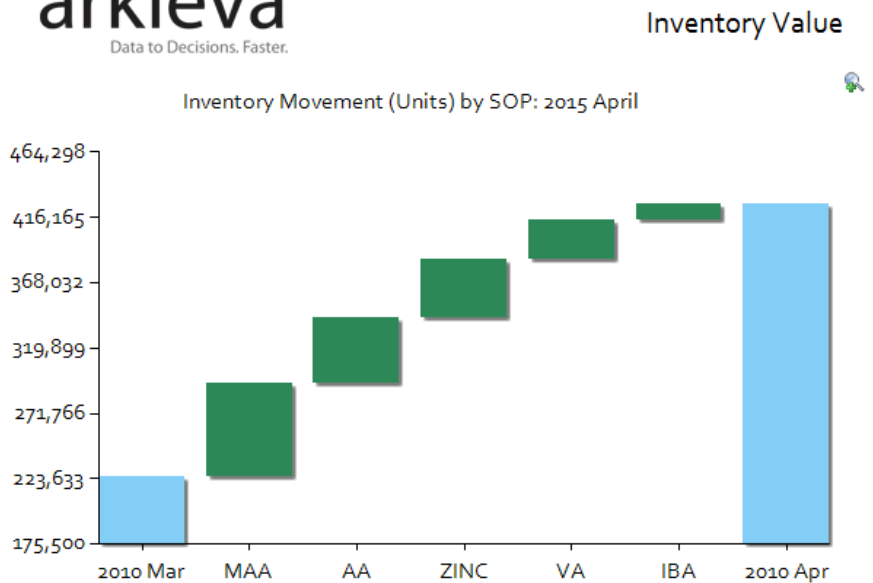
**Momentive
RTV103 2.8oz One
Part Acetoxy Cure
RTV Silicone Adhesive**

“We have been able to generate a lot of value at our plants: minimizing changeovers, reducing inventory because of a better sequence plan, and gaining better visibility”

– William Duty, Director of Momentive’s Supply Chain Center of Excellence

solution with the key people there and refine it some more.” Following some more fine tuning the team returns to the site to do the detailed training, start to use the tool, leaving some team members on site to support, measure, and make sure the process is working as it should.

At first, he says, one site was tackled at a time, but now they are doing two at a time. “In the last month we went live in Germany and in Florida and started the process in Brazil and Japan too. We are a lot faster now. At the beginning the



Example: Arkieva view of how inventory has changed

team was new and they had to learn the process, but we devised the plan in such a way that we could learn as we went.” There is a good reason why twelve plants were done ahead of Japan, he adds: “I wanted to make sure the team had seen all the different types of assets they would encounter in the large Japan facility before they got there - I didn’t want that to be their first time!”

New products are constantly coming out of Momentive’s R&D laboratories, and NPD will benefit as much as the facilities from the cash that can now be devoted to this vital function. One major trend in the market is the use of silicones in medical applications. Silicone is used in catheters and tubing, transdermal drug delivery, skin adhesives, and other equipment, and performs better than many other elastomers. According to a recent report, the rapid growth of the end-user markets is one of the factors contributing to the growth of the global silicones market. And the construction and automotive sectors are growing rapidly in emerging economies such as China and India, where silicones are used for various applications such as sealants and adhesives, product areas where Momentive excels.

As more applications emerge, supply chain complexity increases, and planning and scheduling functions become more important. The rebirth of Momentive has started well, but future expansion will depend heavily on its success in keeping cost out of the supply chain. ■

Company Information

INDUSTRY

Performance Materials

HEADQUARTERS

Waterford, USA

FOUNDED

2006

EMPLOYEES

5,000

REVENUE

\$2.6 billion

PRODUCTS/ SERVICES

Silicones, Quartz, and
Ceramics

MOMENTIVE™

inventing possibilities

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