

**Varian Medical  
Systems at a  
Glance**

- ▶ **Industry:** Medical devices
- ▶ **Core businesses:** Manufacturer of medical devices and software for treating cancer and other medical conditions with radiotherapy, radiosurgery, proton therapy, and brachytherapy; supplying informatics software for managing cancer clinics and medical oncology practices
- ▶ **Headquarters:** Palo Alto, Calif.
- ▶ **Founded:** 1948
- ▶ **Revenues:** \$2.9 billion (2012)
- ▶ **Global footprint:** Major sites in the United States, Canada, England, France, Finland, Germany, Switzerland, China, Japan and India
- ▶ **Employees:** Over 6,000 (40 percent of whom are outside North America)

[www.varian.com](http://www.varian.com)

Source: Varian Medical Systems

1. Snehashish Sarkar spoke at an SAP 2013 SAP SAPHIRE user event.  
2. Brion Booth spoke at an SAP 2013 SAP SAPHIRE user event.

# Varian Harmonizes Systems to Help Save Lives

The medical devices manufacturer connects its processes to speed innovation and improve global access to healthcare.

BY LAUREN GIBBONS PAUL

For manufacturers of radiotherapy technology used in the global fight against cancer, the motivation to innovate is high. And considering the rate at which the disease is growing throughout the world—not to mention treatment costs and the difficulty of accessing care in

less affluent communities and economies—implementation speed and efficiency are also key business drivers.

Varian Medical Systems, a \$2.9 billion medical devices manufacturer, is no exception. The company's mission is clear-cut: To help save millions of lives every year throughout the world (see Figure 1, "Fighting Cancer at Varian"). Clinicians use Varian's radiotherapy systems to deliver over 35 million treatments for cancer patients around the globe each year.

"To do this, we have to bring innovative, high-quality products to the market faster," said Snehashish Sarkar, director of enterprise-wide IT engineering applications at Varian.<sup>1</sup> Toward that end, the company underwent a major, multipronged systems implementation initiative.

According to Brion Booth, enterprise applications solutions manager at Varian, the initiative was aimed at accelerating innovation through lean, paperless product design and optimizing manufacturing processes for compliance-sensitive products.<sup>2</sup> To accomplish these goals, Varian implemented several systems, including a manufacturing execution system (MES) for automated process control and data exchange between the shop floor and back-office business systems; a manufacturing intelligence (MI) system for cross-platform integration, data collection, analysis and reporting; and a product lifecycle management (PLM) system to digitize engineering systems.

**FIGURE 1 Fighting Cancer at Varian**

*Varian is using innovation and improved business processes to help more cancer patients get treatment around the world.*

Types of cancer in existence	200
New cases of cancer diagnosed in 2000, according to the World Health Organization (WHO)	10 million
Estimated number of new cancer cases that will be diagnosed in 2050, according to WHO	20 million
Annual rise in cancer diagnoses	4%
Number of patients treated using Varian equipment every day	250,000
Number of Varian treatment machines installed globally	7,000
Number of Varian X-ray tubes manufactured each year	22,000
Number of treatments enabled by Varian's medical linear accelerators every day	100,000

Source: Varian Sustainability Report, 2012

The PLM system—which supports all product-related processes, from the product idea through manufacturing and after-sales service—was especially critical. In order for Varian to successfully comply with European market regulations such as Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and Restriction of Hazardous Substances (RoHS), Varian needed to improve its engineering processes, manufacturing automation and integration.

## Varian's Business Challenges

- ▶ Expand global presence.
- ▶ Grow software and services offerings.
- ▶ Continuous innovation.
- ▶ Drive operational excellence.

By implementing such systems, Varian is in good company, with more than half of leading manufacturers using MES and nearly one-third using MI systems (see Figure 2, “Applications for Operational Excellence”).

## The Need for Synchronization and Automation

From the very beginning of the initiative, several of Varian's operations were eager to take advantage of the opportunity to strengthen manufacturing and engineering processes. In particular, business operations wanted to decrease paper-based processes and increase automation on the shop floor, as well as speed regulatory compliance efforts through on-demand product genealogy and traceability. Varian also wanted to enable cross-functional and seamless product collaboration by streamlining its manufacturing execution and engineering processes, with the goal of automating the flow of information from design to the manufacturing bill of materials and production operations.

“We needed to enable a global engineering platform so there was one repository and one place for the information to reside, integrating engineering, manufacturing and service data,” Booth said. “This is pretty powerful.”

Maintaining high levels of quality in a shorter timeframe via faster decision-making was an immediate goal. “By converting the crateful of paper to digital files, we can make decisions based on data gathered in real time or close to it,” Booth said. Robust processes and instantaneous response to real-time data would enable Varian to minimize manufacturing errors and continue reaching its internal goal of achieving better than 98.5 percent equipment uptime for all Varian treatment systems.

Varian's MES implementation was easily justified by the migration to paperless manufacturing, Booth said. Other benefits include:

- The ability to create and view device history records with serial number traceability.

## FIGURE 2 Applications for Operational Excellence

Companies with effective management practices for their individual plants, lines of business and enterprise were asked to name which operations management applications they use. (% responding)



Source: LNS Research, 2014

- Documented process enforcement and control.
- Better integration with calibration and final test systems.
- A visually oriented user experience that shop floor users can use with ease.

Although manufacturers have used MES and associated technologies like supervisory control and data acquisition (SCADA) for decades, these shop-floor-centric systems can have a large impact on business performance. “MES and associated technologies like SCADA are alive and kicking because you can't get enough automation,” said Josh Greenbaum, a principal at Enterprise Applications Consulting. “It's the classic problem of, ‘How do you lower costs and maintain competitiveness using older manufacturing models?’ You automate as much as possible.”

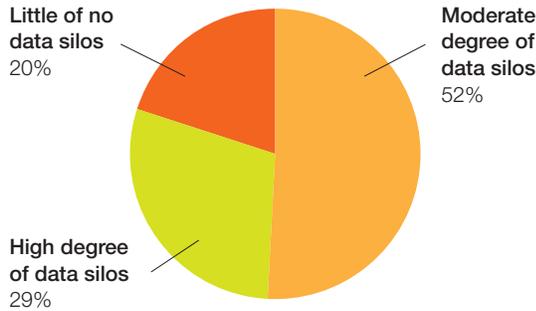
MES functionality has also gotten more interesting in recent years. By connecting MES with back-office ERP data, as Varian has done, manufacturers can improve everything from on-time delivery and

**Varian's IT Solutions**

- ▶ MES to enable automated data exchange between the shop floor and back-office business systems.
- ▶ MI system for cross-platform analysis and reporting.
- ▶ PLM system to automate engineering changes.

**FIGURE 3 Most Companies Have Data Silos**

*Fragmented data is a moderate problem for more than half of firms. (% responding; total exceeds 100% due to rounding)*



Base: 500 U.S. business and IT executives  
Source: CompTIA, "Big Data Insights and Opportunities," 2013.

procurement to supply chain execution and talent management, Greenbaum added. "Connecting traditional back-office functions with data from the MES—that gives you a real advantage."

Certainly the integration of MES and back-office data gives Varian an edge on competitors still struggling with data silos. A study from CompTIA, an industry technology group, found that data silos are alive and well, with most respondents reporting a high or moderate degree of isolated volumes of data (see Figure 3, "Most Companies Have Data Silos").

**Protecting European Revenues**

The drivers for Varian's PLM implementation, Booth said, included the need for compliance and the ability to efficiently handle engineering changes. The company had used several different CAD systems.

"Now, because of the PLM implementation, we can version and change our products much more easily," he said. "Information exists in one place and can be accessed by those who need it. You don't need multiple people to administer the paper files. We leverage the PLM framework to create electronic configuration management and full traceability."

By removing lead from applicable products, Varian protected its European revenue via compliance with REACH and RoHS. Now, design changes take

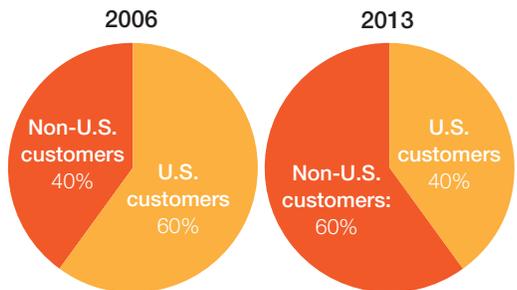
weeks or days rather than months. "That is a huge benefit for us," Booth said.

Europe, Asia-Pacific and "rest of world" countries are essential for Varian, as orders are increasing quickly in these regions. Over the last five years, Varian has gone from collecting 40 percent of revenues from outside the United States and 60 percent from U.S. customers to the reverse, with 60 percent of revenues coming from outside the United States in 2013 (see Figure 4, "Going Global").

The final system that Varian implemented was a manufacturing intelligence tool that brings ERP data to the shop floor and then reports it back to executives for decision-making. "As we get further into it, we realize how powerful our MI system is," Booth said. "In addition to the system integration and automatic data acquisition that MI provides, it's also a robust reporting engine."

**FIGURE 4 Going Global**

*Between 2008 and 2013, Varian's revenues shifted from predominantly U.S.-based to mostly outside the United States.*



Source: Varian Medical Systems

Varian's ambitious integration and automation project is a product of its culture, said Bob Parker, group vice president of research at IDC Manufacturing Insights. "They're a very courageous IT organization, and they have great leadership. They have a good understanding of IT as a business enabler and the value it can deliver." •

*Lauren Gibbons Paul is a Waban, Mass.-based business and technology writer.*

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## Recipe for Success from SAP

### ▶ SAP Product Lifecycle

#### **Management (SAP PLM)**

**application:** Accelerates time to market and reduces product design cycles by connecting design and development, procurement, manufacturing and service.

### ▶ SAP Environment, Health and Safety Management

#### **application add-on for REACH compliance:**

Supports efforts to meet product and materials compliance regulations.

### ▶ SAP Manufacturing Integration and Intelligence

#### **application:**

Links manufacturing processes with business operations to enable collaborative manufacturing and visibility to run the business in real time.

### ▶ SAP Manufacturing Execution System

**application:** Helps improve product quality while driving down costs by creating ideal conditions for increased reliability and full, global product traceability.

### ▶ SAP Services organization:

With our partners, we help you differentiate your company and make more profitable business decisions.

# Bringing Innovations to Market Faster with SAP Solutions

New research, qualitative interviews and the report from Bloomberg Businessweek Research Services clearly show that medical devices companies face unprecedented complexity when designing, sourcing and manufacturing medical devices.

*Many companies must overcome challenges to minimize time to market from design to delivery, because different regions require different styles, sizes, features and compliance attributes, as well as needing to minimize costs.*

*In the following Q&A, SAP's life sciences industry team discusses how technology innovations and real-time insights can help medical devices companies overcome these challenges and drive business results, while discovering better ways to manage complex product structures and to provide visibility and control over compliance, purchasing, manufacturing and service processes.*

## How do technology innovations solve the challenges faced by most medical devices companies today?

You can reduce complexity by integrating engineering and manufacturing processes. A central product structure helps reduce design flaws, control component costs and streamline production. Our solution for design and development for medical devices enables our customers to do just this. You can also benefit from the latest innovations, such as 3D technology and mobile apps, to improve productivity, profitability and quality.

## What can medical devices companies do to accelerate time to market?

To start with, a company needs to assess its current status. For example, can you keep up with dynamic markets, customer needs and regulations? Can you manage your manufacturing efficiently? Can you deliver the right insight to your internal stakeholders to support decision-making and customer service? Second, you need to define your

vision for the future. For example, how will your markets and customer needs change? How will your company's offerings have to change? How will you deliver products and services to your future customers? Finally, consider taking a gradual approach to your transformation.

The most immediate value that SAP solutions can provide medical devices companies is to gain a 360-degree view of the processes and activities involved in developing and manufacturing products with the SAP PLM rapid-deployment solution. In addition, by taking advantage of SAP PLM, medical devices manufacturers can optimize collaboration, align many design-related processes, provide early visibility of required materials and components, and improve handoffs from engineering to manufacturing. With manufacturing solutions from SAP, you can further streamline your manufacturing processes from design to delivery whether you have one plant or many.

## How can a medical devices company get started?

Select a product line or a region as a test bed, and implement an integrated solution supporting the complete process from design to delivery. Then adopt an enterprise-wide strategy. Our solution for design and development for medical devices will support that strategy. It is a complete solution that can help you integrate your R&D, manufacturing and service processes—for shorter innovation cycles, quicker response to changing market demand, improved plant operations and stellar aftermarket services.

For more information, please visit this Web site: [www.sap.com/solution/industry/life-sciences.html](http://www.sap.com/solution/industry/life-sciences.html)

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