



**Extension of the technology leadership in the development and production of low-level radioactive components**

Eckert & Ziegler is one of the largest developers and manufacturers of radioactive components for medical and measurement technology applications in the world. In medical technology, the leading independent isotope specialist is cooperating with the global players in the life science sector, for which it develops and produces radioactive sources. Eckert & Ziegler has succeeded in extending its technological lead ever since the IPO in May 1999 by signing new partnership agreements and by extending the value chain in the field of radiology.

**Acquisition of the DuPont "Radiation Sources" business unit doubles this world market share to over 65%**

By acquiring the "Radiation Sources" division from the US pharmaceuticals group DuPont and fully integrating it into the California subsidiary "Isotope Products Laboratories" (IPL), Eckert & Ziegler has increased its world market share in the field of nuclear medicine reference sources from 30% to 65%. The economies of scale yield a significant increase in profitability and open up additional revenue potential.

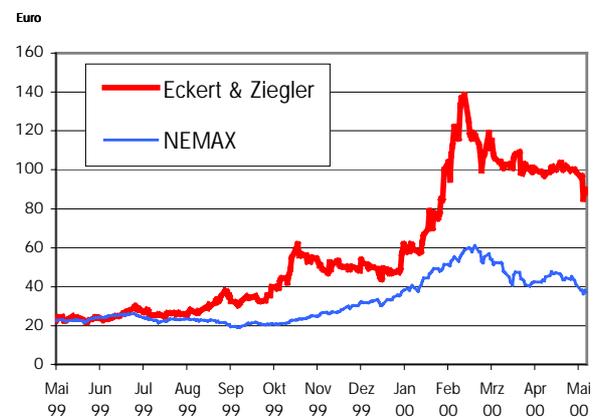
**The markets of the core business cardiology and oncology are growing by an average of 170% and 25% p.a. respectively.**

For Eckert & Ziegler AG the principal areas are brachytherapy for the treatment of restenosis (Cardiology) and prostate cancer (Oncology). According to a study conducted by SG Cowen (1999) these segments will grow by an average of 170% and 25% respectively over the next few years. Given its strong market position as an integrated supplier of low-level radioactive sources, Eckert & Ziegler AG's share of this growth potential and therefore its ongoing business success is assured.

**Core data**

Market segment	Neuer Markt
Industry	Radiation/medical tech.
Securities ID No.	565 970
Av.Price 5/22.- 29.	€ 90,30
High/low since IPO	€ 146/22
Market Cap	€ 270,9 million
No. of shares	3 million

**Eckert & Ziegler vs. NEMAX All Share**



**High level growth of over 45% in sales and revenue possible in the next few years**

Integration of the DuPont business unit will bring in additional sales of around € 6 million and additional profits of around € 1 million from 2001. Major expansion is also planned especially in the Oncology unit (iodine and palladium seeds for treating cancer). The R&D investments over the last few years have made Eckert & Ziegler much more profitable since the start of 2000 and sales of just under € 60 million could result in a 30% rate of return in 2003. As a result of its newly acquired development expertise we believe that the company and its products have good prospects for the future and will achieve its ambitious targets.

Financial data	1999	2000e	2001e	2002e	2003e
Sales pre acquisition (€ million)	9,9	18,0	30,2	45,6	53,5
Sales post acquisition (€ million)	9,9	19,8	36,5	52,0	59,9
EBIT (€ million)	1,2	5,5	9,1	13,3	18,4
Return on sales	12,1%	27,8%	24,9%	25,6%	30,7%
Net income (DVFA) in € million	0,3	2,1	4,3	6,5	9,0
EPS pre acquisition (€)	0,11	0,82	1,14	1,77	2,56
EPS post acquisition (€)	0,11	0,66	1,33	1,99	2,77
Price/earnings ratio		136,8	67,9	45,4	32,6
Price/sales ratio		13,7	7,4	5,2	4,5

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## Investment criteria

**Technology leadership in the development of radiation sources for oncology and cardiology**

Eckert & Ziegler AG is one of the largest developers and producers of radioactive components for medical and measurement technology applications. In the medical technology field the isotope specialist works together with the world's leading life science companies and receives orders for the development and production of radiation sources as the principle component of medical technology devices for oncology and cardiology. Eckert & Ziegler is the technology leader in these fields.

**Expansion of the value-creation chain in medical robotics/radiology**

By founding a new company to develop and manufacture medical robots (JOJUMARIE Intelligente Systeme GmbH) Eckert & Ziegler has reinforced its technological competence and this will extend the value-adding chain in radiology.

**Acquisition takes share of world market in nuclear medical reference sources up to over 65%**

By acquiring the "Radiation Sources" business unit from the US DuPont Pharmaceutical Company, Eckert & Ziegler AG will increase its world market share in the field of nuclear medicine reference sources from 30% at present to over 65%. This means that significant economies of scale can be exploited in the core Industrial and Nuclear Medicine Radiation Sources business area. Following this acquisition the plans are to concentrate reference source activities at the Californian subsidiary "Isotope Products Laboratories" (IPL). Up to now IPL has held roughly 30% of the world market in this segment. According to Eckert & Ziegler, sales at the Los Angeles site would roughly double whereas expenditure would only increase by half.

**Excellent negotiating position and distinguishing features guarantee market leadership in reference sources**

With this acquisition Eckert & Ziegler will be able to permanently improve its position in the reference sources market and to strengthen its negotiating position long term as a primary equipment supplier in relation to the other producers of medical imaging techniques. The products taken over from DuPont have exclusive licenses with numerous licensing authorities. Due to the fact that the acquisition entails a ten year competition ban on the part of the seller, Eckert & Ziegler can concentrate in the coming years on maximising its distinguishing characteristics.

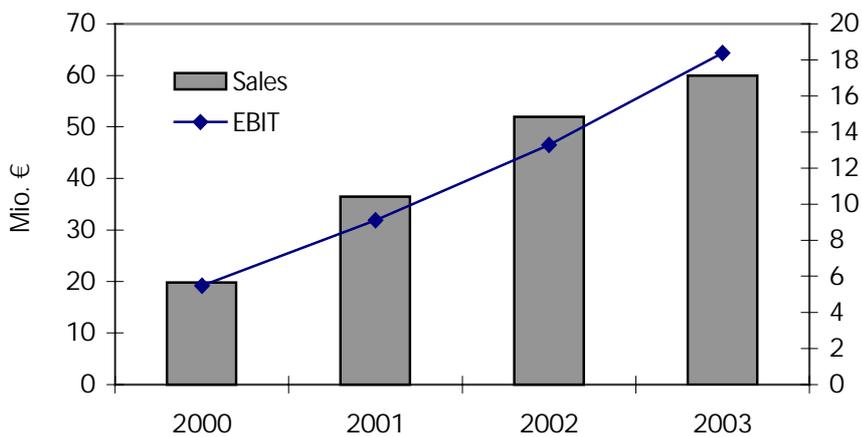
**The core fields of Cardiology and Oncology have average growth of 170% and 25% respectively**

Eckert & Ziegler develops and produces radiation sources for medical technology devices in the rapid-growth cardiology and oncology markets. Brachytherapy areas for the treatment of restenosis and cancer of the prostate are of prime interest to the company. According to a study carried out by SG Cowen these areas can achieve average growth rates of 170% and 25% respectively over the next three years. As a result of Eckert & Ziegler's strong position it can claim a disproportionate share of the market growth for itself and generate high sales and revenue growth.

Eckert & Ziegler AG increased its sales in 1999 to € 9.9 million, 480% higher than the previous year, and enjoyed income of € 0.11 per share (DVFA) in its first year on the stock market. In the next four years Eckert & Ziegler plans to grow by an average of 45% per year and generate sales of just under € 60 million in 2003. Given the strong position and the first rate development competence we believe the Board's plan to post an EBIT of € 17 million in 2003 (1999: € 1.1 million) is entirely realistic.

**Major increases in sales and profits possible**

**Eckert & Ziegler plans a major increase in sales and profits of over 45% p.a. (CAGR)**



Source: Eckert & Ziegler

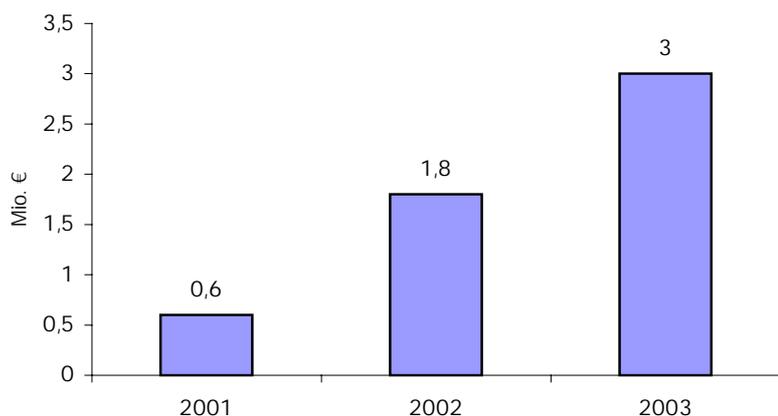
## Business performance since the IPO

**Creation of a company to produce medical robots is intended to increase the company's value adding potential in radiology**

Eckert & Ziegler AG was introduced as a highly innovative life science share to the Neuer Markt of the Frankfurt Stock Market on May 25, 1999. During the course of the last year the company attracted attention with numerous announcements of new contracts, partnerships, investments and product improvements.

In July 1999 Eckert & Ziegler set up a company together with the renowned German medical robot specialists Prof. Dr. Tim Lueth (Krupp Prize Winner 1999) and Prof. Dr. Bier, head of the Clinic for Oral and Facial Surgery in the "Charité" in Berlin, to develop and manufacture robots. Eckert & Ziegler AG is 80% owner of the newly founded "JOJUMARIE Intelligente Systeme GmbH". Over the next five years roughly €2.6 million is to be invested in the development and production of work platforms for robot systems which are intended to make radiological and surgical procedures even more precise and patient-friendly than was previously possible. According to Eckert & Ziegler, robots permit a significant increase in quality in radiology as they allow optimum implantation of radioactive components (seeds) into diseased tissue during operations involving image processing and navigation systems. In making this move Eckert & Ziegler intends to strengthen its technological competence in the integration of microsystems engineering, electronics and software and, in the medium term, substantially increase its value-adding potential in the radiological field. The aim is to generate €20 million of extra business volume, with €5.4 million by 2003.

**JOJUMARIE GmbH (robotics) to contribute to sales growth for first time in 2001**



Source: Eckert & Ziegler

**Investment in a sales company to raise European sales**

At the end of last year the company acquired a 25% share in "ISOTO-PEN DIENST Blaseg GmbH". This company has specialised in distributing radioactive components and the aim is for it to increase Eckert & Ziegler's sales of industrial radiation sources in Europe in the future.

On July 7, 1999 came the CE approval within the European market for iodine seeds as active implants for the treatment of prostate cancer. Until then the company had predominantly developed and distributed these seeds for the US market. The European approval means that Eckert & Ziegler now has access to the second largest market in the world for the treatment of prostate cancer after the USA. Local irradiation with radioactive iodine 125 is much more effective, cheaper and less aggressive than conventional methods as its low-energy radiation only destroys the tumour cells and not the surrounding tissue. The great demand coming in from hospitals is proof of the product quality and means that Eckert & Ziegler AG has enormous sales and revenue potential here.

**European CE approval for iodine opens up enormous sales and profit potential**

A long term development partnership was set up with the California-based medical equipment manufacturer "Radiance Medical Systems" (RMS) in August 1999 to develop a new type of device for treating narrowing of the arteries. Under this agreement Eckert & Ziegler will receive investment sums from RMS to undertake the entire European production and optimisation of the production technology. In return RMS may use Eckert & Ziegler's isotope know-how and the key patents. If this partnership succeeds, Eckert & Ziegler AG could considerably increase its sales volume and, according to the company's own figures, achieve a 25% share of the market in Europe.

**Development partnership with considerable growth potential**

In June 1999 a globally valid five year framework agreement was signed with a leading American medical equipment corporation. The agreement covers the development, production and distribution of palladium seeds which are used for the indication of prostate cancer. This agreement is worth €43 million and will speed up the world-wide distribution and marketing of miniaturised radiation sources, yielding even faster growth in this segment than was planned at the time of the IPO.

**Framework agreement enables world-wide distribution and marketing of radiation sources to treat prostate cancer**

A further framework agreement was signed in September 1999 with a leading European manufacturer of radiation units for the development and production of radioactive components for cancer treatment. The agreement covers a sales volume of €12.8 million and includes the development of miniaturised radiation sources and accompanying production technology. The components should go into production in a second stage in 2001. This framework agreement confirms Eckert & Ziegler's very strong position in the innovative isotope technology market and ensures long term participation in the potential of the growing oncology and cardiology markets.

**Development agreement will enable series production of radioactive components in 2001**

**Slice of three-figure growth in relevant cardiology market guaranteed by isotope supply agreement**

In November 1999 Eckert & Ziegler received a large order for iridium sources from the US Varian Corporation and the Johnson & Johnson subsidiary Cordis for the development of a new heart technique aimed at preventing restenosis. The five year agreement worth €5 million envisages the creation of substantial production and service capacities in Berlin and the manufacture of several hundred thousand low-level radiation components. The agreement is not only testimony of a global player's faith in the life science unit, it also secures Eckert & Ziegler an excellent starting position for cardiology applications. According to SG Cowen, this unit will generate growth rates of around 140% over the next three years as low-level irradiation of the inner vascular wall can lead to a 50% reduction in restenosis (recurrence of narrowing of the arteries).

**1999 financial year successful with over 400% growth in sales**

As a result of the continuing high level demand for low-level radioactive components for therapeutic purposes, especially for the treatment of heart disease and prostate cancer, Eckert & Ziegler AG enjoyed above-average growth in the 1999 financial year. Sales increased by over 480% on the previous year to €9.9 million and the result from ordinary activities rose from €0.04 million to €1.2 million. This led to a result of €0.11 per share (DVFA) in 1999. However, the sales and profit targets had to be revised downwards in October 1999 in relation to plans stated at the time of the IPO, as the result of delays in starting up a production line. Now that the problems have been resolved and given the growth potential referred to above, the target figures for 2000 have not been affected by these delays.

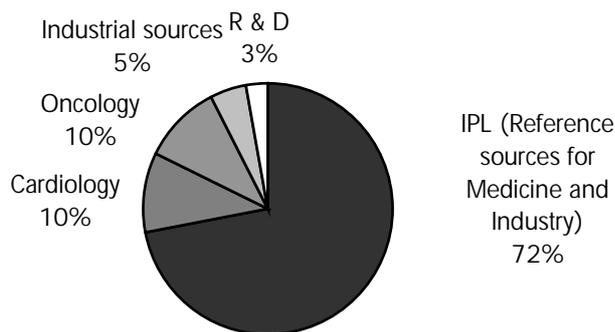
**Acquisition of DuPont business unit doubles market share in nuclear medical radiation sources**

Through the acquisition of a US competitor, Eckert & Ziegler AG is significantly strengthening its market position in the nuclear medicine reference sources unit in 2000. Acquiring the "Radiation Sources" unit from the DuPont Pharmaceutical Company in Boston will raise Eckert & Ziegler AG's share of the world market in this segment from 30% to over 65%.

**Full integration of the division into IPL yields substantial economies of scale**

Because of the overlapping product ranges this new division can be fully integrated in the California-based Isotope Products Laboratories Inc (IPL) subsidiary. According to the company's own information this will lead to considerable economies of scale in the production of comparable products in the core business area of industrial and nuclear medicine radiation sources. IPL already has a roughly 30% share of the world market with its products in this area. In the last financial year IPL accounted for the largest proportion of sales in the Eckert & Ziegler group at 72%.

**The Californian subsidiary IPL yielded by far the greatest proportion of sales in 1999**  
 Total 1999: € 9,9 million

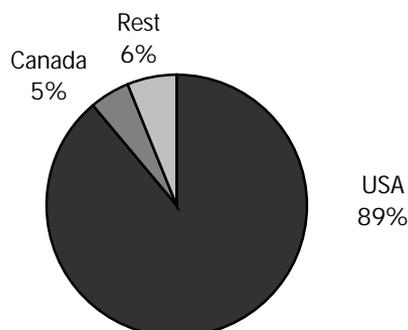


Source: Eckert & Ziegler

The purchased objects include immaterial goods (rights, brand names, customer contracts), production equipment and the company's materials and supplies. As its reason for selling, DuPont cited above all the unfavourable size of the division depriving the group of any economies of scale. In addition, in recent months DuPont has lost a major distributor to Eckert & Ziegler AG. The purchase of the DuPont Worldwide Source Business Unit, which produced mainly for the US sales market in 1999, is to be financed by a capital increase of 200.000 shares in June 2000. This corresponds to a ratio of 12:1.

**Acquisition financed by capital increase**

**USA was top sales market for the Dupont "Radation Sources" business unit in 1999**  
 Total sales 1999: US \$ 8.3 million



Source: DuPont

## Market for low-level radioactive components

**Increasing demand through improvements of diagnostic methods and innovations in medical technology**

In the last few years there has been a global increase in demand for low-level radioactive components for therapeutic purposes. This demand is due to a number of factors. The main reason is the far-reaching improvements in diagnostic methods arising from new molecular-medical techniques. With many types of cancer, tumours can now be recognised at a much earlier stage thereby obviating the need for surgery. The use of miniaturised radiation sources represents a lower cost and more patient-friendly alternative to surgery. Reports of successful use in cardiology are giving rise to increasing demand for low-level radioactive components. Studies indicate that short courses of local radiation therapy to the inner walls of arteries can effectively prevent restenosis after angioplasty. As soon as the appropriate licenses have been granted a market potential of \$US 36 million will open up in Europe alone in 2001 (source: SG Cowen 1999), from which the development and production partners Novoste and Eckert & Ziegler stand to benefit most.

**Oncology**

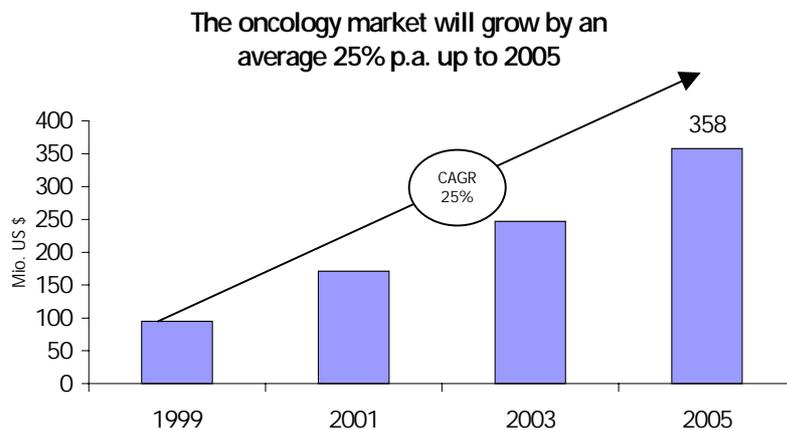
Today over one hundred types of cancer are known to medicine. The most common types are lung cancer, breast cancer, stomach cancer and prostate cancer. Cancer has advanced to become the second most common cause of death; over one third of all people die from the effects of cancer. However, if cancer is identified at an early stage there is now a whole range of treatment methods which offer good prospects of recovery.

**Ruthenium applicators regarded as most successful remedy for eye cancer**

Roughly 75% of all eye cancer patients are currently treated with the Ruthenium method in Europe. Up to now it has been regarded as the most successful treatment for retinoblastoma (eye cancer). Eckert & Ziegler AG is the only provider of Ruthenium applicators on the global market. Despite being the technology leader in this field, growth is, however, limited as retinoblastomas only develop in 1 in every 25,000 head of population.

**Prostate cancer market to grow on average by 25% to \$US 358 million in 2005**

Possible treatment methods for prostate cancer include surgical removal, external radiation and brachytherapy. Brachytherapy involves the introduction of iodine seeds, such as those developed and produced by Eckert & Ziegler. These then irradiate the tumour for a certain period of time. The frequency with which this therapy is performed will increase according to the European Cancer Research Institute, as it represents a lower cost and, above all, a much less aggressive treatment option. Following a 50% increase in the rate the Institute predicts continual growth of 20% each year up to 2005. The market potential will increase from \$US 95 million in 1999 to an estimated \$US 358 million in 2005.



Source: Europäisches Krebsforschungsinstitut

World-wide, roughly one million people undergo angioplasty each year to dilate narrowed and closed coronary vessels, to ensure that the blood flows properly and that the heart is receiving sufficient oxygen. According to a study conducted by the University of Chicago Cardiology Department roughly 30% of these patients suffer a relapse (restenosis).

At present there is no medication which is internationally recognised for the prevention of restenosis. In recent years inserting stents has become established as a means of preventing restenosis. Stents are small metallic vascular supports which are inserted into the artery using a catheter. Although roughly 50% of patients in Europe and the USA are supplied with stents, their use is contentious as they can cause a high degree of cell proliferation. In the USA Johnson & Johnson is currently the market leader in the field of stent implants during angioplasty because its product is the only one currently approved by the FDA (U.S. Food & Drug Administration) for the US market. Balloon dilatation (angioplasty) yields a total global volume of roughly \$US 15 billion. According to surveys carried out by SG Cowen in 1999, stents account for \$US 2 billion of this volume.

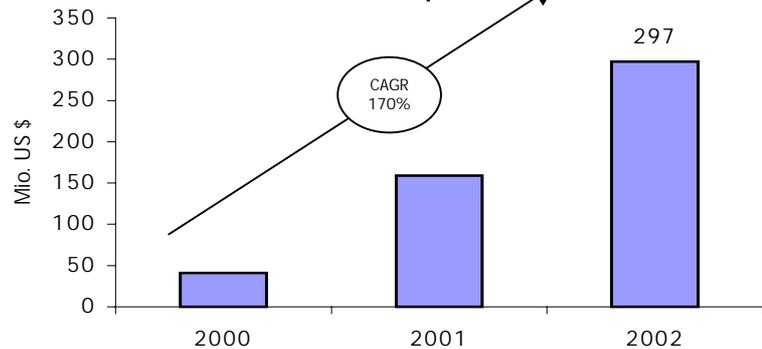
Many physicians regard local radiation (brachytherapy), for which Eckert & Ziegler manufactures the necessary strontium sources, as an alternative to implanting stents for the prevention of restenosis. Following dilatation by the balloon, brief irradiation of the vessels with beta rays can prevent their re-narrowing. Experts are predicting that due to its high degree of effectiveness beta radiation will become well established in the coming years. According to the SG Cowen study conducted last year, a market potential of \$US 41 million will open up in the US and European markets. In the next two years the market for restenosis treatment will increase to \$US 297 million, representing an average growth rate of 170%.

## Cardiology

**Despite 50% share of restenosis prevention market, stents remain controversial**

**If beta radiation takes off, a market volume of \$US 41 million (2000) and a CAGR of 170% are estimated in the coming years**

Relevant cardiology market to grow by 170% p.a.



Source: SG Cowen 1999

**Science and Industry market with 3-5% growth p.a.**

According to figures published by the DuPont Pharmaceuticals Company the market for reference sources in the USA grew by 3-5% in each of the last few years, reaching a volume of \$US 12 million in 1999. DuPont estimates the US market for industrial sources at \$US 6.7 million with an annual growth rate of 4%. For the next few years we therefore calculate global growth of 3-5% in IPL's relevant business areas.

**Radiobiology and radiopharmaceuticals open up further growth potential**

Additional growth areas which Eckert & Ziegler could profit from include radiobiology and radiopharmaceuticals. The emphasis here is on developing new technologies in the fight against tumour-related diseases. In radiology, according to the company's own estimates, the coupling of antibodies with isotopes could create a market volume of \$US 250 million in the western industrialised countries. Radiopharmaceuticals includes such products as contrast media which are used for X-ray images and new types of antibody-based radio therapies. This market is estimated to be worth roughly \$US 1.3 billion. As the result of the high market entry barriers companies which are already established in this sector such as Eckert & Ziegler are accorded good prospects for the future by being able to service this growth segment.

## Competitors

Eckert & Ziegler Strahlen- und Medizintechnik AG distinguishes itself clearly from its rivals in the field of radioactive components with its wide range of products. Whereas Eckert & Ziegler has positioned itself as an integrated provider of low-level radioactive sources for medical engineering and industrial applications, most of the competitors have focussed on specific areas.

In the treatment of prostate cancer through the implanting of seeds, there are only three notable competitors: Nycomed Amersham (GB), Theragenics and National American Scientific (both USA). Whereas Amersham owns the global license for iodine seeds, the palladium and iodine products of Theragenics and National American Scientific (NASI) have only been approved for the US market.

Eckert & Ziegler AG and its co-operation partner Novoste Inc. from the USA are currently the only providers of beta radiation for the prevention of restenosis. Novoste is the global market leader in the production of intracoronary radiotherapy devices. The company's own system is a catheter-based insertion system which channels beta radiation to the interior of a blood vessel. Eckert & Ziegler provides essential parts of this system, which is currently the only one of its kind with EU approval.

The Johnson & Johnson group is not only the largest in the world, it is also the most diversified in the medical technology industry. The company holds the leading position in the field of balloon-tipped catheters in the USA, and, with its "PALMAZ-SCHATZ", owns the only article approved by the FDA for reducing restenosis. Otherwise, on account of its extensive range of products, Johnson & Johnson is not a direct competitor to the radiation technology specialists Eckert & Ziegler.

By acquiring the "Radiation Sources" business unit from the DuPont Pharmaceutical Company, Eckert & Ziegler has improved its market position in the field of nuclear medicine reference sources. Here the group is basically targeting the global diagnostic market. Companies such as Schering and Siemens from Germany and Mallinckrodt and General Electric in the USA are the key players in this dynamic field. In our opinion Mallinckrodt is the only one of these companies which holds any significance as a competitor. The company mainly sells products for the diagnosis and treatment of illnesses and is currently developing a balloon filled with beta radiation sources to be used to treat restenosis. They plan to launch this product onto the market in two years at the earliest in the USA.

### Three "Seeds" competitors

**Novoste and Eckert & Ziegler - forerunners in use of beta radiation to combat restenosis**

**Johnson & Johnson is the largest medical technology company in the world**

**Competitors in the global diagnosis market are developing new identification and treatment methods**

**High market entry barriers  
keeping down numbers of  
competitors**

Any market launch for new companies in the field of radiation and medical technology is made difficult for potential newcomers by the high technical demands and extensive investment which is necessary. For this reason we believe that the number of competitors in Eckert & Ziegler's markets will remain strictly limited in the future.

## Company Profile

Eckert & Ziegler Strahlen- und Medizintechnik AG is one of the leading international specialists in the development and manufacture of low-level radioactive sources for measurement or medical technology applications. The joint stock company functions as a holding company for numerous subsidiaries; principal among these is BEBIG GmbH.

### Group structure



The main thrust of the business strategy is development and production for leading medical technology groups. Eckert & Ziegler has an extensive value creation chain divided into four parts: Development, Market Launch, Contract Manufacturing and Services.

Eurotope GmbH is responsible for the development of products in Germany. The manufacturing process is validated here and small runs are produced for clinical trials. According to the company's own figures, development costs in the form of Eurotope's operating costs are on average nine percent of the total turnover and operating results of the holding company.

The second link in the value creation chain, Market Launch, covers the transformation of the laboratory versions into commercially feasible production runs. This includes constructing production equipment, obtaining licenses and approvals and designing and licensing suitable transport packaging.

Contract Manufacturing covers the manufacture and distribution of marketable products. In addition to the manufacture of radiation sources this includes installing the sources into medical devices and exporting the devices world-wide.

### Basic strategy

### Growth

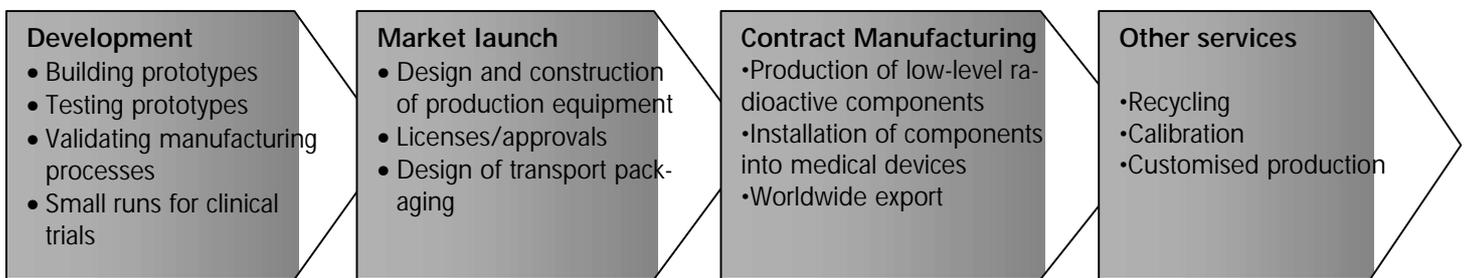
### Market Launch

### Contract Manufacturing

**Services**

Additional services such as the recycling of radioactive components, the manufacture of calibration sources for quality assurance and the production of radiation sources for measuring purposes completes the extensive range of services provided by the company.

**Value creation chain**

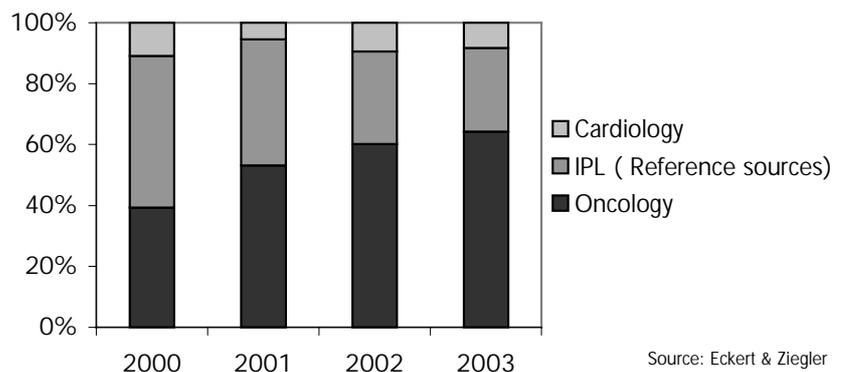


Source: Eckert & Ziegler

**Business Units**

Eckert & Ziegler is globally well positioned in the growth market of radioactive sources through its subsidiaries and numerous partnership agreements with renowned life science companies. The individual business units of the joint stock company can be assigned to the Oncology, Cardiology, Science + Industry and Other Medicine segments. Oncology will be of major importance in the next few years, as will Cardiology and the reference sources produced by the IPL subsidiary for the Science + Industry segment.

**Oncology's share of sales to increase significantly by 2003**



Eckert & Ziegler AG has been active in the field of eye cancer treatment since 1984. Metals treated with a ruthenium source and applied to the eye socket are a standard product designed to locally combat tumours. The fact that these eye applicators have become so well established, as used for example for the treatment of retinoblastoma, means that the company enjoys a monopoly position in Germany.

Eckert & Ziegler has developed metal rods in which radioactive isotopes (seeds) are deposited and welded for the treatment of prostate cancer. These iodine seeds are implanted directly into the carcinoma in the patient's body, causing neither scatter effects nor high level radiation doses for the patient.

At Eckert & Ziegler the cardiology segment covers the manufacture of radioactive sources for the treatment of cardiovascular disorders. Deposits in the coronary vessels, e.g. in the form of cholesterol and other fats, can lead to constriction which impedes the bloodflow and the oxygen supply to the heart. In partnership with the US company Novoste the company has developed strontium sources which prevent the reconstruction of heart arteries following artificial widening by means of balloon dilatation.

The sphere of business of the IPL subsidiary, into which the recently acquired business unit of the DuPont pharmaceuticals company has been integrated, is chiefly the development and production of nuclear medical reference sources and applications for research and industry. In 1999 the sales ratio of Nuclear Medicine to Research & Industry was 60:40 in the DuPont business unit, similar to IPL. The nuclear medicine reference sources are used by hospitals in all industrialised countries to check the functioning and calibration of gamma cameras or PET (positron emission tomography) scanners. These devices are the basis of imaging techniques which use new products to generate innovative diagnosis methods.

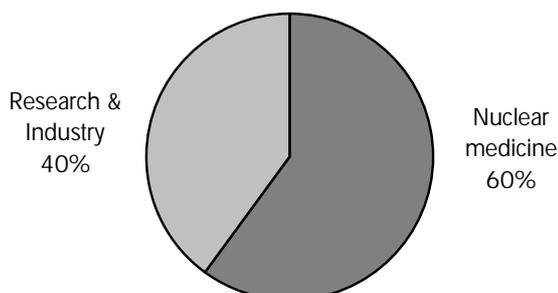
**Treatment and control of eye and prostate cancer in oncology segment**

**Therapy and prevention in treatment of restenosis in cardiology**

**After integration of DuPont business unit, IPL strengthens its position as a specialist in nuclear medical reference sources**

**Nuclear medicine accounts for majority of sales in newly acquired business unit**

Total sales 1999: US \$ 8.3 million



Source: DuPont

**Industry products mostly used in measurement technology and quality assurance**

In the industrial sector the main products are americium, caesium and krypton sources which are used, for example, for measuring density, thickness or fluid levels. Major customers include such global market leaders as BASF, Siemens, Bertrand from Germany, Yokogawa from Japan or Schlumberger, Honeywell and Halliburton from the USA. The technical sources produced by Eckert & Ziegler AG are used above all in measurement technology and quality assurance in industry and science.

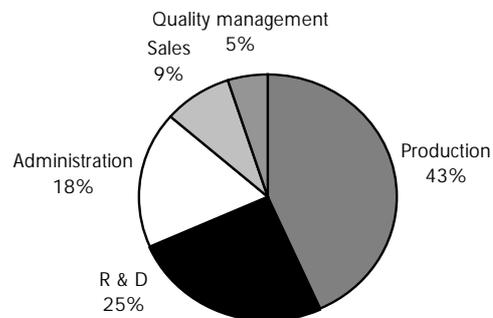
**Other Medicine as additional business**

The Other Medicine business unit sells accessories for the radiation sources manufactured by Eckert & Ziegler, e.g. eye screens, dummies or software for using radiation sources in industrial applications. This segment should be regarded as a secondary business activity; sales of these goods on average account for only one percent of total sales.

In the financial year just ended the breakdown of employees in the various business units was as follows:

**Production and R & D are business units with most employees**

Total number 1999: 139



Source: 1999 Financial statement

## Strengths

Eckert & Ziegler heads the technological field as the result of many years of experience in developing low-level radioactive components.

**Technological leadership through excellence of development competence**

From the outset Eckert & Ziegler has recognised the necessity of an international outlook and has developed its business strategy accordingly. The company offers an integrated range of products and services and it is unrivalled in the field of low-level radioactive components.

**Integrated range of goods and services plus international orientation as distinguishing features**

By acquiring the DuPont business unit Eckert & Ziegler will have a world market share of 65% in nuclear medicine reference sources, representing a virtual monopoly.

**Market leadership in nuclear medical reference sources**

In recent years Eckert & Ziegler AG has concluded partnership agreements with the world's leading medicine technology manufacturers including such companies as the Varian Corporation and Cordis, the Johnson & Johnson subsidiary. These agreements give the company an excellent position in the market as these partners generally assume a considerable proportion of the investment risk through partial financing.

**Partnership agreements reduce investment risk**

In Eckert & Ziegler's chosen market the market entry barriers are very high as development and production are technically highly sophisticated and capital intensive and the licensing procedure is very costly.

**High market entry barriers for potential competitors**

## Weaknesses

**Reliance on Chairman, Dr. Eckert**

The company's success is based largely on the extensive business connections of the Chairman of the Board of Management, Dr. Eckert, to medical equipment manufacturers. The contractual relations to the American companies are due in no small part to Dr. Eckert's mediating skills. If he left the business this could have lasting effects on the company's fortunes.

**Overwhelming product concentration in field of medical radiotherapy**

All of Eckert & Ziegler's main products are to be found in the area of medical radiotherapy. Research success in alternative treatment methods such as chemotherapy could considerably reduce the company's growth potential.

**Reliance on established development team**

The continuing growth of the business depends to no small extent on the development competence of the company's scientists and the Board management under Jürgen Ziegler. If these experienced staff members were to leave Eckert & Ziegler this would leave a gap which would be very difficult to fill.

## Risks

Eckert & Ziegler AG trades in a market in which the success of newly developed products depends largely on the level of acceptance they find with doctors. Success in clinical trials is by no means a guarantee of market success. New and further developments first need to prove themselves in the face of existing applications and treatment methods.

**Acceptance of new and further developments by market is crucial**

Despite extensive accident prevention measures there remains the risk of a radiation accident which could result in considerable damage claims. In the event of an accident the further growth of the company could be jeopardised by the loss of image.

**Risks associated with handling radioactive materials**

The raw materials market for radioactive materials is generally not regarded as transparent. The joint venture with the Russian supplier, the V.G. Khlopien Radium Institute, guarantees reasonable market prices as long as the political situation in Russia remains stable.

**Raw materials market not transparent**

## Opportunities

The strong position in the low-level radioactive component market allows Eckert & Ziegler to take a disproportionately large slice of the predicted growth in the fields of cardiology and oncology. According to a survey conducted by SG Cowen, the market volume in the next three years will increase by an average of 170% and 25% in the cardiology and oncology segments respectively.

**Long-term participation in growth in relevant markets possible**

Doctors regard local radiotherapy (brachytherapy) as a highly promising alternative to implanting stents in the battle against restenosis. The partners Eckert & Ziegler and Novoste are currently the only suppliers of beta sources which are suitable for this therapy. If this method continues to establish itself there will be considerable additional profit potential for the company.

**Acceptance of beta sources for prevention of restenosis yields considerable income potential**

## Financial section

### Profit and loss account for 1999 business year Eckert & Ziegler group

	1999 EUR	1998 EUR
Sales revenues	9.896.197,09	1.714.161,56
Increase (decrease) in finished goods inventories and work in progress	500.158,68	-31.120,30
Capitalised cost of self-constructed assets	2.286.638,91	2.460.848,01
Other operating income	1.717.287,70	1.148.963,80
	<b>14.500.282,38</b>	<b>5.292.853,07</b>
Cost of materials		
Cost of raw materials, consumables and supplies and of purchased materials	-3.135.920,58	-1.525.535,88
Cost of purchased services	-395.448,71	-141.560,28
	<b>-3.531.369,29</b>	<b>-1.667.096,16</b>
Personnel expenses		
Wages and salaries	-4.437.191,76	-1.331.027,86
Social security and other pension costs	-549.209,05	-242.209,74
	<b>-4.986.400,81</b>	<b>-1.573.237,60</b>
Depreciation of intangible fixed assets	-1.636.709,33	-645.602,41
Other operating expenses	-2.916.025,01	-1.246.179,36
Expenses from associated companies	3.700,18	-233,66
Income from loans of financial assets	11.042,31	12.971,55
Other interest and similar income	223.455,53	38.931,90
Interest and similar expenses	-505.767,41	-175.643,02
Result from ordinary activities	<b>1.162.208,55</b>	<b>36.764,31</b>
Extraordinary expenses	-1.479.998,31	0,00
Taxes on income and profit	-177.338,60	0,00
Other taxes	-14.577,00	0,00
Net income/net loss for the year	<b>-509.705,36</b>	<b>36.764,31</b>
Shares of third parties in net loss	2.278,00	0,00
Profit carried forward from previous year	273.472,51	236.708,20
Balance-sheet profit	<b>-233.954,85</b>	<b>273.472,51</b>

Source: 1999 Financial Statement

## Valuation

For the evaluation of Eckert & Ziegler AG we have decided to use the relative evaluation procedure based on market value/sales and enterprise value/sales factors. The evaluation of Eckert & Ziegler AG is based on the ratio of market capitalisation and market capitalisation taking the net indebtedness into consideration, to the 2001 sales predictions of the selected companies.

For the peer group we have taken companies which are most comparable to Eckert & Ziegler in terms of growth, specialisation and company size. However we have deliberately omitted larger companies which have business relations to Eckert & Ziegler as their size and fundamental data makes them unsuitable for comparison. The peer group selected for Eckert & Ziegler consists of the following companies:

aap Implantate AG was founded in 1990 and has been quoted on the Neuer Markt since May 1999. It produces orthopaedic and surgical implants for broken bones and special surgical tools.

**BioMarin Pharmaceutical Inc.** develops carbohydrate-enzyme therapies to alleviate life-threatening chronic genetic disorders and other diseases. The company has been listed on the stock exchange since 1999.

The **Endosonics Corporation** develops ultrasound imaging systems and catheters to aid the diagnosis and treatment of coronary and peripheral blood vessel disease.

**International Isotopes Inc.** produces radiopharmaceutical products, radio isotopes for the diagnosis and treatment of different types of cancer and other diseases. The company is Eckert & Ziegler's main rival in the iodine 125 seeds market for the treatment of prostate carcinomas.

The **Novoste Corporation** develops and produces devices for conducting intracoronary radio therapy (ICRT). The Beta-Cath™ system developed by the company is a catheter-based guidance system which channels beta radiation to the interior of a blood vessel by means of stents. Eckert & Ziegler supplies parts of this system.

Founded in 1998, PlasmaSelect AG was first offered on the Neuer Markt in March 2000. It develops and manufactures medical systems for the extracorporeal elimination of pathogenic substances in the blood.

### Valuation procedure

### Peer group selection

#### aap Implantate AG

#### BioMarin Pharmaceutical

#### Endosonics Corporation

#### International Isotopes

#### Novoste Corporation

#### PlasmaSelect AG

### Rösch AG Medizintechnik

**Rösch AG Medizintechnik** was founded in 1990 and was floated on the Neuer Markt in February 2000. The company develops and produces medical equipment such as the Viola™ camera system, "The Wand" - a local anaesthetic system for dental use - and INJEX™, an injection system.

### SciClone Pharmaceuticals Inc

**SciClone Pharmaceuticals Inc.** specialises in the development and distribution of treatments for chronic and life-threatening conditions such as hepatitis B and C, cancer and immune system diseases.

### SuperGen Inc

**SuperGen Inc.** acquires, develops and markets products for the treatment of diseases, especially cancer and blood cell diseases.

### Theragenics Corporation

The **Theragenics Corporation** develops, produces and markets radio-logical pharmaceutical products for the treatment of cancer. Its main product, TheraSeed® is used in the early stages of treating cancer of the prostate.

all figures in €	Av.Price	Shares	Number	Net	MCap	Sales (m)	CAGR Sales	EPS	MV/Sales	EV/Sales
Peer-Group	5/22.-29.	(m)	Employ.	debt	(m)	2001e	1999-2001e	2001e	2001e	2001e
aap Implantate AG	16,3	3,8	82	-2,8	62	24,0	+94%	0,67	2,58	2,70
BioMarin Pharmaceutical	20,32	34,8	149	-22,4	708	27,1	+94%	0,00	26,15	26,98
Endosonics Corp	4,8	17,6	417	-5,0	85	75,9	+26%	0,36	1,12	1,19
International Isotopes Inc	6,2	9,6	140	13,9	59	46,1	+255%	0,47	1,29	0,98
Novoste Corp	43,7	14,2	118	-7,0	620	39,9	+370%	-1,01	15,54	15,72
PlasmaSelect AG	69,7	11,3	-	15,4	785	54,1	+181%	2,00	14,51	14,22
Rösch AG	60,4	4,8	24	1,0	290	43,5	+214%	1,30	6,66	6,64
SciClone Pharmaceuticals	9,1	30,4	46	-1,8	276	28,0	+73%	0,52	9,88	9,94
Supergen Inc	26,3	28,3	77	-22,4	743	99,4	+359%	-0,62	7,48	7,70
Theragenics Corp	9,0	29,5	190	-18,6	265	81,4	+37%	0,86	3,26	3,49
<b>Average</b>					<b>389</b>	<b>51,9</b>	<b>+170%</b>	<b>0,46</b>	<b>8,85</b>	<b>8,96</b>
<b>Adjusted average</b>									<b>8,56</b>	<b>8,63</b>
<b>EZAG Current Data</b>	<b>90,3</b>	<b>3,0</b>	<b>40</b>	<b>-11,9</b>	<b>271</b>	<b>36,5</b>	<b>+92%</b>	<b>1,33</b>	<b>7,42</b>	<b>7,75</b>
<b>New valuation EZAG per average in €m<sup>1</sup></b>									<b>322,9</b>	<b>315,0</b>
<b>New valuation EZAG per adj. average €m<sup>2</sup></b>									<b>312,4</b>	<b>303,1</b>
<b><sup>1</sup> Price per share in €</b>									<b>107,6</b>	<b>105,0</b>
<b><sup>2</sup> Price per share in €</b>									<b>104,1</b>	<b>101,0</b>

Source: Eckert & Ziegler, Reuters, Bloomberg, Wright, own estimates

### Valuation - summary

We have restricted ourselves to the key sales indicators as these are largely companies in a very early phase of growth with very low or negative predictions for 2001. The result of our evaluation is a price range per share of between € 101 and € 107 for Eckert & Ziegler. In comparison to its current market value Eckert & Ziegler shows new potential as the result of the positive business growth.

## Glossary

### Angioplasty

- Common clinical name for a vascular surgery procedure aimed at remedying short sections of vascular constriction

### Dosimetry

- Procedure for measuring radiation dosage

### Invasive

- Penetrating the body

### Isotope

- Isotopes are different types of atom of the same chemical element. They differ in the number of neutrons but generally have the same chemical characteristics. They can have different radioactive effects and can have a radiological effect in a wide range of tissue types and biochemical cycles, making them suitable for use in radiotherapy and diagnosis.

### Cardiology

- Study of the heart and its disorders as a subdivision of internal medicine

### Carcinoma

- Malignant tumour

### Cancer

- Uncontrolled growth of body cells which, if not treated, can have fatal results. Cancer generally leads to colonies of tumours which penetrate normal tissue.

### Oncology

- Study of tumours and tumour-related diseases

### Prostate

- Walnut-sized gland of the male urogenital system. It is located beneath the bladder and surrounds the upper part of the urethra.

### Radioactivity

- The characteristic of certain substances to spontaneously emit radiation when the nucleus is transformed. It can be elementary particles: alpha rays (helium nuclei, 2 protons, 2 neutrons), beta rays (electrons) or electromagnetic rays: gamma-rays (X-rays). Beta and gamma rays have medical uses. Radioactive isotopes disintegrate into stable isotopes which are then no longer radioactive, i.e. the initial quantity of radioactive isotope material steadily decreases. The time it takes for these values to halve remains constant for each individual radioactive substance and this is referred to as the half-life.

### Radiology

- Bombardment with radioactive rays, radiotherapy

### Restenosis

- Repeated occurrence of stenosis

### Seeds

- Small needles or bodies containing radioisotopes, used for radiotherapy

### Stenosis

- Congenital or acquired constriction or narrowing of the blood vessels

### Stents

- Medical devices which are inserted into a blood vessel to prevent stenosis and restenosis

### Scaling-Up

- Translation from laboratory scale production up to full-scale production