

# VARIAN05

VARIAN MEDICAL SYSTEMS 2005 ANNUAL REPORT

## LIFESAVING ADVANCES

WHY VARIAN'S DYNAMIC  
ADAPTIVE RADIOTHERAPY  
GIVES CANCER PATIENTS  
NEW HOPE

### IMAGE-GUIDED RADIOTHERAPY

Versatile, Cost-Effective  
Systems Broaden  
Treatment Options

### STEREOTACTIC RADIOTHERAPY

Noninvasive Neurosurgery  
Extends Therapeutic Reach

### CARGO-SCREENING FIRST

X-Ray Linear Accelerator  
Pinpoints Nuclear Materials

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medical systems

Varian Medical Systems, Inc., of Palo Alto, California, is the world's leading supplier of radiotherapy equipment and software for treating cancer. The company is also a premier supplier of components including X-ray tubes and digital image detectors for medical, scientific, and industrial imaging. Varian Medical Systems employs approximately 3,600 people who are located at manufacturing sites in North America and Europe and in its 56 sales and support offices around the world. Additional information is available on the company's Web site at [www.varian.com](http://www.varian.com).



## IN THIS ISSUE

Innovative technology from Varian is offering doctors and patients around the world a new ray of hope in the battle against cancer: fast, flexible imaging, planning, and treatment systems with

highly integrated information management have made huge strides toward the goal of truly personalized cancer care. Meanwhile, Varian's digital image detectors for instant filmless X-ray images are helping doctors, dentists, and veterinarians to improve the precision and quality of healthcare for their patients.

# VARIAN05

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

## Total Company

(Dollars in millions)

	<i>Fiscal Years</i>		
	2005	2004	2003
Revenues	\$1,383	\$1,236	\$1,042
Gross margin	\$593	\$518	\$421
Operating earnings	\$305	\$257	\$198
Operating earnings as percentage of revenues	22.1%	20.8%	19.0%
Net earnings	\$207	\$168	\$130
Net earnings per diluted share	\$1.50	\$1.18	\$0.92
Net orders	\$1,591	\$1,398	\$1,152
Backlog	\$1,179	\$970	\$808

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# TO OUR STOCKHOLDERS, CUSTOMERS, AND EMPLOYEES

**I**ncreasing demand for more effective and affordable healthcare solutions, together with a focus on execution and operational efficiency, enabled Varian Medical Systems to grow and achieve excellent financial results in fiscal year 2005. The year was marked by another major revolution in cancer care sparked by products for state-of-the-art radiation oncology and X-ray imaging. The company launched several new and enhanced products for advanced cancer treatments, bloodless neurosurgery, filmless X-ray imaging, and automatic inspection of cargo containers. We extended our global leadership in our traditional markets and pushed more deeply into promising new markets.

All in all, it was another successful year in which we positioned the company for continued growth.

## **PROFITABLE GROWTH**

In fiscal year 2005, compared with the previous fiscal year:

- Net orders rose 14 percent, to \$1.6 billion
- Year-end backlog rose 21 percent, to \$1.2 billion
- Revenues increased 12 percent, to \$1.4 billion
- Operating earnings climbed 19 percent, to \$305 million
- Net earnings rose 23 percent, to \$207 million
- Earnings per diluted share climbed 27 percent, to \$1.50

All three of our business segments contributed positively to the growth in annual net orders, revenues, and operating earnings. Annual net orders increased 14 percent in Oncology Systems, 11 percent in X-Ray Products, and 20 percent in the “Other” segment that included the Ginzton Technology Center and BrachyTherapy products. Annual revenues rose 10 percent in Oncology Systems, 18 percent in X-Ray Products, and 23 percent in our “Other” segment.

Compared with the previous fiscal year, the company’s gross margin rose by 1 percent to 43 percent of revenues with gains in every business segment. We credit this achievement to a bigger mix of new, more profitable products.

Despite spending roughly \$5 million to implement the new Sarbanes-Oxley financial accounting requirements, we reduced selling, general, and administrative (SG&A) expenses as a percentage of revenues by about half a point, to 15 percent. In recognition

For fiscal year 2005, Varian Medical Systems delivered a 33 percent return on equity—an increase of 5 points over the previous fiscal year.

of several promising potential technological developments for cancer care and imaging, we increased research and development investment by nearly 14 percent, keeping it flat as a percentage of revenues at 6 percent. With the help of our gross margin improvements and well-managed controls on SG&A, our operating earnings for fiscal year 2005 were up 19 percent from the previous fiscal year.

The company generated a record \$252 million from operations. We ended the year with \$382 million in cash and marketable securities after spending \$227 million to repurchase nearly 6 million shares of the company’s common stock, \$44 million on capital expenditures including an expansion of our Las Vegas facilities, and approximately \$14 million for the acquisition of Sigma Micro Informatique Conseil, a supplier of information-management software for radiation oncology and medical oncology in cancer clinics and hospitals in France and other European nations.

For fiscal year 2005, Varian Medical Systems delivered a 33 percent return on equity—an increase of 5 points from a 28 percent return on equity in fiscal year 2004.

## **MARKET LEADERSHIP**

As the world’s largest dedicated manufacturer of radiotherapy products for cancer care, we challenged ourselves in fiscal 2005 not just to provide better medical technology, but also to control the cost and increase the efficiency of treatments. Several highlights of the year stood out.

By combining new accessories for high-quality imaging with our machines for treatment delivery as well as enhanced software for planning and information management, we have enabled oncologists to see anatomical structures and target tumors precisely while making the entire process faster and more comfortable for the patient.





**Richard M. Levy (right)**  
Chairman of the Board, Chief Executive Officer

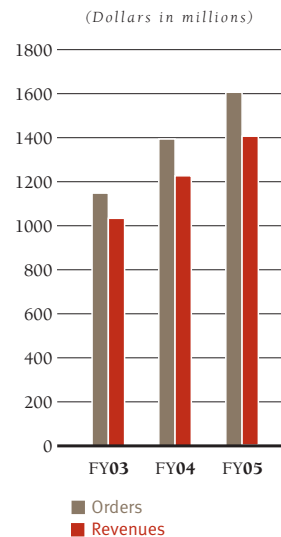
**Timothy E. Guertin**  
President, Chief Operating Officer

All three business segments contributed positively to the growth in annual net orders, revenues, and operating earnings.

#### NET ORDERS AND REVENUES

14 percent gain in annual net orders, to \$1.6 billion

12 percent gain in annual revenues, to \$1.4 billion



43% GROSS MARGIN

22% OPERATING MARGIN

\$252M OPERATING CASH FLOW

A new process, known as image-guided radiation therapy (IGRT), has been hailed as a technological breakthrough. We have led the field in the practical implementation of this technology with more than 275 orders and 110 shipments of automated, robotically controlled On-Board Imager™ devices for IGRT since their introduction in fiscal 2004.

Our IGRT products also facilitate 4D treatments by correcting for tumor motion caused by respiration during treatment. This capability holds special importance for treatment of lung cancer, which today is the most common and one of the most lethal forms of cancer. Many institutions throughout the world are adopting this technology.

A second major initiative in fiscal 2005 was the deployment of our new Varian Trilogy™ accelerator, which delivers traditional radiation therapy, intensity-modulated radiation therapy (IMRT), IGRT, and stereotactic radiosurgery treatments. IMRT shapes the treatment field to conform to the irregular 3D shape of the tumor. Stereotactic radiosurgery, often called bloodless neurosurgery, excises tumors and neoplasms in a short, noninvasive outpatient treatment. A growing body of evidence suggests that stereotactic radiosurgery, combined with today's advanced diagnostic imaging techniques, makes it possible to stop the spread of early-stage metastatic cancer. With this capability, some fatal forms of cancer may be converted into controllable, chronic diseases.

Throughout the year, we continued to concentrate on the enhancement and tighter integration of all products needed for more advanced radiotherapy treatments. We developed a new version of our Eclipse™ software with additional features and functions designed to simplify and speed up treatment planning.

We also introduced the ARIA™ Oncology Information System for paperless and filmless cancer clinics that offer radiation therapy, chemotherapy, and/or surgery. ARIA combines rapid image-processing capabilities with a comprehensive database and network

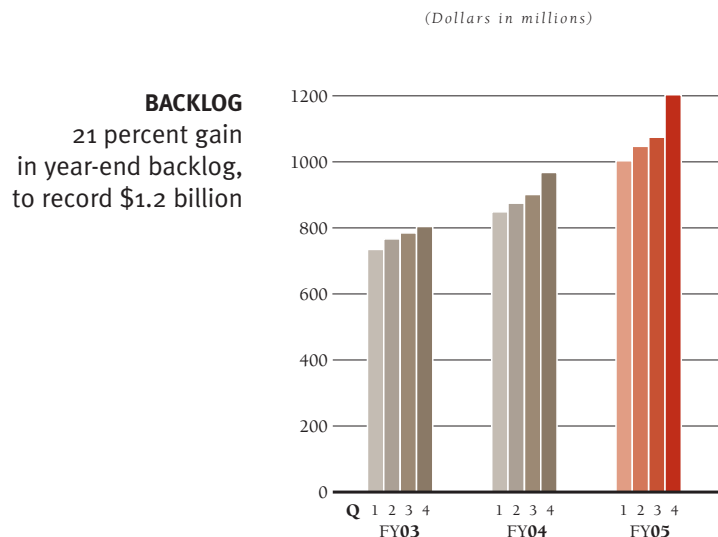
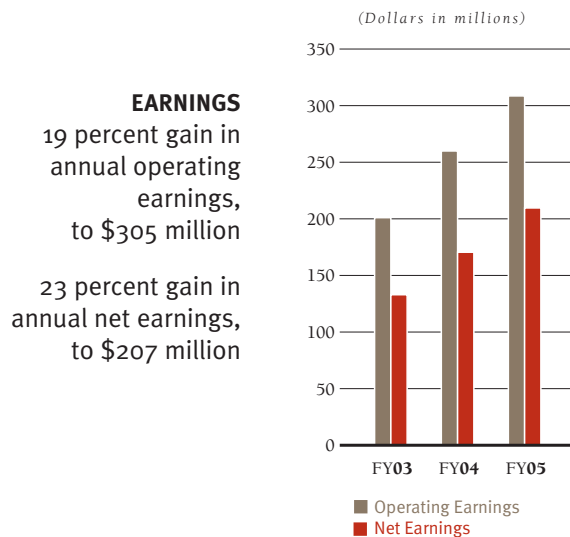
capability that integrates and supports devices, processes, and staff members involved in patient care. We see it as an important tool for providing clinicians with all the information they need to make critical treatment decisions.

The digital revolution has led to an explosion of new technology in medical equipment in the last few years. This rapid technological change is especially characteristic of cancer diagnosis and treatment systems. Sophisticated technology alone, however, cannot cure cancer. Our customers need training, on-site support, periodic software enhancements, patient education materials, telephone support, parts availability, and quality assurance tools. We are second to none in providing these capabilities. Revenues for service and support rose more than 20 percent in 2005, indicating our customers' growing appreciation for these critical services.

Our expertise in X-ray imaging gives Varian a huge advantage in this market. Our IGRT accessories are equipped with a Varian X-ray tube for diagnostic-quality images and our unique PaxScan® image detector for instantly capturing and digitizing X-ray images. The unmatched processing speed of the Varian PaxScan detector makes it possible to generate superior image detail in order to precisely locate and target tumors.

As a measure of our image detector's unique capabilities, Varian has been supplying these products in increasing volumes to manufacturers of X-ray equipment for medical diagnostics, veterinary imaging, dental computed tomography (CT) scans, and non-destructive test and inspection of machined or cast metal parts.

The PaxScan product line, together with our high-power tubes for CT scans, significantly enhanced the growth rate of our X-Ray Product segment in fiscal year 2005. In anticipation of future growth for this segment, we announced plans to expand our X-Ray Products manufacturing plant in Salt Lake City.



**\$382M** CASH AND MARKETABLE SECURITIES

**\$659M** SHAREHOLDER EQUITY

### MANAGEMENT SUCCESSION AND EMPLOYEES

Shortly after the fiscal year ended, I announced my intention to retire as Chief Executive Officer and to continue as Chairman of the Board of Directors of Varian Medical Systems effective February 17, 2006. In the last year or two, we have established a sound succession plan with a team of proven performers in senior management positions.

Upon my retirement, Tim Guertin, who was named President of the company and appointed to the Board of Directors earlier in fiscal year 2005, will become CEO. He will be continuing a 30-year career, having served Varian in many posts including several years as the President and strategic architect of our Oncology Systems business.

Dow Wilson joined Varian during the fiscal year, leaving a position as CEO of the GE Healthcare Information Technologies business to become President of our Oncology Systems business. While retaining direct responsibility for managing our Oncology Systems business, Dow was subsequently appointed Executive Vice President for the company.

Elisha Finney, who is well known to our investors as Varian's Chief Financial Officer, was promoted during the year to Senior Vice President for the company. In addition to managing finance, investor relations, and regulatory affairs for the company, she has assumed responsibility for the company's information systems function.

Our senior management team taps a deep pool of talented and committed managers and employees who have continued to build our company over the years through superb execution in virtually every aspect of our business. Thanks to this collection of people, who are among the leaders in their fields, Varian Medical Systems is a global powerhouse with a winning tradition and an excellent reputation for delivering when it counts.

### WHAT'S NEXT?

Our successes in fiscal year 2005 have inspired us. Varian Medical Systems' key goals for fiscal year 2006 are to:

- Accelerate the adoption of better, more advanced cancer treatments
- Expand our image detector business for filmless X-rays
- Strengthen our emerging businesses in neurosurgery, brachytherapy, and homeland security
- Extend our reach into new and emerging markets
- Strengthen our operations
- Deliver excellent financial results

The last several years at Varian Medical Systems have been the most exciting in my 37 years with the company. We have advanced technologies and launched many new products that are improving X-ray imaging and helping to cure cancer. With our leading technology, products, and talent, Varian Medical Systems has a tremendous opportunity to make modern healthcare more effective, more affordable, and more available for patients around the world, as exemplified by the stories in this annual report. Our potential to make a positive difference for patients as well as our stockholders, customers, and employees has never been greater.

We are looking forward to making fiscal year 2006 rewarding for all of us, and we thank you for your continued support.

Sincerely yours,

Richard M. Levy  
Chairman and CEO  
Varian Medical Systems



# VARIAN IGRT: A DYNAMIC

A man with short, light brown hair, smiling, stands with his arms crossed next to a dark blue car. A red kayak is mounted on the roof rack of the car. The background shows out-of-focus trees with autumn foliage. The man is wearing a blue zip-up jacket over a light-colored shirt and a silver watch on his left wrist.

Advances in image-guided radiation therapy (IGRT) enable clinicians to track and target tumors precisely at the moment of treatment—sparing more healthy tissues and minimizing side effects.



# TECHNOLOGY ON THE MOVE

When Clark Hayward's primary healthcare physician noticed a nodule on the left side of Hayward's prostate during a routine physical, he didn't think it was anything to worry about. Hayward is a 53-year-old active father of three and had no other symptoms. However, just to be on the safe side, he referred Hayward to a urologist, who took a biopsy. The results came as a big shock—multiple tumors and a high likelihood that the cancer had extended beyond the prostate.

As a part-time paramedic, Hayward knows a lot about emergency medicine, but up until then he had heard only a little about prostate cancer. Determined to confront his life-threatening diagnosis head-on, he started out on a research quest that led him to other prostate cancer patients, bookstores, Web sites of all the major cancer institutes, and to Arun Puranik, MD, director of the Image-Guided Radiotherapy Treatment Program for Community Care Physicians in Latham, New York.

"Based on my own personal goals and lifestyle, surgery was not a good option," says Hayward, who is director of client development for a major telecommunications company and enjoys many outdoor hobbies, including trail running, mountain biking, skiing, and kayaking. "So I sought out a couple of opinions on treatment options and liked Dr. Puranik's plan the best. It was the follow-up radiation treatment that made the decision for me—Dr. Puranik's ability to visualize the tumor, reduce the margins around the tumor, and preserve as much healthy tissue as possible."

**Active Lifestyle.** Varian image-guided radiation therapy has helped 53-year-old Clark Hayward (left) maintain his active lifestyle after Dr. Arun Puranik (center) recommended this treatment for prostate cancer.

## Clark Hayward

Greenfield Center,  
New York

**Age:** 53

**Profession:** Director of client development for a major telecommunications company; part-time paramedic and wilderness medicine teacher

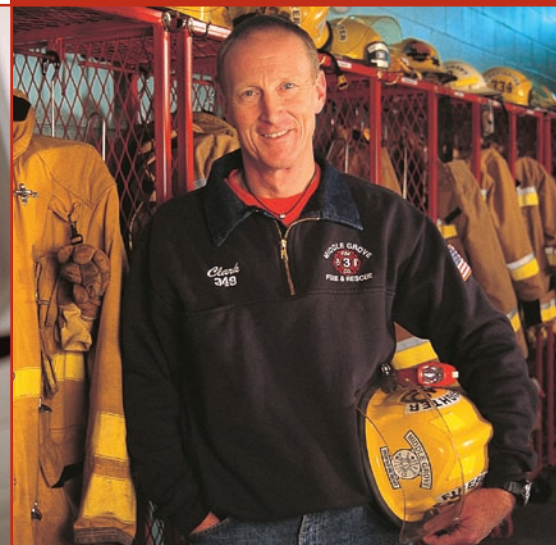
**Hobbies:** Trail running, mountain biking, kayaking, and white water rafting; avid skier and national ski patroller

**Diagnosis:** Prostate cancer

**Treatment:** Brachytherapy followed by image-guided radiation therapy

**Profile:** Active, adventurous, optimistic

**Quote:** "Some of the things you get so wrapped up in, especially work issues, are really not that important at all in the grand scheme of things."

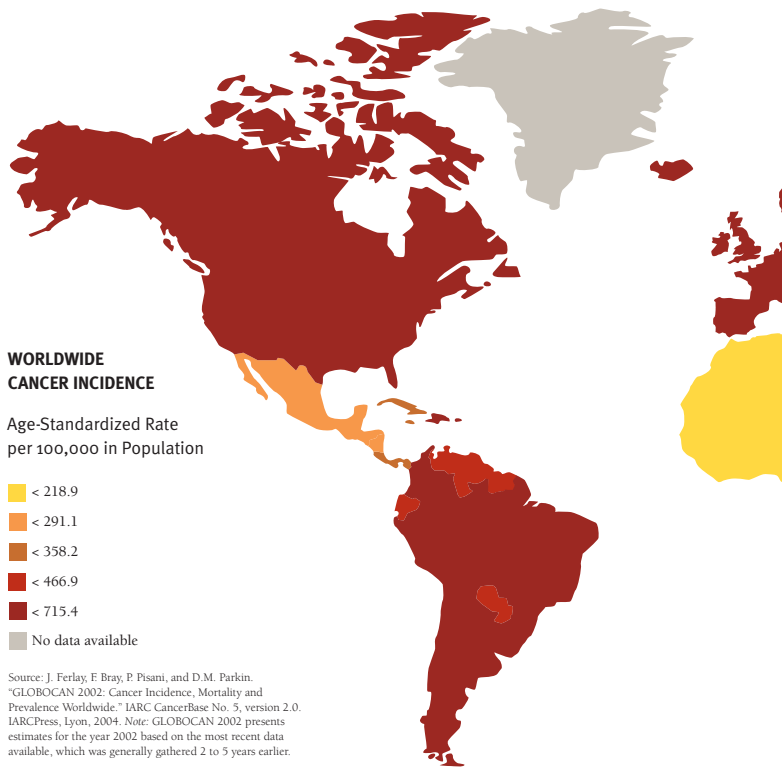


Dr. Puranik prescribed brachytherapy—radiation seed implantation—followed by image-guided radiation therapy (IGRT) using implanted gold markers and the Varian On-Board Imager™ device to help ensure accurate beam placement. “Every cancer patient is unique,” Dr. Puranik explains. “In my experience, Varian has a highly reliable radiation therapy system and with the On-Board Imager we can accurately match the radiation beam with the position of the tumor at the moment of treatment. This helps ensure we deliver the maximum radiation dose to the tumor, while sparing normal tissues.”

Accurate beam placement with advanced imaging techniques is setting the stage for a new standard of care in hospitals and clinics around the world. By the end of fiscal 2005, Varian had received more than 275 orders for On-Board Imager devices for either Clinac® or Trilogy™ accelerators. While the bulk of these orders are from North America, hospitals and clinics around the globe are expressing interest in this innovative imaging technology.

“IGRT is at the forefront of another technological revolution in cancer treatment,” says Todd Pawlicki, PhD, assistant professor in the department of radiation oncology at the Stanford University School of Medicine in Palo Alto, California. “In the past, we were treating larger areas of the body to accommodate tumor motion and daily setup errors. Now we have more control because we can more accurately image the tumor at any time during treatment, which allows us to precisely target the radiation therapy. For patients, this means sparing more normal tissue so we can deliver a higher radiation dose to the tumor while improving the patient’s quality of life.”

The Stanford clinic treats about 1,000 new patients each year, using the Varian Trilogy accelerator primarily for head, neck, and pancreatic cancers, as well as for innovative research into ways to conquer cancer. The majority of Stanford patients receive radiation therapy in conjunction with surgery and chemotherapy. “By



imaging and targeting the tumor more accurately, we can reduce the toxicity of radiation therapy,” says Quynh-Thu Le, MD, associate professor in the radiation therapy department at Stanford.

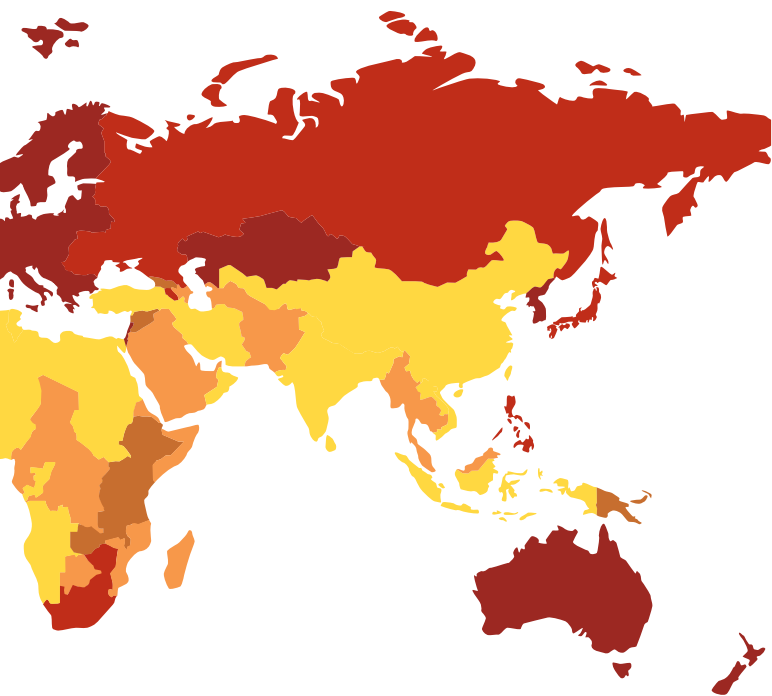
The increased accuracy of radiation beam placement is one of the main reasons the Buddhist Tzu Chi General Hospital in Taipei, Taiwan, one of Asia’s leading cancer treatment centers, recently purchased a Varian IGRT system. The Tzu Chi hospital provides treatment for a wide range of diseases, including lung, esophageal, head, and neck cancers, offering advanced treatments to help patients recover from their ailments as quickly as possible.

“The Varian technology will enable us to treat tumors more precisely and at higher doses,” says Dr. Jing-Min Hwang, director of the hospital’s radiation oncology department. “This will help us improve the

**Global Reach.** The prospect of few side effects and short treatment time appealed to Clark Hayward (left), one of a growing number of patients around the world who have chosen IGRT after evaluating several treatment options. Dr. Arun Puranik (right) offered a personalized approach that helps Hayward live life to the fullest.








Most recent estimates available from the World Health Organization indicate that in 2002 approximately 10.9 million new cases of cancer were reported worldwide. This study was conducted by the International Agency for Research on Cancer (IARC) and focused on 26 types of cancer. For more information, visit IARC at [www-dep.iarc.fr](http://www-dep.iarc.fr).

feedback that helps ensure we've lined up the beam exactly right," Dr. Seagren says. "The fact that this imaging technique is inherent in the system, and not an add-on, increases our ability to provide intensity-modulated radiation therapy (IMRT) safely and competently, improving the outcome for patients and reducing unpleasant side effects." IMRT enables doctors to segment a tumor into hundreds of fields and to apply different radiation doses to the different fields.

Since the center opened in April 2005, the number of patients seeking treatment has increased much faster than the team anticipated. Dr. Seagren expects that the patient load will only continue to grow as the innovative Varian technology enables his team to treat more complex and difficult-to-control tumors.

Improved tumor control has been a key benefit for many patients at the Emory University School of Medicine in Atlanta, Georgia, which treats about 2,500 cancer patients each year across four clinics. Over the past year, doctors have performed around 3,500 treatment sessions using Varian IGRT technology. "Imaging enables us to verify the patient setup at each treatment and better localize the tumor," explains Jerome Landry, MD, professor of radiation oncology at Emory University. "We're seeing this translate into fewer side effects and better control of tumors."

As more treatment centers and patients realize the benefits of Varian IGRT technology, prostate cancer patient Clark Hayward continues to enjoy his active lifestyle and excellent prognosis. "I chose this treatment to avoid some of the side effects of other treatments. Still, I've been pleasantly surprised that I've had fewer problems than I thought I would," Hayward says. "I'm very optimistic about the future." 

treatment outcomes for cancer patients and as a result, I believe more patients will come to our hospital for this advanced treatment."

At the University of California, San Diego (UCSD) Medical Center, providing top-notch clinical care and cancer research was a key goal for the cancer center team that designed the Rebecca and John Moores UCSD Cancer Center in La Jolla, California. The university decided to invest in state-of-the-art Varian equipment to enhance the spectacular new three-story medical center with innovative technology that would expand their cancer-fighting capabilities and enhance their research projects.

Stephen Seagren, MD, is chief of the UCSD Medical Center radiation oncology division and has been using a Trilogy accelerator primarily to treat head and neck cancers. "On-board imaging gives us immediate

**Stimulating Research.** At Stanford, Dr. Quynh-Thu Le (left) uses the Varian Trilogy accelerator for cancer treatment and innovative radiation therapy—primarily for head, neck, and pancreatic tumors. Dr. Stephen Seagren (center) is seeing patient load grow since a Trilogy accelerator was installed at the new UCSD cancer center (right).





## RESPIRATORY GATING: BREATHTAKING PRECISION

Timing radiation beam delivery with the patient's natural breathing cycle raises the prospects of better outcomes.

Denise Dopico says her life took a little detour in December 2003. After a busy day of last-minute holiday shopping, the 44-year-old mother of four was relaxing at her home in West New York, New Jersey, when her left arm twitched briefly. At first she thought it was the way she was sitting, but when her whole body began twitching she went straight to her local hospital. With no other symptoms, Dopico says she could hardly believe the test results: small-cell lung cancer with brain metastasis and an average survival outlook of three to five months.

"I thought my life was over, that I would suffer dementia and then die," Dopico says. "But a friend of my brother told me about some great cancer doctors at the Holy Name Hospital." After unsuccessful chemotherapy, Dopico was referred to Charles Vialotti, MD, medical director and head of radiation oncology at the Holy Name Regional Cancer Center in Teaneck, New Jersey. Dr. Vialotti is a pioneer in respiratory gating therapy—a unique Varian technology that tracks the position of tumors as patients breathe, enabling doctors to choose exactly the right moment to target the tumor. This unique technology opens the door to a new level of precision, allowing doctors to increase the dose of radiation to destroy the tumor while minimizing harm to surrounding tissues. In addition to respiratory gating therapy for her lung tumor, Dopico was treated with external-beam radiation as well as noninvasive stereotactic neurosurgery for the brain lesion.



"The results have been tremendously encouraging in almost every case we've treated," says Dr. Vialotti, who has used respiratory gating therapy on about 40 patients in the past year. "We're treating many kinds of tumors throughout the body—liver, stomach, heart, and esophagus. And we're seeing dramatic advantages, not the least of which are excellent local control and minimal toxicity."

At the Klinikum Dortmund, the clinical arm of Munich University in Dortmund, Germany, doctors are using respiratory gating technology on lung and breast cancer patients. Many of these patients have delayed seeing their doctors, which often means tumors are well advanced with metastases by the time they are diagnosed. Nevertheless, Ralf Rohn, MD, head of the radiology department, is encouraged by the results so far. "There is no doubt that respiratory gating can be beneficial to patients," Dr. Rohn says. "It enables us to reduce treatment margins, spare normal tissue, and increase patient comfort." Dr. Rohn and his colleagues are planning to expand the gating program to treat abdominal tumors.

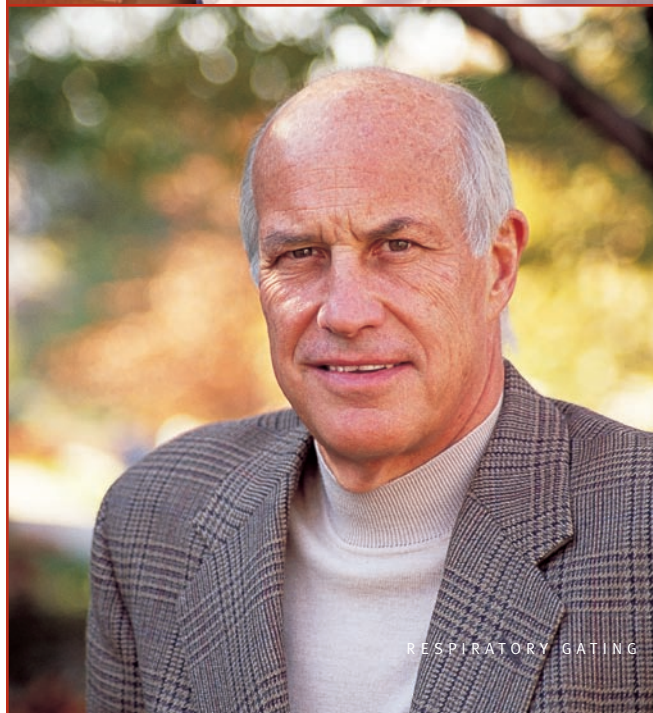
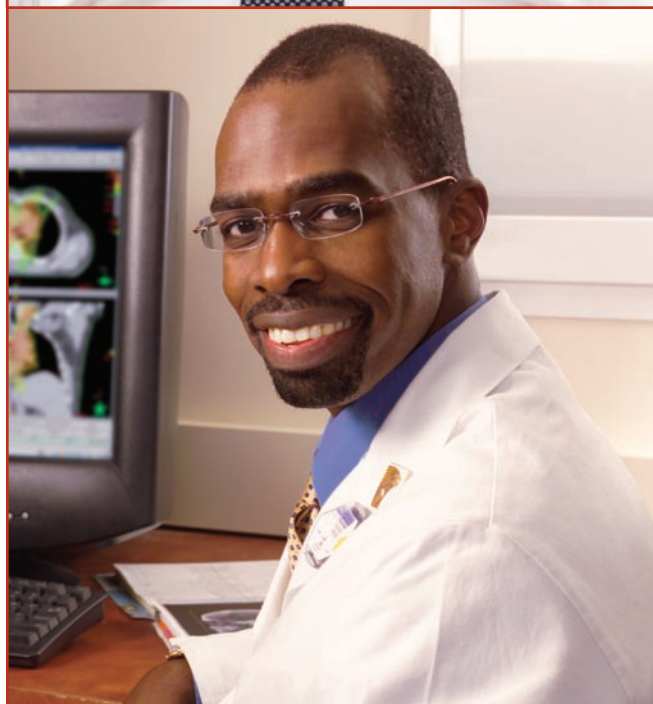
Dwight Heron, MD, is an assistant professor of radiation oncology at the University of Pittsburgh School of Medicine and vice chairman for clinical affairs at the University of Pittsburgh Medical Center (UPMC). Dr. Heron is also using respiratory gating therapy for lung cancer and other tumors that move inside the body as the patient breathes, including rare and difficult-to-treat tumors such as gall bladder and pancreatic cancer.

When 61-year-old Ted Brooks, a lawyer from Pittsburgh, was diagnosed with an inoperable 3-centimeter tumor in his pancreas, the prognosis was so chilling that Brooks opted to participate in a clinical trial at UPMC. After conducting 28 sessions of respiratory-gated radiation and four chemotherapy treatments, doctors were able to shrink the tumor so surgeons could operate. "During the entire radiation treatment, I never missed any work," Brooks says. "And it helped keep me focused on a positive outcome." Following his surgery, tests continue to show that the remaining margins are clear of cancer and Brooks is back to practicing law part-time.

"Respiratory gating is enabling us to use concentrated doses of radiation in areas that would not have been feasible otherwise," Dr. Heron says. "And we've already seen a number of impressive successes."

For Denise Dopico, that dramatic success has meant more time with her family and a greater appreciation of life. Now, two years after she was first diagnosed, the tumors that once threatened her life have disappeared. "I feel great," Dopico says. "I had this little bump in the road, but I'm cruising right along now." **V**

**More Options, More Hope.** Varian's advanced imaging and respiratory gating techniques are helping Dr. Charles Vialotti (top) treat difficult cases like Denise Dopico (facing page). Meanwhile, Dr. Dwight Heron (center) developed a treatment plan for Ted Brooks (bottom) that used pioneering techniques to shrink a pancreatic tumor so Brooks could undergo critical surgery.



# A NEW HORIZON: TREATING METASTATIC AND RECURRENT DISEASE

Metastatic lesions that spread beyond the original tumor site have often proved fatal. Now, state-of-the-art imaging and motion-management systems are changing that picture.

Lillian Reidell is in her seventies, and she's fighting cancer for the second time. Michael Greenberg, MD, radiation oncologist at the Dale and Frances Hughes Cancer Center in East Stroudsburg, Pennsylvania, is helping her win the fight.

A retired nursing home aide, Reidell was originally treated with chemotherapy and radiation for lung cancer. She had been disease-free for a year and a half, until she recently developed a metastatic tumor on her adrenal gland. Despite the devastating news, Reidell was sure of one thing. She did not want to suffer through another course of chemotherapy. Plus, she told Dr. Greenberg, "I don't want to lose my hair again." Dr. Greenberg explained that hair loss is a side effect of chemotherapy, and offered Reidell a new kind of radiation treatment. "We will focus on your tumor and keep away from everything else," he promised.

Metastatic lesions, or cancer that has spread beyond the original tumor site to other organs, have been notoriously hard to treat. But recent advances in image-guided radiation therapy (IGRT) are making it possible to treat many forms of metastatic disease and enabling cancer patients to survive longer.

For example, the adrenal glands, which sit on top of the kidneys, move when a person breathes and also shift around during the

course of therapy in relation to other organs. Dr. Greenberg used a set of new image-guidance devices—acquired just two months earlier—to keep the treatment beam focused on Reidell's moving tumor. Varian's On-Board Imager™ device was used to position Reidell accurately for treatment each day, while Varian's Real-Time Position Management (RPM™) respiratory gating technology coordinated beam delivery with her breathing cycle.

## IMPROVING CHANCES FOR LONG-TERM SURVIVAL

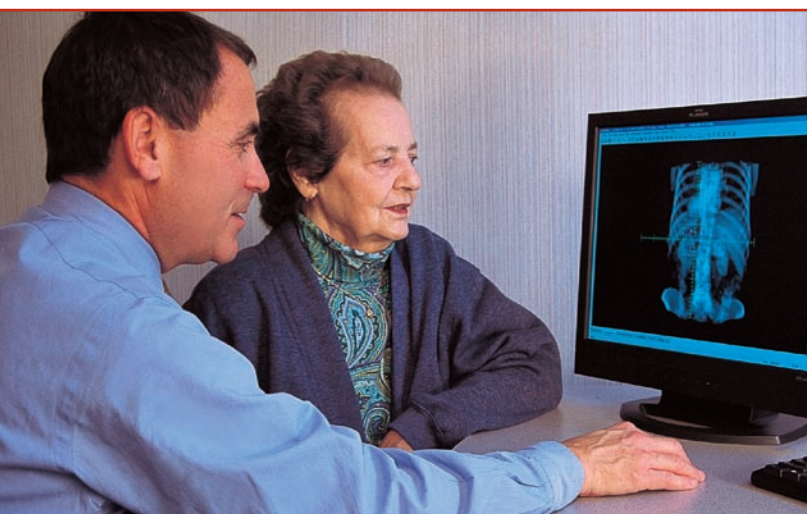
IGRT technology is enabling Dr. Greenberg and other clinicians to treat many different types of metastatic and recurrent cancers. In fact, the ability to treat recurrences in the head, neck, and prostate, along with metastatic lesions in the brain, liver, lungs, and spine, is a major advantage for cancer centers that can offer patients the accuracy and precision of image-guided radiotherapy treatments.

"In many cases, people receiving treatment at centers that do not have the latest IGRT technology are told that they can't receive any more radiation," Dr. Greenberg says. "IGRT makes it possible for us to treat patients successfully a second and even a third time with radiation."

Clinicians at prominent research centers are studying the potential of image-guided radiotherapy in the treatment of a wide range of metastases. For example, researchers at Memorial Sloan-Kettering Cancer Center in New York have published several papers about their experience using image-guided intensity-modulated radiation therapy (IG-IMRT) to treat metastatic lesions of the spine, while researchers at the University of Chicago are investigating the feasibility of treating oligometastases, or cases where multiple metastases occur in a number of sites throughout the body.

By the end of her most recent series of treatments, Lillian Reidell was happy to report that all is well. "I'm okay. I don't have any pain or anything. I have a great family and I have good friends," she says. "You leave it in the hands of God and the technicians. That's all you can do. You have faith in the technology, and you see what happens." **V**

**Minimizing Side Effects.** Anxious to avoid another struggle with the sickening side effects of chemotherapy, metastatic cancer patient Lillian Reidell discusses a new treatment option with Dr. Michael Greenberg—image-guided radiation therapy.





# LIFESAVING ADVANCES: VARIAN'S DYNAMIC ADAPTIVE RADIOTHERAPY

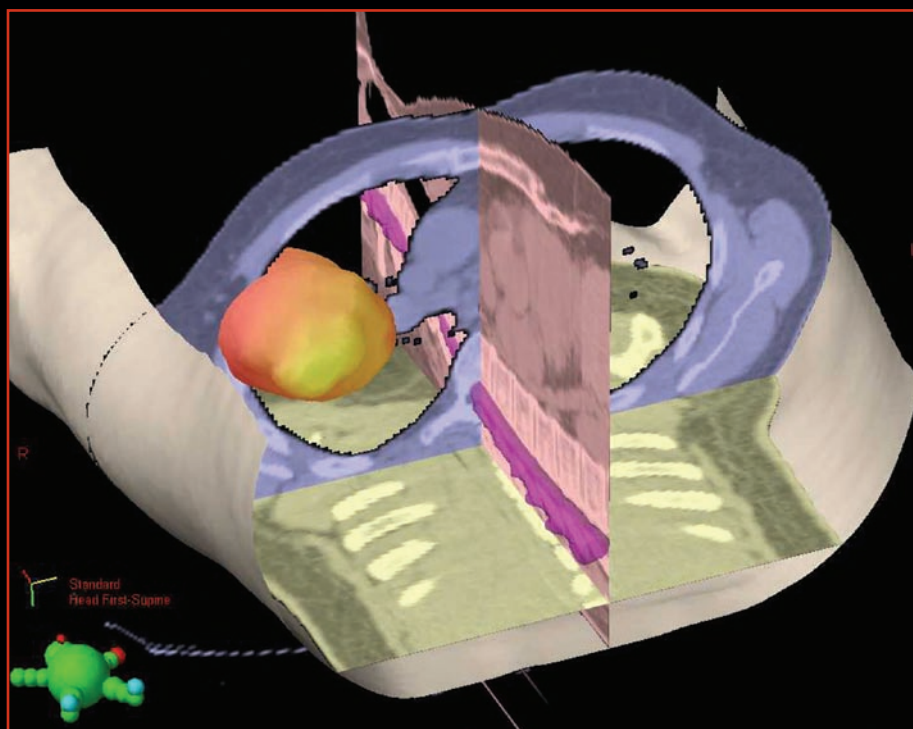
Dynamic Adaptive Radiotherapy™ (DART™) will take a giant step toward truly personalized cancer care by enabling clinicians to adapt treatments based on up-to-the-moment changes in a tumor or in the condition of a patient.

To achieve the dramatic results reported in this year's gallery of doctor and patient profiles, each treatment had to be as individual as the patient. By processing real-time image and motion-management data, Varian's Dynamic Adaptive Radiotherapy (DART) approach can help clinicians more quickly and effectively develop the best plan for treating each patient, accounting for the continuously changing shape, size, and position of a tumor both during a daily treatment session and throughout the prescribed course of treatment.

Working together with the versatile Trilogy™ or Clinac® medical linear accelerators, Varian's Inspiration™ environment will support the DART approach by providing a highly integrated and automated oncology treatment environment with immediate access to tightly synchronized imaging, planning, and treatment data. The DART

initiative will incorporate Varian's leading-edge technologies, including Real-Time Position Management (RPM™) respiratory gating, rapid inverse treatment planning with Eclipse™ software, and ARIA™ software for comprehensive data management.

By leading the way in the convergence of oncology treatments and information-management technology, Varian is also helping to simplify the decision-making process and to make complex treatment plans clinically practical for advanced treatments such as stereotactic radiosurgery or image-guided radiation therapy (IGRT) using cone-beam computed tomography (CT), radiographic, or fluoroscopic imaging. The clinical capabilities embodied in DART enable physicians to take a giant step toward the goal of delivering exactly the right dose, in the right place, at the right time—right now. ▣



**On Target.** Dynamic adaptation during treatment has the potential to improve the quality of care for lung cancer and other tumors that move as a patient breathes. This treatment plan for lung cancer shows a concentrated dose of radiation at the site of the targeted tumor (red).



# VARIAN IMRT: RAISING THE BAR WORLDWIDE

Hospitals and cancer centers around the globe are raising the standard of health-care with automated, high-precision Varian intensity-modulated radiation therapy (IMRT) technology. As a result of Internet research, many patients are now demanding SmartBeam™ IMRT treatment for themselves.



## BRINGING INNOVATION TO INDIA

The Kailash Cancer Hospital and Research Centre in the western state of Gujarat, India, has been treating cancer patients for the past 25 years. D. Elangovan, MD, chief physicist at the hospital, says IMRT has been one of the greatest advances in radiotherapy. IMRT significantly enhances precision compared to its predecessor, 3D conformal radiation therapy, by segmenting a tumor into hundreds of treatment fields—enabling different doses to be delivered to different parts of the treatment area. The Varian platform provides fast, integrated information management and image processing to help simplify the complex treatment planning that SmartBeam IMRT requires.



**Advancing the Cure.** Cancer patient Mayank Dholakiya (top) enjoys precious time with his family after intensity-modulated radiation therapy (IMRT) recommended by Dr. D. Elangovan (center) and Dr. Vivek Bansal.

“We have used IMRT to treat 52 patients so far—cases ranging from brain cancer to prostate and, more recently, pancreatic cancer,” Dr. Elangovan explains. “IMRT has enabled us to give higher doses without the complications and side effects we saw in the past.” For example, 3D conformal radiation therapy delivered a uniform dose across the entire treatment field, typically requiring manual delivery and slow, “trial-and-error” planning.

Pancreatic cancer patient Mayank Dholakiya was told by his surgeon that his tumor was inoperable because it was too close to critical organs and arteries. However, Dr. Elangovan and Dr.

Vivek Bansal, chief physician and head of radiation oncology, devised a treatment plan that combined IMRT with chemotherapy to shrink the tumor for surgical removal. “The challenge was accounting for tumor motion in the abdomen during radiation therapy,” Dr. Bansal explains. “Using IMRT, we were able to contour the dose and instruct Mr. Dholakiya to hold his breath for 15-second periods during treatment.”



Dholakiya, a local educator, was relieved to hear that IMRT offered him a chance against this typically fatal disease. “The doctors at Kailash told me this is one of the most patient-friendly treatments available,” says Dholakiya, who feels positive about his chances. “Overall, I feel much better in myself. I know I’m going to win.”

### SAVING LIVES IN CHILE


Dr. Pelayo Besa at the Centro de Cáncer at Pontificia Universidad Católica, Santiago, Chile, has been attracting patients from all over South America. Most recently, Hugo Victorio, a 61-year-old patient with prostate cancer, traveled from his home in Argentina to receive IMRT.

“I did a lot of Internet research,” Victorio explains. “My doctor confirmed that IMRT would be the best treatment.” Victorio’s search took him from Argentina 1,000 miles across the Andes to Dr. Besa in Chile, who prescribed 39 treatment sessions over the course of two months. “Today I feel great and life is back to normal,” Victorio says. “Except now I see life differently. I make more time to appreciate all the small things that come together to make life happy.”

### INSPIRING HOPE IN BRAZIL

Since the end of 2004, João Victor Salvajoli, MD, Chief of the Radiation Oncology Department at Hospital AC Camargo (Hospital do Câncer) in São Paulo, Brazil, has treated about 50 patients with IMRT. One of Dr. Salvajoli’s patients, 79-year-old Hector Afonso Mita, says that incurring fewer side effects was a key factor in his decision to opt for IMRT. “When I found out I had prostate cancer, I immediately consulted with three doctors,” Mita says. “I was soon convinced that radiotherapy was the best method and the results have proved this to be true. Now I feel like Lance Armstrong—I have at least 30 years left.”

### CONQUERING CANCER IN FRANCE

The Centre Georges-Francois Leclerc in Dijon, France, is one of 20 cancer centers participating in the French government’s initiative to defeat cancer. The center routinely treats about 15 patients each day, mainly focusing on gynecological malignancies. “IMRT is particularly useful because it allows us to deliver much higher doses than in the past,” says Philippe Maingon, professor of radiation oncology and head of the radiation oncology department at the center. In a recent case, a 33-year-old cervical cancer patient was able to receive a particularly high dose of radiation after another tumor appeared in a nearby lymph node. “Without IMRT, that would not have been possible because of the risk of damage to the small bowel area,” Maingon explains. “IMRT enabled us to increase the dose and destroy the tumor.” 

**Growing Demand.** Patients in countries around the world including Chile, Brazil, and France (from top) are seeking access to IMRT treatments.



# VARIAN SURGICAL SCIENCES: NONINVASIVE NEUROSURGERY SPARKS WIDESPREAD HOPE

Innovative radiosurgery techniques treat tumors and lesions with pinpoint precision.

Certain that her stuffy nose and impaired sense of smell were due to a sinus infection, Diana Mitchell was stunned when her doctor told her she was suffering from a meningioma—a benign, slow-growing brain tumor that can wreak havoc on vital regions inside the head. This was back in 1996, and at that time Mitchell was 31 years old, married with two young children, and had to endure the only available treatment: major brain surgery that involved several days in intensive care and 12 weeks off work. Furthermore, doctors warned her that there was an 80 percent chance that the meningioma would recur.

Since then, Mitchell and her family have lived with that haunting fear—and a recent magnetic resonance imaging (MRI) scan revealed the meningioma was indeed slowly growing again. But this time, Mitchell was relieved to discover a new and dramatically different treatment option—stereotactic radiosurgery, which delivers highly concentrated doses of radiation to small tumors and early metastases using very narrow beams from many different angles.

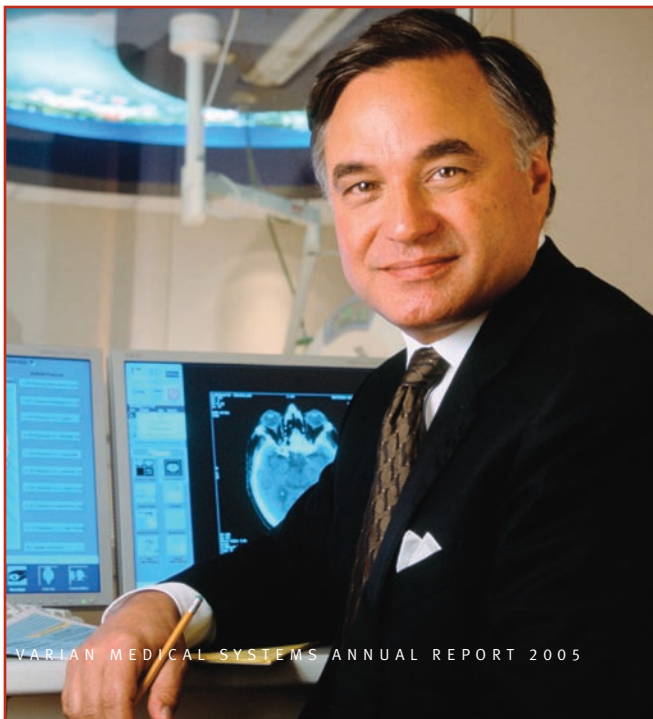
Mitchell chose Frank Holladay, MD, a neurosurgeon at the Providence Medical Center in Kansas City, Kansas, and one of a growing number embracing Varian's stereotactic radiosurgery technology as a major step forward in imaging and treating difficult-to-reach tumors. "Varian radiosurgery has applications beyond

treating cancer," Dr. Holladay explains. "It is enabling us to visualize and treat inside the central nervous system with unprecedented accuracy, and this includes recurring and nonmalignant tumors that can be just as incapacitating or life-threatening as cancer."

At the Department of Neurosurgery in the University of Florida, Frank Bova, PhD, says that 60 percent of the patients treated with radiosurgery by his team have benign brain malformations or tumors similar to Mitchell's. Professor Bova and William Friedman, MD, chairman of the neurosurgery department, have been pioneering radiosurgery techniques for more than 20 years and recently purchased a Varian Trilogy™ accelerator. "The Trilogy allows us to highly automate the way we treat radiosurgery patients and save time by delivering these treatments quickly," Dr. Friedman explains. "Also, the advanced imaging technology enables us to accurately position patients, so we can treat areas such as the spine."

Subsequent scans show that Diana Mitchell's meningioma is shrinking and, now 40, she hasn't missed a beat in her active life, studying for an advanced degree, working, and raising her two children. "I had virtually no side effects and was able to walk out of the hospital the same day," Mitchell explains. "I hope that I don't have to use it again, but if I do, I know this option is available and that takes the fear out of treatment." ■

**No Fear.** Dr. Frank Holladay (left) recommended just one session of a tightly focused beam of radiation to treat Diana Mitchell. Scans show Mitchell's brain tumor is shrinking and she is side-effect free. Stereotactic radiosurgery treatments typically can be conducted in one to five sessions on an outpatient basis.







## Katharina Esser

Waldfeucht-Haaren,  
Germany

**Age:** 12

**Profession:** Student

**Hobbies:** Horseback riding, painting, playing piano, bicycling

**Diagnosis:** Intraorbital eye cancer

**Treatment:** Chemotherapy followed by brachytherapy

**Profile:** Fun-loving, active, studious

**Quote:** "Laughter can help you get through the dark days."



# BRACHYTHERAPY: FIGHTING CANCER FROM THE INSIDE

Tiny radiation implants placed in or near tumors are delivering promising results for some patients who might otherwise not be treatable.

Katharina Esser is a smart, active 12-year-old who likes to paint and dreams of becoming a veterinarian. Watching her gallop across a field on her favorite horse, it's hard to believe that at the tender age of three, Katharina almost lost her vision and could have lost her life. Doctors discovered a cancerous tumor above her left eye and treated it with chemotherapy. But not long afterward, Katharina started seeing double. The tumor had returned and threatened to turn her cheery world into darkness.

Katharina was sent to the University Hospital Schleswig-Holstein in Kiel, Germany, renowned for its groundbreaking work in intra-orbital brachytherapy implants. Often combined with external-beam radiotherapy, brachytherapy treats cancer by placing tiny radiation sources precisely in or near a tumor—in this case, near Katharina's left eye.

With traditional treatment, Katharina's eye would have been surgically removed, explains György Kovács, MD, head of the university hospital's Interdisciplinary Brachytherapy Center. However, Varian's advanced brachytherapy tools helped Dr. Kovács save Katharina's eyesight as well as her life.

Dr. Kovács and his team also combine brachytherapy with organ-preservation surgery and external-beam treatments for intraorbital tumors in adults suffering from advanced nasal sinus cancers. Doctors report the result has been a high cure rate with preserved visual acuity.

Brachytherapy has also been used to successfully treat prostate cancer patients at several cancer centers around the world, including Mount Vernon Hospital in Northwood, England. In a pioneering research program, Dr. Peter Hoskin and his team use Varian brachytherapy tools to deliver the full high-dose-rate brachytherapy treatment in just four sessions over three days. "This is a very important factor for many patients," says Dr. Hoskin. "Because they need to take only a couple of days off work, they are very enthusiastic to receive these escalated treatments."

Innovations in brachytherapy are enabling patients to improve their quality of life. "There is not even a mark on Katharina's face from the treatment," says Kathy Esser, Katharina's mother. "She became ill so young, and we've all been through a lot together. Every time I see her laughing now, I laugh too." **V**

# COMMERCIALIZING DIGITAL X-RAY DETECTOR TECHNOLOGY

From back surgery and jaw realignment to canine orthopedics, imaging specialists around the world are making no bones about the value of Varian's X-ray image detectors.

After a nasty bicycle accident left 35-year-old Hope Baldwin with devastating facial injuries, including a shattered chin and broken bottom jaw, she suffered through multiple reconstructive surgeries. When an operation at a clinic in Florida failed to fully correct the results of the trauma, Baldwin, who runs a beauty salon in Madison, Georgia, began looking for another maxillofacial surgeon. Her research took her to Glenn Maron, DDS, at the dental practice of Goldstein, Garber & Salama in Atlanta.

"I chose Dr. Maron because of his vast experience and because of the advanced technology at his office," Baldwin says. This technology includes the Imaging Sciences i-CAT™ Cone Beam 3-D Dental Imaging System, a dental scanner that uses the Varian PaxScan® X-ray image detector to provide dental offices with a compact, easy-to-use diagnostic and planning tool.

"The i-CAT provides us with unprecedented 3D views within minutes," Dr. Maron explains. "It leads to a tremendous savings in time and money for patients because I'm able to make an accurate diagnosis almost instantaneously."

In Hope Baldwin's case, the availability of high-quality 3D images enabled Dr. Maron to determine that further surgery would not be necessary. "We could see what was going on with her jaw joint very clearly and that helped us determine that we could proceed to fix her problem with orthodontia, instead of the typical surgical route," Dr. Maron says.

Baldwin has already noticed some improvement from the treatment and is looking forward to coming out of braces in about six months. "It's been a very emotional time," she says. "But I am confident in the treatment the doctor has prescribed."

## Hope Baldwin

Madison, Georgia

**Age:** 35

**Profession:** Beauty salon owner

**Hobbies:** Running, playing tennis, chasing after 5-year-old twin boys

**Diagnosis:** Extensive facial trauma

**Treatment:** Functional orthodontia after surgery failed to fully correct bite plane and jaw alignment issues

**Profile:** Caring, active, determined

**Quote:** "This experience has given me a greater understanding of the beauty that is within us all. I feel lucky that technology has helped me recover from what has been a very emotional experience."





## COMFORTING VIEWS FOR PET OWNERS

Another key market for Varian PaxScan has been veterinary medicine. Sound Technologies, a division of the nationwide pet healthcare services provider VCA Antech, produces the TruDR™ veterinary digital radiography system using Varian PaxScan X-ray image detector technology.

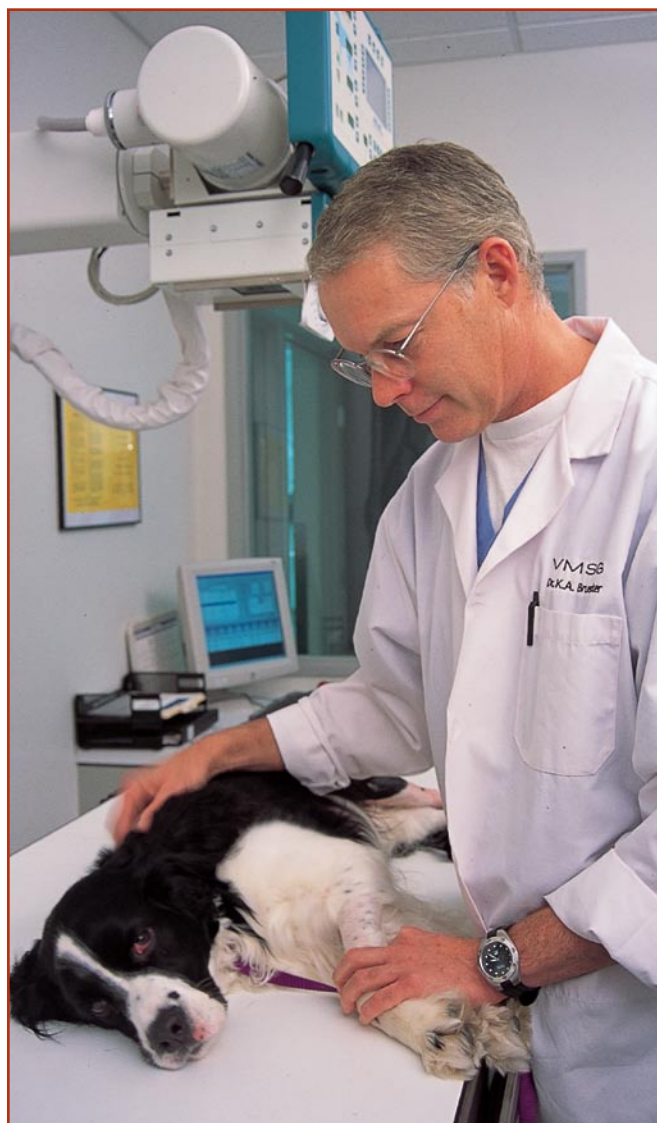
The Veterinary Medical and Surgical Group in Ventura, California, is one of about 15,000 veterinary clinics that regularly purchase equipment from VCA Antech. Founded by Kenneth Bruecker, DVM, in 1988, the clinic now employs 70 people in a multi-specialty practice covering orthopedics, neurosurgery, internal medicine, critical care, and diagnostic imaging services.

After carefully watching imaging technology evolve over the last few years, Dr. Bruecker purchased two TruDR systems a year ago and uses them to image about 30 patients a day. These patients are primarily cats and dogs undergoing treatments for just about everything from hip replacement surgery to lung cancer. However, Dr. Bruecker also performs pro bono work for local wildlife facilities and uses the system to diagnose animals such as endangered owls and eagles suffering from bone fractures.

**Clear Vision.** Thanks to Varian's digital X-ray imaging technology, Dr. Glenn Maron was able to determine that surgery was not necessary to realign Hope Baldwin's jaw (above). Meanwhile, veterinarians working with Dr. Kenneth Bruecker (below left) use X-ray scanners to diagnose about 30 patients a day—reassuring owners like Caroline Willsie, shown with her dog Toby, that they can receive the best possible care for their pets.



“These digital X-ray detection systems have been phenomenal because they speed up the acquisition time of radiographs and enable us to enhance and manipulate images,” Dr. Bruecker says. “That means less time on the table, less stress on the animal, and an accurate diagnosis almost immediately. The pet owners are especially impressed by the quality of the images since they are often able to see the true extent of the problem for themselves—and that reassures them that their pet is in good hands and receiving excellent care.”



## INNOVATIVE IMAGING IN THE OPERATING ROOM

Of course, it's not just animals that stand to benefit from innovative Varian imaging technology in the operating room. After receiving FDA approval in May, Breakaway Imaging recently signed a distribution deal with Medtronic for its revolutionary O-arm™, a multi-dimensional system that uses both a Varian image detector and a Varian X-ray tube to bring state-of-the-art imaging techniques into real-time surgery.

"The O-arm helps surgeons visualize the patient in 3D during surgery. That perspective enables them to perform minimally invasive procedures," explains Rich Grant, president and CEO of Breakaway Imaging. "Three-dimensional imaging enables a high degree of precision and that can lead to a reduction in the number of repeat surgeries. Varian digital image detectors and X-ray tubes have enabled us to incorporate high-precision robotics, so the system is easy to use in the operating room and can help reduce the number of X rays and radiation dose to the patient."

Confident that the O-arm will fill a vital gap in the operating room, a physician network of angel investors has provided funding for the company, which plans to begin shipments in 2006.

## IMPROVED DIAGNOSTICS FOR EAR, NOSE, AND THROAT PATIENTS

Widespread availability of quality imaging systems is also helping ear, nose, and throat specialists to improve diagnostics and minimize treatment time. When David Palmer, MD, first considered purchasing a full-body computed tomography (CT) scanner for his practice, ENT Specialists in Salt Lake City, Utah, he expected to lease the suite next door to provide enough space and meet ventilation and electricity

requirements. Then he attended the annual meeting of the American Academy of Otolaryngology and saw the MiniCAT™ for ENT, produced by Xoran Technologies using Varian image detectors.

"The image quality of MiniCAT for ENT is better than I was getting with conventional CT," Dr. Palmer explains. "Plus the price, space requirements, and electricity needs were perfect. We were going to buy a used CT scanner, but I just fell in love with the MiniCAT and bought that instead. We never did have to renovate that extra suite."

The ENT Specialists practice currently uses the scanner about four times a day, and the doctors are able to read their own scans instantly. "We don't have to wait for extra trips to the hospital. If I find something, I can ask a patient there and then about any symptoms and get an up-to-the-minute history," says Dr. Palmer who, in his first few months using the MiniCAT, was able to quickly diagnose three serious cancers. "The accuracy is phenomenal so I feel more confident making diagnoses with the MiniCAT than with conventional CT scans. Often, I used to have to perform a nasal telescopic exam to verify CT results. Now I know that if I see a normal result, it is most likely normal."

## INCREASED CLARITY FOR SURGEONS

In Nuremberg, Germany, Ziehm Imaging, a leading manufacturer, developer, and distributor of mobile C-arms for hospitals and clinics worldwide, is now incorporating a Varian X-ray image detector into its digital mobile C-arm, the Ziehm Vision Flat™ system. Previously, the system used an image intensifier that included a bulky TV camera and often caused image distortion because of sensitivity to magnetic fields.



"Mobility is very important to our customers," says Martin Törnvik, marketing manager for the Ziehm Vision Flat. "Using a Varian digital image detector, the C-arm is more compact and clinicians have easy access to the patient." Another advantage, Törnvik says, is that the detector produces high-quality digital images that show exacting bone structure and soft tissue in the same display. "This enables doctors to make highly accurate diagnoses and treatment plans, whereas with conventional image intensifiers, there was always a compromise to be made." **V**


**Vital Insight for Surgeons.** The Ziehm Vision Flat C-arm incorporates a Varian image detector that shows ultra-high-quality bone structure and soft tissue scans in the same display—helping doctors to improve the accuracy of diagnoses and the precision of treatment plans.

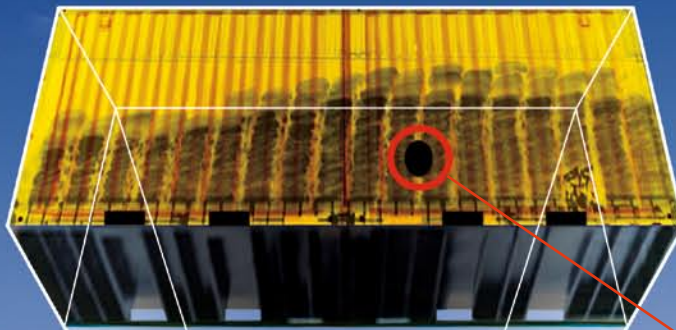


# CARGO SCREENING: SPOTTING HIDDEN DANGERS

**Varian's Linatron® K9 X-ray linear accelerator enables cargo-screening systems to detect nuclear materials quickly and automatically.**

A traditional cargo-screening system cannot distinguish between a weapon of mass destruction and other dense materials. That's a scary proposition, given the millions of cargo containers arriving at seaports and airports around the world each year. For the men and women charged with border security, each container is a potential hiding place for the weapons-grade nuclear material used to make dirty bombs.

In 2005, Varian Medical Systems developed a new type of X-ray linear accelerator designed to automatically alert cargo-screening personnel within seconds of detecting suspicious materials. Linatron K9 technology helps operators viewing the contents of a cargo container to quickly identify the types of substances commonly found in explosives, weapons of mass destruction, and other hazardous materials—and is fast enough to allow every container coming into port to be screened without slowing the pace of commerce. 



**ALARM!**  
**Explosives?**



# ONCOLOGY SYSTEMS

## 2005 HIGHLIGHTS

Varian Oncology Systems is the world's leading supplier of radiotherapy products for treating cancer. Its products include linear accelerators, simulators, and the broadest range of accessories and interconnected software tools for planning, verifying, and delivering the most sophisticated radiation and radiosurgical treatments available for patients. During fiscal year 2005, the business unit also supplied linear accelerators and components for industrial inspection and cargo screening.

**Record orders, revenues, and profits.** Annual net orders increased 14 percent, to \$1.3 billion; revenues rose 10 percent, to \$1.1 billion; and operating profits rose 16 percent, to \$290 million.

**Strong growth in international markets.** Total international net orders rose 29 percent for the fiscal year, with all-time highs in Australia–New Zealand, the United Kingdom, France, Germany, Japan, Italy, Scandinavia, and Iberia.

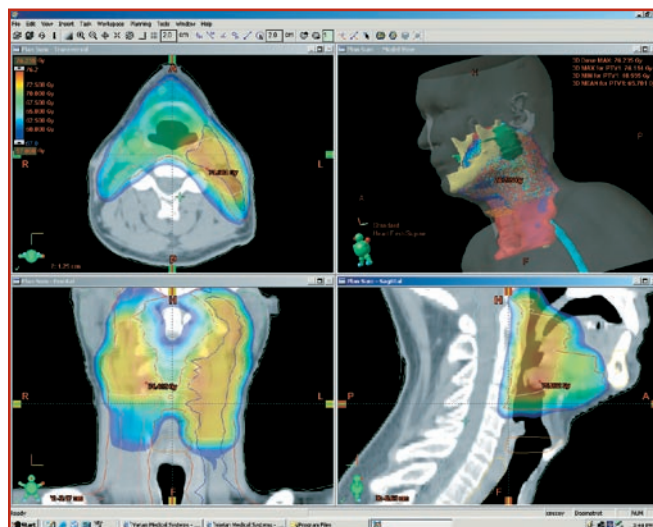
**Leadership in image-guided radiation therapy (IGRT).** More than 110 On-Board Imager™ devices for IGRT were shipped since the product's introduction in fiscal year 2004. Scores of centers began image-guided treatments of prostate, head and neck, lung, breast, pancreatic, liver, brain, and paraspinal tumors.

**New products.** Varian unveiled new products, including the ARIA™ Oncology Information System for paperless and filmless cancer clinics and a new version of Varian's Eclipse™ software for faster, simpler planning of advanced treatments.

**Dynamic Adaptive Radiotherapy™ (DART™).** The business launched its initiative to equip clinics with imaging, planning, and treatment delivery products capable of making real-time adjustments to changes in tumor position.



Trilogy linear accelerator with On-Board Imager device.



An image from Varian's Eclipse treatment planning software.

**Neurosurgery and stereotactic treatments with Trilogy™ linear accelerator.** Varian's thrust into the neurosurgery market gained momentum throughout the year, and neurosurgeons at many centers began using Trilogy for bloodless radiosurgery on tumors of the brain and central nervous system.

**Service.** Annual revenues from the global service and support business grew by 26 percent, driven by expansion of the installed base of information technology products and treatment machines.

**Acquisition.** Privately held Sigma Micro Informatique Conseil of Toulouse, France, was acquired to enhance Varian's information-management offering in Europe.

### Oncology Systems

(Dollars in millions)

	Fiscal Years		
	2005	2004	2003
Net orders	\$1,335	\$1,170	\$977
Revenues	\$1,139	\$1,031	\$856
Operating earnings	\$290	\$251	\$200
Operating earnings as percentage of revenues	25.5%	24.3%	23.3%
Backlog	\$1,108	\$911	\$771
Capital expenditures	\$27	\$16	\$8
Depreciation and amortization	\$15	\$13	\$8



## ONCOLOGY SYSTEMS PRODUCTS AND SERVICES

### Oncology Systems

Clinac® and Trilogy™ medical linear accelerators

On-Board Imager™ device

Millennium™ multileaf collimators (MLCs)

Exact™ treatment couches

Acuity™ treatment planning, simulation, and verification imagers

Eclipse,™ FastPlan,™ Helios,™ ImMerge,® and GrassFire™ treatment planning software

PortalVision™ digital imaging devices

ARIA™ and VARIs Vision™ radiation oncology clinical data and image management software

RPM™ respiratory gating systems

Z-Scape™ image management and viewing software

Linac Scalpel™ stereotactic radiosurgery planning and positioning accessories

SonArray® ultrasound patient positioning platforms

Customer service, educational programs, and product support

### Security and Inspection Products

Linatron® linear accelerators

### FACILITIES

Baden, Switzerland

Buc, France

Crawley, England

Helsinki, Finland

Holliston, Massachusetts

Las Vegas, Nevada

Milpitas, California

Palo Alto, California (headquarters)

Toulouse, France

Tokyo, Japan

Winnipeg, Canada

Zug, Switzerland

# BRACHYTHERAPY

## 2005 HIGHLIGHTS



Varian's BrachyTherapy operation supplies products for treating cancer from the inside out by placing small radiation sources within tumors or into the area where a tumor has been surgically removed.

**Record orders, revenues, and profits.** Annual net orders increased 16 percent, to \$49 million; revenues increased 28 percent, to \$48 million.

**The Acuity™ Brachytherapy Suite.** This product enables clinicians to combine imaging and treatment technologies in one procedure room for real-time, image-guided brachytherapy.

**A new applicator for specialized delivery of high-dose-rate brachytherapy in nasopharynx cancer cases.**

**The Vitesse™ brachytherapy planning tool for streamlining prostate cancer treatments.** This workflow module enables doctors to quickly acquire prostate images with high-dose-rate catheters already in place, export the data to the BrachyVision treatment planning program, and treat the patient in a single procedure room.

**Accelerated acceptance of partial-breast irradiation techniques in the treatment of some breast cancers, resulting in escalating demand for high-dose-rate brachytherapy afterloaders.**

## BRACHYTHERAPY PRODUCTS AND SERVICES

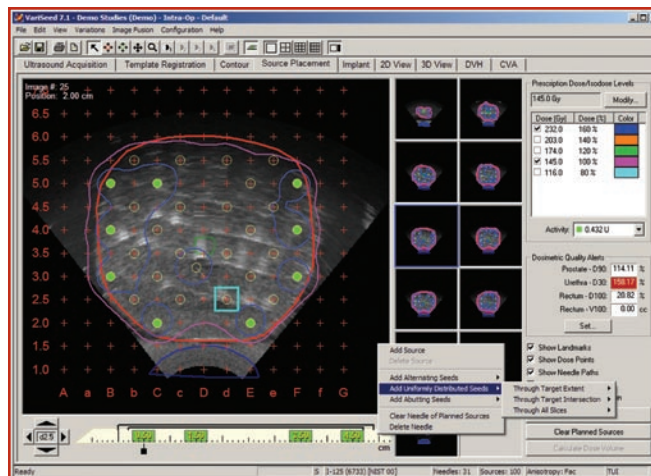
VariSource™ GammaMedPlus™ and MammoSource™ high-dose-rate brachytherapy delivery systems

VariSeed™ brachytherapy treatment planning software for prostate seed implants

BrachyVision™ treatment planning software for high-dose-rate and low-dose-rate brachytherapy

Vitesse™ brachytherapy planning tool

Acuity™ Brachytherapy Suite for image-guided brachytherapy



### FACILITIES

Charlottesville, Virginia

Crawley, England

Haan, Germany

An image from Varian's VariSeed treatment planning software (left). Above: Acuity imaging system for image-guided brachytherapy.

# X-RAY PRODUCTS

## 2005 HIGHLIGHTS

Varian X-Ray Products is the world's premier independent supplier of X-ray tubes and digital image detectors for filmless X-rays. Its products are used in X-ray imaging equipment for medical diagnostics, industrial inspection, and security.

**Record orders, revenues, and profits.** Annual net orders increased 11 percent, to \$204 million; revenues rose 18 percent, to \$195 million; and operating profits gained 26 percent, to \$39 million.

**Stepped up factory output.** Varian facilities manufactured more than 22,000 X-ray tubes and 800 digital imagers.

**Grew digital image detector line into a solid, profitable business model.** Varian's filmless image detectors serve medical, veterinary, dental, and industrial inspection markets.

**Introduced 11 new X-ray tubes.**



### X-Ray Products

(Dollars in millions)

	Fiscal Years		
	2005	2004	2003
Net orders	\$204	\$184	\$142
Revenues	\$195	\$165	\$153
Operating earnings	\$39	\$31	\$29
Operating earnings as percentage of revenues	20.0%	18.8%	18.7%
Backlog	\$53	\$44	\$25
Capital expenditures	\$4	\$3	\$3
Depreciation and amortization	\$6	\$7	\$7

### X-RAY PRODUCTS AND SERVICES

X-ray tubes for:

- CT scanners
- Radiographic and fluoroscopic imaging
- Mammography
- Angiographic imaging
- Scientific instrumentation
- Airport baggage screening systems and nondestructive testing

PaxScan® digital image detectors for:

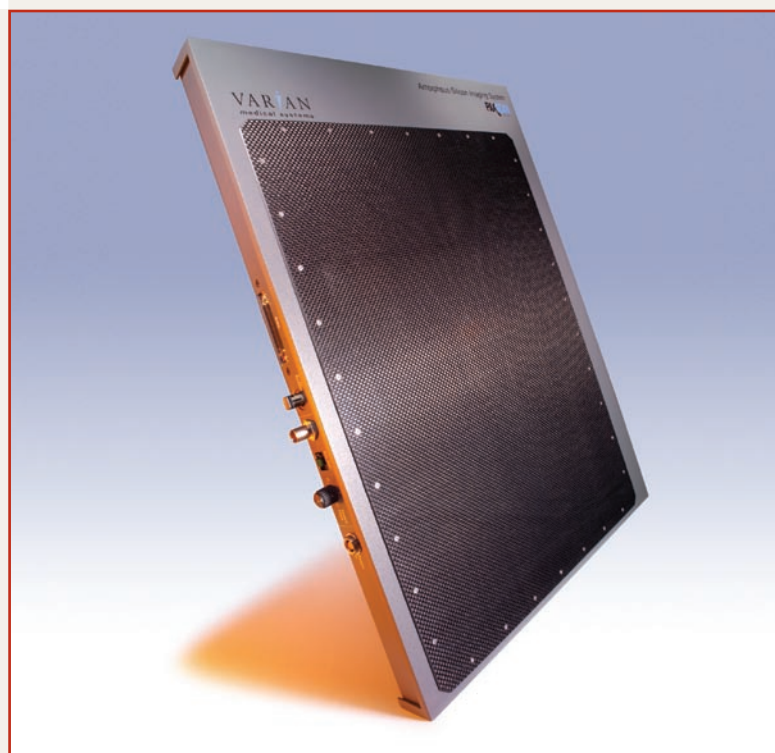
- Industrial inspection
- Medical diagnostic subsystems

### FACILITIES

Charleston, South Carolina

Salt Lake City, Utah (headquarters)

Willich, Germany



Mammography X-ray tubes (top). Above: PaxScan digital image detector.



# GINZTON TECHNOLOGY CENTER: VARIAN'S INCUBATOR FOR BREAKTHROUGH TECHNOLOGIES

Tucked away in an unassuming office complex in Mountain View, California, an innovative team of scientists and engineers works to solve urgent clinical problems confronting doctors and treatment providers—and to develop versatile technologies that advance the quality of healthcare.

These researchers are the heart of the Ginzton Technology Center (GTC), Varian Medical Systems' central research and development organization and business incubator. GTC researchers work with others in Varian's marketing and engineering departments to turn breakthrough technologies into practical, commercially viable products.

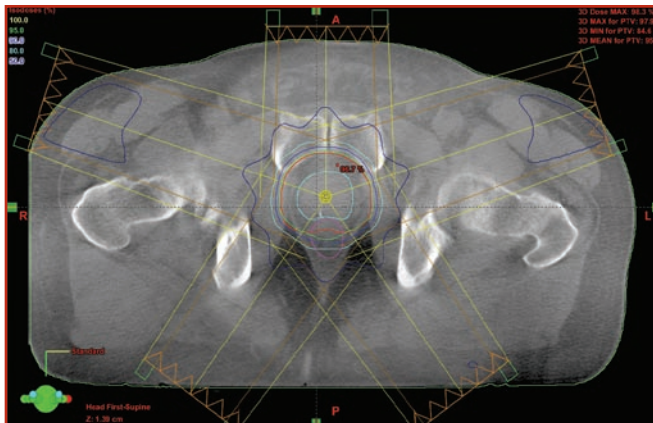
GTC research initiatives contributing to Varian's growth in 2005 include digital X-ray image detectors, the Real-Time Position Management (RPM™) respiratory gating system, and cone-beam computed tomography (CT) imaging.



**The RPM Respiratory Gating System.** By synchronizing imaging and radiotherapy treatments with a patient's natural breathing cycle, Varian's RPM respiratory gating system has enabled life-changing results (see "Respiratory Gating: Breathtaking Precision" on page 10).



**Digital X-Ray Image Detectors.** Varian has become a volume manufacturer of X-ray image detectors (see "Commercializing Digital X-Ray Detector Technology" on page 18). This year, the GTC worked to improve performance and manufacturability of the imaging plates. Varian's digital X-ray image detectors generate ultra-high quality, filmless X-rays such as the diagnostic image shown here, which was generated at Osaka City University Hospital in Japan.



**Cone-Beam CT Imaging.** During 2005, the first cone-beam CT images from Varian's On-Board Imager™ devices enabled treatment centers around the world to acquire high-quality images so quickly that they could help clinicians adjust a patient's position for image-guided radiation therapy dynamically, during a standard treatment time slot. Varian's cone-beam CT capabilities are the result of synergies among major research initiatives at the GTC, culminating from advances in X-ray imagers, digital image reconstruction algorithms and software, and other vital areas of expertise. This cone-beam CT image shows the prostate area with intensity-modulated radiation therapy (IMRT) dose distributions superimposed.

# Earnings

See the company's Fiscal Year 2005 Annual Report on Form 10-K for Consolidated Statements of Earnings

(In thousands, except per-share amounts)

	Fiscal Years		
	2005	2004	2003
Revenues		(As adjusted)	(As adjusted)
Product	\$1,161,837	\$1,058,702	\$907,668
Service contracts and other	220,720	176,821	133,889
Total revenues	1,382,557	1,235,523	1,041,557
Cost of revenues			
Product	662,019	604,789	531,270
Service contracts and other	127,517	112,565	89,194
Total cost of revenues	789,536	717,354	620,464
Gross margin	593,021	518,169	421,093
Operating expenses			
Research and development	82,063	72,106	59,176
Selling, general, and administrative	205,982	189,378	164,380
Total operating expenses	288,045	261,484	223,556
Operating earnings	304,976	256,685	197,537
Interest income	8,048	5,970	7,401
Interest expense	(4,698)	(4,668)	(4,383)
Earnings from operations before taxes	308,326	257,987	200,555
Taxes on earnings	101,750	90,300	70,200
Net earnings	\$206,576	\$167,687	\$130,355
Net earnings per share: Basic	\$1.56	\$1.23	\$0.96
Net earnings per share: Diluted	\$1.50	\$1.18	\$0.92
Shares used in the calculation of net earnings per share			
Weighted average shares outstanding: Basic	132,435	136,036	136,113
Weighted average shares outstanding: Diluted	137,835	142,215	142,153

Note: This table does not represent the company's complete set of audited financial statements, which are available together with accompanying notes in the company's Fiscal Year 2005 Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission.

Except for historical information, this summary annual report contains "forward-looking" statements within the meaning of the Private Securities Litigation Reform Act of 1995. Statements concerning industry outlook, including market acceptance of or transition to new products or technology such as intensity-modulated radiation therapy (IMRT), image-guided radiation therapy (IGRT), software, and advanced X-ray products; growth drivers; our orders, sales, backlog, or earnings growth; future financial results and any statements using the terms "set the stage," "can," "expect," "think," "should," "believe," "continue," "will," "could," "may," "would," "eliminate," "promises," "enable," "make," "might," "potential," "becoming," "transforming," "growing," "gaining," "momentum," "continued," "designed," "hope," or similar statements are forward-looking statements that involve risks and uncertainties that could cause our actual results to differ materially from those anticipated. Such risks and uncertainties include, without limitation, demand for our products; our ability to develop and commercialize new products; the impact of competitive products and pricing; the effect of economic conditions and currency exchange rates; our ability to meet demand for manufacturing capacity; the effect of environmental claims and expenses; our ability to protect our intellectual property; the impact of managed care initiatives or other healthcare reforms on capital expenditures and/or third-party reimbursement levels; our ability to meet U.S. FDA and other regulatory requirements or product clearances; our dependency on a small number of customers for a significant amount of our sales; our reliance on a limited group of suppliers, and in some cases sole-source suppliers, for some product components; the potential loss of key distributors; the possibility that material product liability claims could harm future sales or require us to pay uninsured claims; the risk of operations interruptions due to events beyond our control; and other risks detailed from time to time in our filings with the Securities and Exchange Commission. We assume no obligation to update or revise any forward-looking statements because of new information, future events, or otherwise.



# Balance Sheets

See the company's Fiscal Year 2005 Annual Report on Form 10-K for Consolidated Balance Sheets

(In thousands, except par values)

	Fiscal Years Ended	
	September 30, 2005	October 1, 2004
		(As adjusted)
<b>Assets</b>		
Current assets		
Cash and cash equivalents	\$243,086	\$132,870
Short-term marketable securities	135,356	219,078
Accounts receivable, net	351,899	288,663
Inventories	164,873	144,389
Prepaid expenses and other	26,211	29,454
Deferred tax assets	95,470	81,130
<b>Total current assets</b>	<b>1,016,895</b>	<b>895,584</b>
Property, plant, and equipment, net	114,540	85,377
Long-term marketable securities	3,679	40,970
Goodwill	121,389	112,653
Other assets	60,899	46,056
<b>Total assets</b>	<b>\$1,317,402</b>	<b>\$1,180,640</b>
<b>Liabilities and stockholders' equity</b>		
Current liabilities		
Accounts payable	\$71,007	\$59,639
Accrued expenses	315,287	255,519
Current maturities of long-term debt	2,689	5,250
Accrued product warranty	39,407	40,654
Advance payments from customers	115,543	100,277
<b>Total current liabilities</b>	<b>543,933</b>	<b>461,339</b>
Long-term accrued expenses and other	57,124	41,889
Long-term debt	57,318	53,250
<b>Total liabilities</b>	<b>658,375</b>	<b>556,478</b>
Commitments and contingencies		
Stockholders' equity		
Preferred stock of \$1 par value: 1,000 shares authorized; none issued and outstanding	—	—
Common stock of \$1 par value: 189,000 shares authorized; 130,715 and 134,045 shares issued and outstanding at September 30, 2005, and at October 1, 2004, respectively	130,715	134,045
Capital in excess of par value	152,263	133,985
Deferred stock compensation	(1,797)	(1,110)
Retained earnings	383,667	357,242
Accumulated other comprehensive loss	(5,821)	—
<b>Total stockholders' equity</b>	<b>659,027</b>	<b>624,162</b>
<b>Total liabilities and stockholders' equity</b>	<b>\$1,317,402</b>	<b>\$1,180,640</b>

Note: This table does not represent the company's complete set of audited financial statements, which are available together with accompanying notes in the company's Fiscal Year 2005 Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission.

# Cash Flows

See the company's Fiscal Year 2005 Annual Report on Form 10-K for Consolidated Statements of Cash Flows

(In thousands)

	Fiscal Years		
	2005	2004	2003
		(As adjusted)	(As adjusted)
<b>Cash flows from operating activities</b>			
Net earnings	\$206,576	\$167,687	\$130,355
Adjustments to reconcile net earnings to net cash provided by operating activities			
Tax benefits from employee stock option exercises	21,993	33,916	28,142
Depreciation	21,458	20,751	19,482
Provision for doubtful accounts receivable	1,418	805	2,160
Loss on disposal of property, plant, and equipment	341	179	44
Amortization of intangibles	5,677	4,372	832
Amortization of premium/discount on marketable securities, net	403	795	1,359
Amortization of deferred stock compensation	1,113	1,171	1,055
Deferred taxes	5,555	8,409	(9,001)
Net change in fair value of derivatives and underlying commitments	4,923	1,907	(10,172)
Income on equity investment in affiliate	(3,391)	—	—
Other	194	496	(116)
Changes in assets and liabilities			
-Accounts receivable	(68,383)	(25,267)	(110)
-Inventories	(21,927)	(9,389)	7,954
-Prepaid expenses and other current assets	(1,051)	(6,180)	2,042
-Accounts payable	11,748	4,122	5,205
-Accrued expenses	52,131	15,666	25,071
-Accrued product warranty	(1,243)	4,256	4,912
-Advance payments from customers	14,958	12,964	2,657
-Long-term accrued expenses and other liabilities	(696)	(2,750)	(2,072)
<b>Net cash provided by operating activities</b>	<b>251,797</b>	<b>233,910</b>	<b>209,799</b>
<b>Cash flows from investing activities</b>			
Proceeds from maturities or sale of marketable securities	358,460	318,915	249,740
Purchases of marketable securities	(237,850)	(252,011)	(346,409)
Purchase of businesses, net of cash acquired	(12,372)	(71,770)	(135)
Purchases of property, plant, and equipment	(43,865)	(24,218)	(18,888)
Increase in cash surrender value of life insurance	(7,885)	(6,002)	(5,166)
Notes receivable from affiliate and other	(4,453)	—	—
Proceeds from disposal of property, plant, and equipment	42	311	189
Other, net	(317)	(976)	(378)
<b>Net cash provided by (used in) investing activities</b>	<b>51,760</b>	<b>(35,751)</b>	<b>(121,047)</b>
<b>Cash flows from financing activities</b>			
Repurchases of common stock	(227,157)	(201,807)	(105,099)
Proceeds from issuance of common stock to employees	38,161	46,099	36,654
Net repayments on bank borrowing/short-term obligations	(5,340)	—	(58)
Proceeds from sale of mandatorily redeemable financial instrument	—	13,457	—
<b>Net cash used in financing activities</b>	<b>(194,336)</b>	<b>(142,251)</b>	<b>(68,503)</b>
Effects of exchange rate changes on cash and cash equivalents	995	(2,687)	(7,012)
Net increase in cash and cash equivalents	110,216	53,221	13,237
Cash and cash equivalents at beginning of fiscal year	132,870	79,649	66,412
<b>Cash and cash equivalents at end of fiscal year</b>	<b>\$243,086</b>	<b>\$132,870</b>	<b>\$79,649</b>

Note: This table does not represent the company's complete set of audited financial statements, which are available together with accompanying notes in the company's Fiscal Year 2005 Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission.



# Management and Directors

## Management

### **Richard M. Levy, PhD<sup>(1)(2)</sup>**

*Chairman of the Board,  
Chief Executive Officer*

### **Timothy E. Guertin<sup>(1)(2)</sup>**

*President, Chief Operating Officer*

### **Elisha W. Finney<sup>(1)(2)</sup>**

*Senior Vice President,  
Chief Financial Officer*

### **Robert H. Kluge<sup>(1)(2)</sup>**

*Vice President;  
President, X-Ray Products*

### **John W. Kuo<sup>(1)(2)</sup>**

*Vice President,  
General Counsel and Secretary*

### **Franco N. Palomba<sup>(2)</sup>**

*Vice President,  
Corporate Treasurer*

### **Crisanto C. Raimundo<sup>(1)(2)</sup>**

*Vice President,  
Corporate Controller*

### **Wendy S. Reitherman**

*Vice President,  
Human Resources*

### **Spencer R. Sias**

*Vice President,  
Corporate Communications  
and Investor Relations*

### **J. A. (Andy) Thorson II**

*Vice President,  
Business Development*

### **Dow R. Wilson<sup>(1)(2)</sup>**

*Executive Vice President;  
President, Oncology Systems*

### **George A. Zdasiuk, PhD<sup>(2)</sup>**

*Vice President, Director,  
Ginzton Technology Center;  
Chief Technology Officer*

## Board of Directors

### **Susan L. Bostrom**

*Senior Vice President,  
Internet Business Solutions Group and  
Worldwide Government Affairs,  
Cisco Systems, Inc.*

### **John Seely Brown, PhD**

*Former Chief Scientist,  
Xerox Corporation;  
Director Emeritus, Xerox PARC*

### **R. Andrew Eckert**

*President and Chief Executive Officer,  
Eclipsys Corporation*

### **Timothy E. Guertin**

*President, Chief Operating Officer,  
Varian Medical Systems, Inc.*

### **Samuel Hellman, MD**

*A. N. Pritzker Distinguished Service Professor,  
Department of Radiation and Cellular Oncology,  
University of Chicago*

### **Richard M. Levy, PhD**

*Chairman of the Board and  
Chief Executive Officer,  
Varian Medical Systems, Inc.*

### **Allen S. Lichter, MD**

*Dean and Newman Family Professor  
of Radiation Oncology,  
University of Michigan Medical School*

### **David W. Martin, Jr., MD**

*Chairman and Chief Executive Officer,  
AvidBiotics Corporation;  
Lead Director,  
Varian Medical Systems, Inc.*

### **Ruediger Naumann-Etienne, PhD**

*Owner and Managing Director,  
Intertec Group*

### **Kent J. Thiry**

*Chairman and Chief Executive Officer,  
DaVita Inc.*

## Stockholder Information

### **World Headquarters**

Varian Medical Systems, Inc.  
3100 Hansen Way  
Palo Alto, CA 94304-1038  
650.493.4000

### **Stockholder Relations**

Copies of Varian Medical Systems' Fiscal Year 2005 Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission and other current financial information are available without charge by contacting Stockholder Relations, Varian Medical Systems, Inc., 3100 Hansen Way, Mail Stop E210, Palo Alto, CA 94304-1038.

To obtain more information over the Internet, go to [www.varian.com](http://www.varian.com).

### **Listing**

Varian Medical Systems' common stock is listed on the New York Stock Exchange. The symbol is VAR.

### **Transfer Agent and Registrar**

Computershare Trust Company, N.A.  
PO Box 43069  
Providence, RI 02940-3069  
1.800.756.8200  
Hearing impaired: 1.800.952.9245  
[www.computershare.com/equiserve](http://www.computershare.com/equiserve)

### **Stockholders' Meeting**

The annual meeting of stockholders will be held on February 16, 2006, at 4:00 PM at the Sheraton Palo Alto, 625 El Camino Real, Palo Alto, CA 94301.

### **Stockholders of Record**

There were 3,568 stockholders of record of the company's common stock on September 30, 2005.

(1) Executive Officer

(2) Corporate Officer



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