

**Festo Didactic**  
Inspiring technical education

**FESTO**











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**Inspiring technical education**

Editor

Dr Wilfried Stoll







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# Education – Knowledge – Innovation

## Prologue





Kurt Stoll



Dr. Wilfried Stoll

Lifelong learning is an essential part of what makes human existence meaningful. Enthusiasm and motivation for continuous learning are preconditions for long-term success, allowing knowledge to turn into skill.

All over the world, education is the foundation of a future worth striving for, and the key to social and economic success – for individuals and entire societies.

But education by itself lacks an important complement: experience. Through the concrete application of knowledge in practice and through continuous learning in the workplace, education is becoming the 21st century's most important economic resource. The power to innovate and the ability to compete are inextricably bound up with learning and knowledge.

In the course of globalisation, technical education in particular has emerged as a key factor in social and economic success. Education and knowledge thus form the foundations of sustainable societal development. They contribute to freedom and prosperity, securing the futures of cities, economies and companies in an increasingly complex environment. At the same time, they contribute to the development of human potential and help create equality of opportunity.

Education is a key element in sustainable development and societal participation – culturally, politically, socially and economically. Technical training and professional development are fuels that power technological progress and success – both today and for coming generations.

But education can only power our future if our fine words are followed up with action. In its Europe 2020 strategy, the European Union estimates that a country needs to invest seven to eight percent its GDP in education and vocational training each year if it is to remain competitive on the global market.

Answers to those challenges can be found at Festo Didactic. Festo Didactic has been developing professional, hands-on educational products and services for technical training and professional development in the field of automation technology, the core business of the Festo Group, for over five decades. That commitment began with pneumatics, a young and fast-moving discipline from the United States whose potential applications had to be explained to German customers. Today not only pneumatics, but also hydraulics, electronics and mechatronics

along with sensor technologies, robotics, CNC and fieldbus technologies determine the range of course offerings.

To be sure that the knowledge Festo Didactic conveys is up to date, its curricula are subject to continuous development. Likewise, its learning centres, teaching facilities and laboratories are continuously modernized to keep pace with technological progress. Maximum productivity in the manufacture of capital and consumer goods calls for a precise selection of methods and tools. The specifics of each country, industry and culture must be considered along with social, methodological and technical criteria. Festo applies that formula for success in cooperation with clients worldwide.

Solutions suggested by Festo Didactic are always tested in-house at Festo before being offered to clients. Each year, over 42,000 people in 176 countries take part in Festo Didactic seminars or receive training in Festo's proprietary training facilities. The trainees, tradespeople and technicians of today become tomorrow's experts. Festo Didactic also partners with technical universities and colleges, vocational and secondary schools, technical training institutes and companies whose training programmes are already established. With model factories that approximate industrial conditions and its MPS® modular production system for industrial automation, Festo Didactic enables highly efficient learning under real-time conditions, conveying knowledge relevant to the technology and its planning, assembly, programming and operation, maintenance and troubleshooting with a focus on practical applications.

We, today, live in the information age and the age of global networks. Facilities and the employment opportunities they offer can only be secured long-term if all employees have access to the best possible training and professional development. Knowledge, as a raw material, provides a decisive competitive edge in the global market. In sectors where work processes are complex, it is the sine qua non of success. But once gained, today's knowledge holds little promise of staying up to date for long. Employees who invest in continuous professional development stand to gain decisively. They enhance their prospects in the labour market – their employability. In the long term, no investment promises greater rewards than a commitment to life-long learning.

Festo firmly believes that it has a “corporate educational responsibility” (CER). Through the Festo Education Fund and many other international, national and regional projects, Festo supports young technical talent and, using its expertise as the global market leader in the field, advocates on behalf of international standards for education, practice-oriented curricula and outstanding achievements in technological fields. But another objective must be to lay the foundations for technological achievement at an early age and kindle enthusiasm for technology among young people. The roots of a country’s competitiveness are its kindergartens and classrooms. Enabling schoolchildren to grasp on the micro level how technology works on the macro level – that is the achievement of Festo Didactic’s MecLab®, a simplified model that allows pupils from the eighth grade upwards to understand automated production lines. Festo also supports the vocational championship WorldSkills in the disciplines of Mechatronics and Mobile Robotics. Exceptional talents from around the world vie for the title of the world’s most skilled. The competition emphasizes teamwork as well as technological competencies. The world’s most promising young skilled workers convene to show what they are capable of once every two years. The 2013 competition will be held in Leipzig.

Be it in the established economies of Europe, the Americas and Asia, or in regions where industry is developing rapidly, Festo Didactic remains an important driving force behind technical education around the world. Emerging markets, notably the countries of Africa, the Middle East and parts of Asia, will offer particularly promising opportunities for future growth. The strategic resources of education, knowledge and innovation are the key for those regions to unlock their potential.

This book is the first to offer a systematic history of Festo Didactic’s success. I would like to thank everyone involved, in particular the many people who granted us interviews and whose recollections – standing in for those of our employees around the world – contained many valuable and vivid remembrances of the road we have taken together. With the management board and the executive committee, each of you has made a decisive personal contribution to the company’s success, ensuring that Festo Didactic today continues its development as the trendsetter in technical education.

Dr Wilfried Stoll



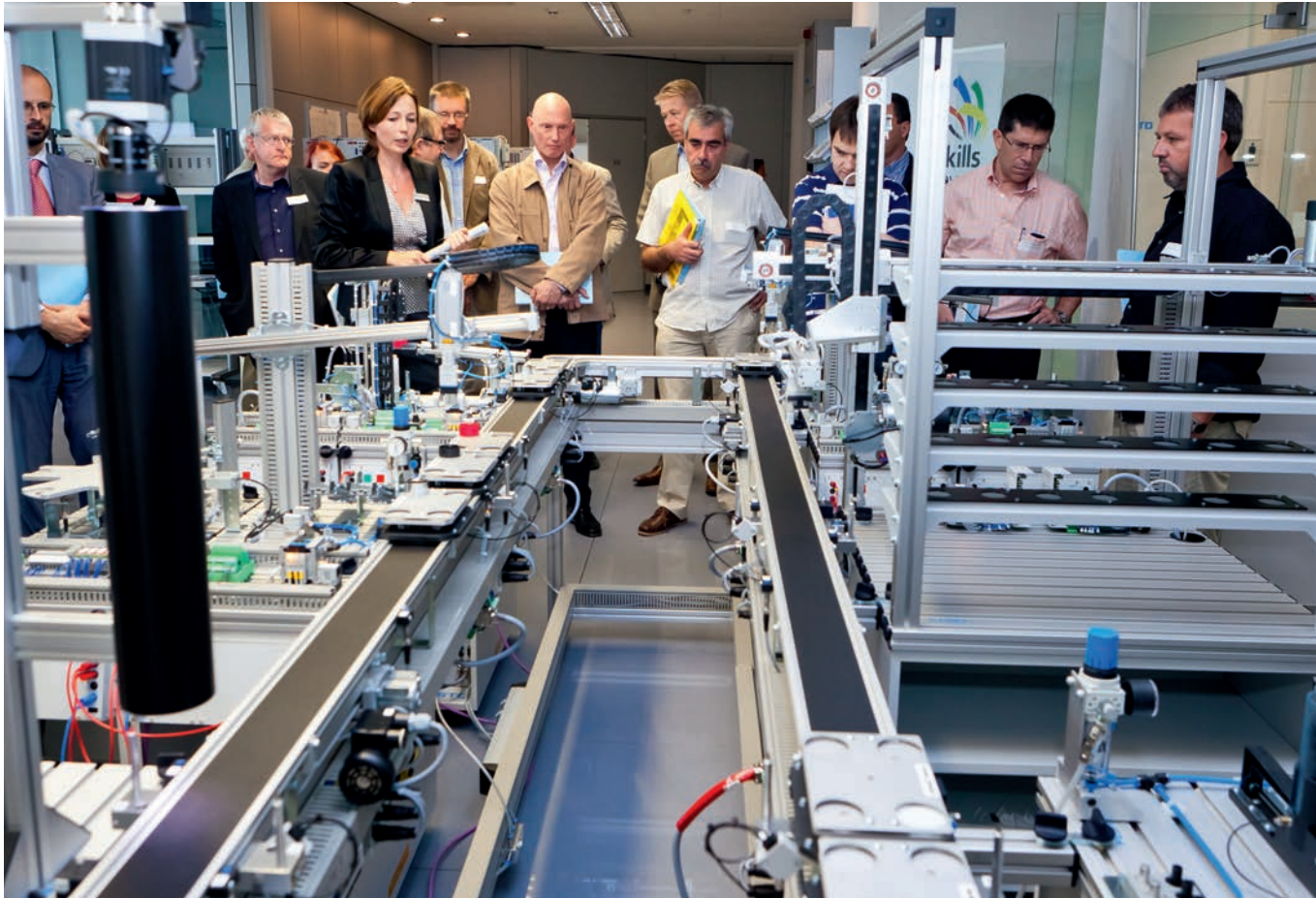






## A Finger on the Pulse of Technology

From “Campus Week”  
to cognitive factory –  
innovation and sustainability  
at Festo Didactic



**Campus Week 2012** Guided tours familiarize participating professors with the capabilities of Festo Didactic's learning factories.

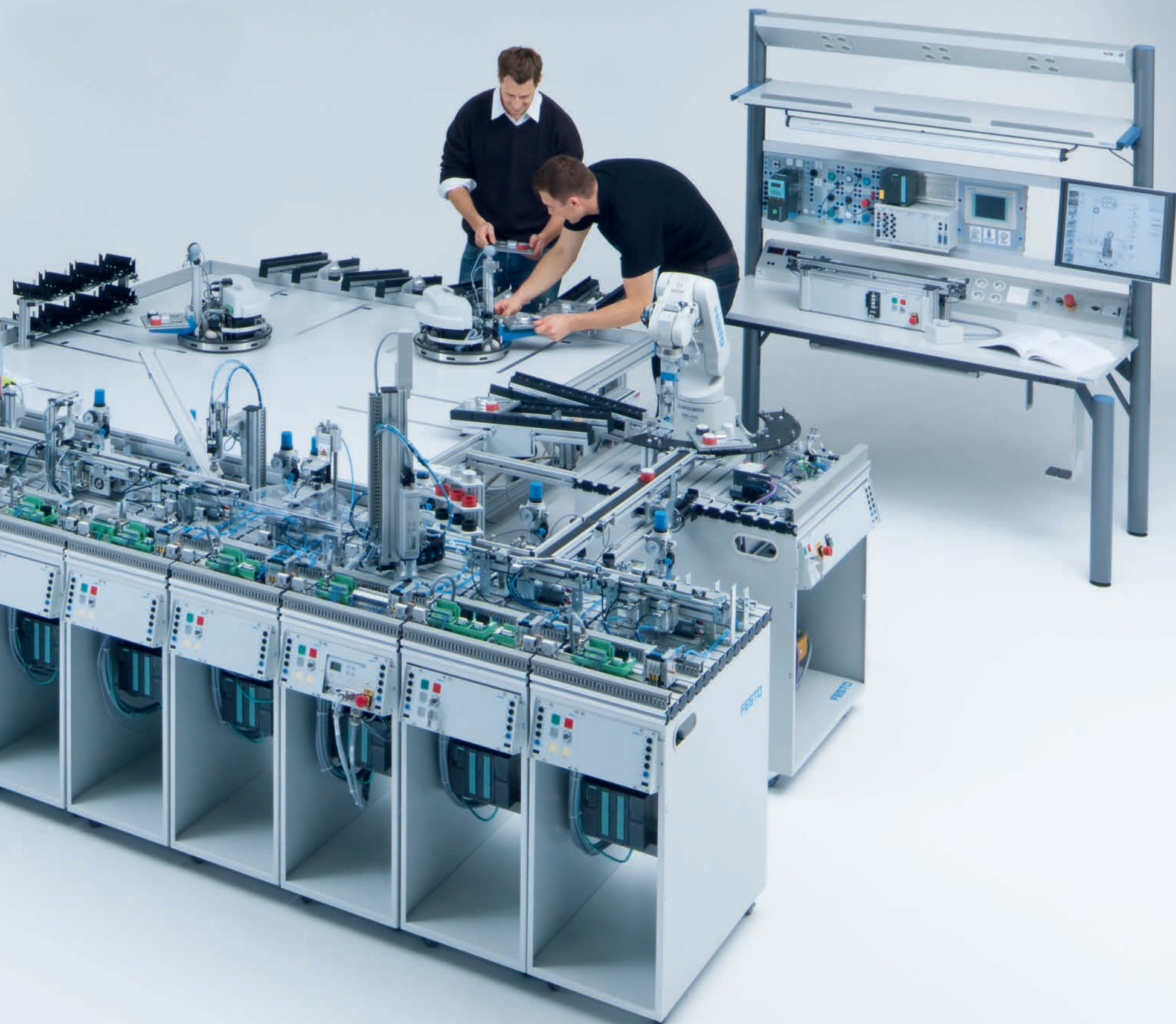


On a sunny morning in June, a double-decker bus heading for Munich pulls out of the car park at Festo Didactic in Denkendorf near Esslingen. On board are eighty university professors from the world over. Visibly excited about their trip, the mechanical and electrical engineers and IT experts from as far afield as Columbia, Korea, Mexico, Poland, South Africa, Sweden, Thailand and the United States are chatting about what awaits them over the next few hours at TU Munich's Institute for Machine Tools and Industrial Management (iwb), one of Germany's top product engineering research facilities. The iwb's "cognitive factory" will show them what cutting-edge automation technology is capable of and what could soon become routine in industrial production. The visitors talk with their colleagues from Festo Didactic, marvel in amazement, observe quietly, take pictures with their mobile phones and digital cameras – and ultimately they swap e-mail addresses with iwb's doctoral candidates.

Two days later, the scene repeats itself at Festo Didactic headquarters in Denkendorf, this time with a different group of professors. Just as it did on the days preceding and following the visit to the iwb. This is the stuff of "Campus Week 2012", the second event of its kind hosted by Festo Didactic, and it features lectures, video presentations and live broadcasts. The format gives university professors the opportunity to immerse themselves in the world of automation technology and exchange ideas about the latest research findings. The scientists are introduced to the "Fab21", a model factory at the Competence Centre For Industrial Automation at Düsseldorf's University of Applied Sciences: it not only boasts cutting-edge equipment that provides students with an up-to-the-minute education, but, as Professor Reinhard Langmann explains, also generates revenue for the university when the learning labs are made available to external training providers. Festo employee Elias Knubben discourses on "(r)evolutionary" findings in bionics and how automated motion sequences can be made even more energy-efficient and productive. Attendees from Daimler and Siemens allow insight into their specializations, and in between lectures, the professors attend guided tours that showcase the abilities of the Festo learning factories on display: carrying boxes, autonomous robots use laser scanner navigation to hum their way through Festo Didactic's Headquarters using "maps" they generated themselves. Hybrid systems dispense grains of maize or mix coloured liquids in glass containers. Robots equipped with measuring probes accurate to the millimetre hover in training cells above the welds on car body components. Pallets find their own way to their slots in a high-bay warehouse. Festo Didactic employees

**ProLog Factory** Training Platform for logistics, communication technology, mechatronics, robotics and industrial engineering – an authentic facsimile of real processes and material flows.









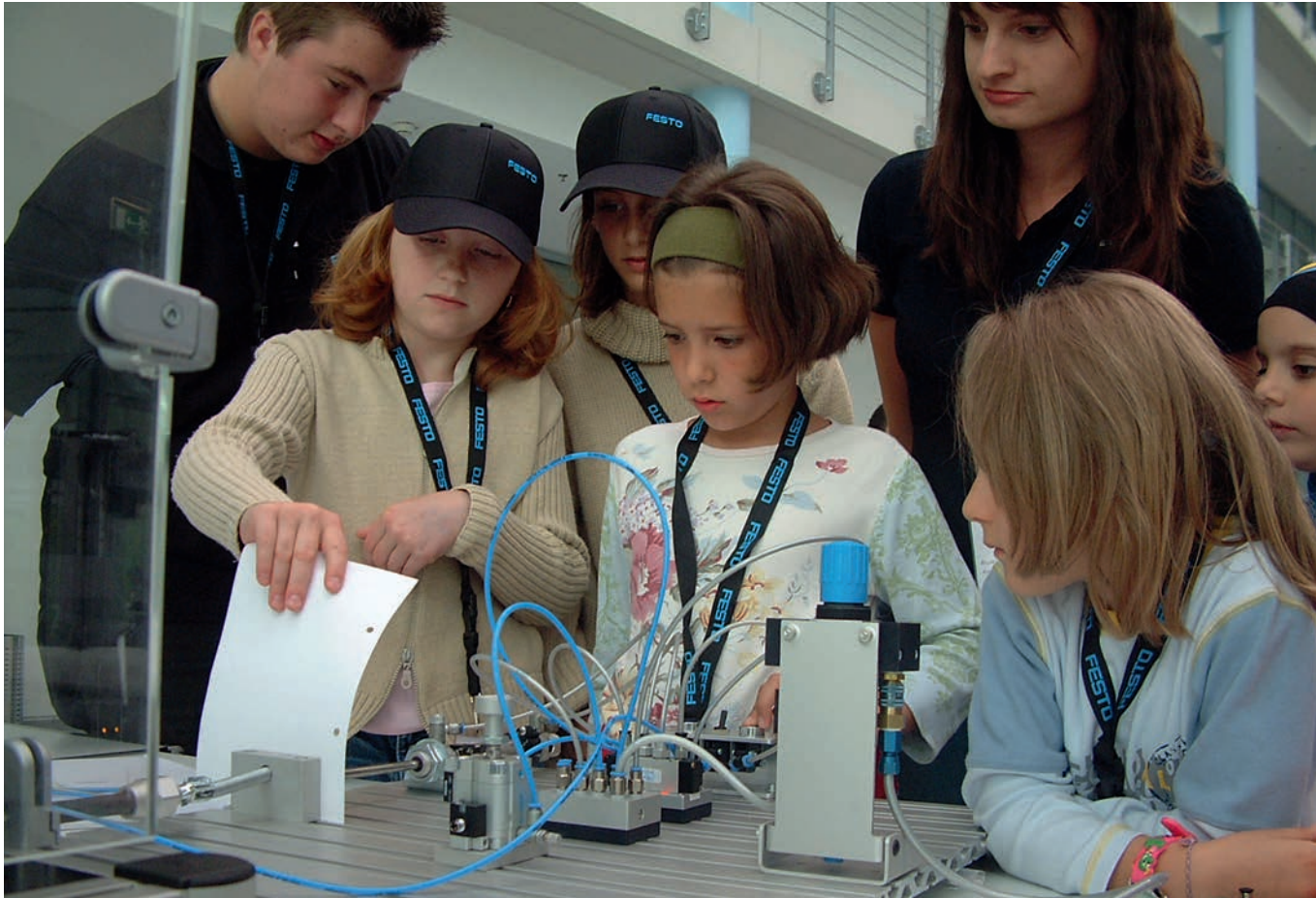
**1<sup>st</sup> GCC Skills competition** Women in burqas listen attentively during the first regional job skills competition hosted by the Gulf Cooperation Council (GCC) for the Arab States 2008 in Abu Dhabi, United Arab Emirates.

show how simple it is to use plug-in connections to link up individual learning stations into a complete Learning Factory.

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At the heart of things, dashing from one person to another, fielding questions and offering explanations, is Eckhard von Terzi. He has been Festo Didactic's sales head for learning factories for seven years. No, he says emphatically, "Campus Week" is not a sales event, despite the fact that around 100 Festo Didactic learning factories are set up worldwide each year. "Our aim is to forge links to university professors and introduce them to research facilities around the globe, and in so doing establish an international network of experts," as von Terzi describes the value added for his visitors. By contrast, the value added for Festo Didactic and Festo is difficult to quantify precisely. But it is indisputably there: "With our portfolio of excellent and exciting training solutions for vocational and university students, we show that Festo Didactic has its finger on the pulse of technology. We enable teachers to take a glance at the bigger picture, promoting the concept of innovation and sustainability championed by Festo Didactic."

When Eckhard von Terzi started out at Festo Didactic as a young engineer aged 23, he could never have imagined working in sales, he says in retrospect. "But it's different when you know you can approach people honestly, offering them products that help them, when you yourself are convinced of the value of the products. And when you're even at liberty to suggest solutions that come out cheaper, it can be great fun. We sell to friends. And that's a dream job."



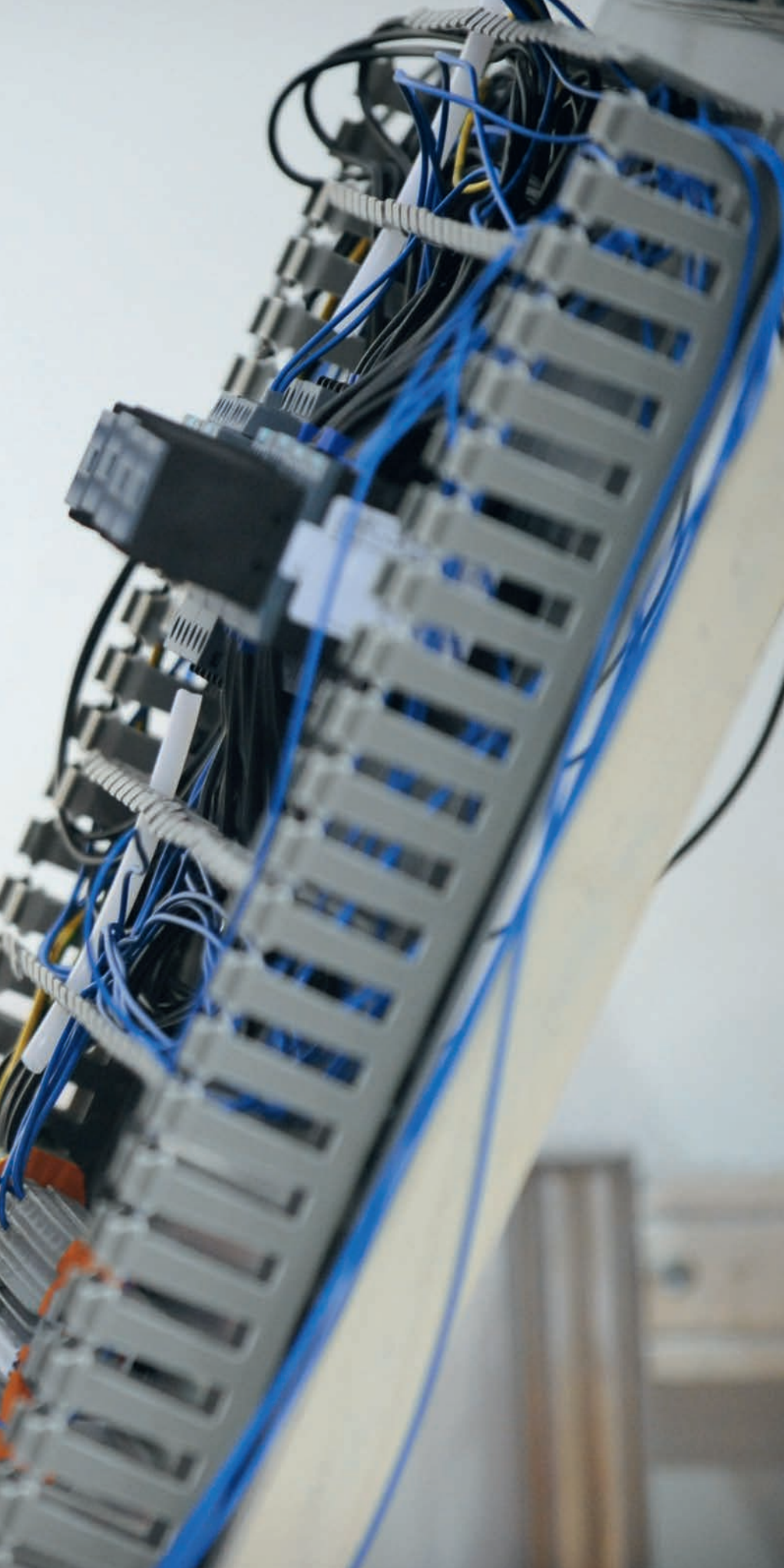
**PneuToy** Once a year, the family-run business Festo invites employees – including those at international subsidiaries – and their families for a vivid, hands-on encounter with pneumatics. The fun, informative event encourages employees to network and socialize while their children get to know the technology.

With our portfolio of excellent and exciting training solutions for vocational and university students, we show that Festo Didactic has its finger on the pulse of technology. We enable teachers to take a glance at the bigger picture, promoting the concept of innovation and sustainability championed by Festo Didactic.

**Eckhard von Terzi** Festo Didactic's Head of Distribution for learning factories for seven years







## **From an Idea to a Business Model**

Knowledge and education  
as a “strategic resource”  
for people, corporations and  
entire economies alike





Hydraulic Transparent Model 4/3 way valve.

We have the enviable and commendable task of supporting individual companies and entire national economies in their efforts to participate in economic development through education and training, primarily of young people.

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**Dr Theodor Niehaus** Managing Director of Festo Didactic GmbH & Co. KG since 1995



Hydraulic Transparent Model diaphragm accumulator.

The history of Festo Didactic is more than the story of a company that started out small and grew into a corporation of considerable size and significance. The Festo Didactic story can indeed be more aptly described as the elaboration and realization of an idea – launched and developed with great persistence by Kurt Stoll and Dr Wilfried Stoll, Festo’s managing partners, over the course of more than five decades. The basic tenets of their idea are: People want to learn; they must continue learning throughout their lives; and maintaining, increasing and sharing that knowledge with others benefits them, the companies they work for, and the society of which they are a part. Knowledge and information are construed as “strategic resources” that help us reach “the highest performance and quality in our daily work”.

Long before English became the industrial lingua franca it is today, the two brothers integrated Festo Didactic’s vision and mission under the rubric of “Corporate Educational Responsibility”. The phrase expresses how Festo Didactic’s client relationships are by no means exhausted by the occasional exchange of teaching materials and educational services in return for money. On the contrary, the aim has from the outset been to foster collaborations with private and public partners that would endure over decades and help keep people abreast of fast-moving advances in technology – thus maintaining their employability. “We have the enviable and commendable task of supporting individual companies and entire national economies in their efforts to participate in economic development through education and training, primarily of young people,” Dr Theodor Niehaus explains. He – with Dr Wilfried Stoll – has been Managing Director of Festo Didactic GmbH & Co. KG since 1995.

With this approach Kurt and Wilfried Stoll laid sound foundations for an educational company that can be unhesitatingly described as unique the world over. Festo Didactic today posts annual revenues in excess of 100 million Euros, and is considered the world’s leading provider of technical education services. It now boasts a portfolio that ranges from technology courses in university preparatory schools and basic classes for trainees to networked CIM (Computer Integrated Manufacturing) systems and turnkey learning centres for universities. With 430 employees, the company has subsidiaries in over sixty countries and distribution partners in another twenty. Cambodia, Mongolia, the Fiji Islands, and Burma – it’s hard to find a country where Festo Didactic lacks a corporate presence. Indeed, 36,000 of the approximately 80,000 vocational schools, colleges, technical

universities and universities worldwide are numbered among Festo Didactic's partners, and each year in excess of 42,000 people attend seminars offered by Festo Didactic. If you were to add up the numbers of participants from the Training and Consulting business segment over the years, the figure would run into the millions, a fact that prompts Otto Bauer, Managing Director of the Turkish country company to remark: "You could call Festo Didactic the world's largest private university."

The key factor driving the success of Festo Didactic is its origin in the parent technology corporation Festo. The relationship between the two companies can be described as symbiotic: They need and benefit each other mutually. Thanks to its long association with automation, Festo Didactic enjoys greater market credibility than any of its rivals (many of whom offer technical education while lacking any background in industrial technology) when it comes to selling hardware and seminars. At the same time, Festo Didactic introduces the Festo brand in areas where the parent company has not gained a foothold. Festo Didactic succeeds in doing so precisely because the company, despite its name and its links to Festo, takes great care in its training sessions with manufacturers to maintain producer neutrality. Moreover, clients train not only on authentic Festo components (instead of toy-like mock-ups), but also on original hardware from other industrial technology providers from those areas where Festo is not active. That act of virtual emancipation underscores the dialectical nature of the relationship between the two companies. But it is the only means for Festo Didactic to gain trust, in particular that of public educational institutions, which have a right to expect that the course material they require will not be constrained by service providers' limitations.

As unique as is the symbiosis between the Didactic and Automation business units, there were times when the relationship between the two divisions was difficult. Some were heard to say that they regarded Festo Didactic as an extension of marketing, or as a special sales unit within Automation. Festo Didactic managers and staff have always endeavoured to disprove those assertions by pointing out that the promotion of product sales, though in itself important, is secondary to the division's actual objective – the profitable imparting of knowledge and education. The controversy was further fuelled by the fact that for years Festo Didactic did not generate any earnings. "The times when we did not make a profit no doubt outnumber those when we did," Dr Wilfried Stoll comments. But that



You could call Festo Didactic the world's largest private university.

**Otto Bauer** Managing Director of the subsidiary in Turkey









**Hydraulic Transparent Model** 2-way pressure compensated flow control valve with gauge connection.

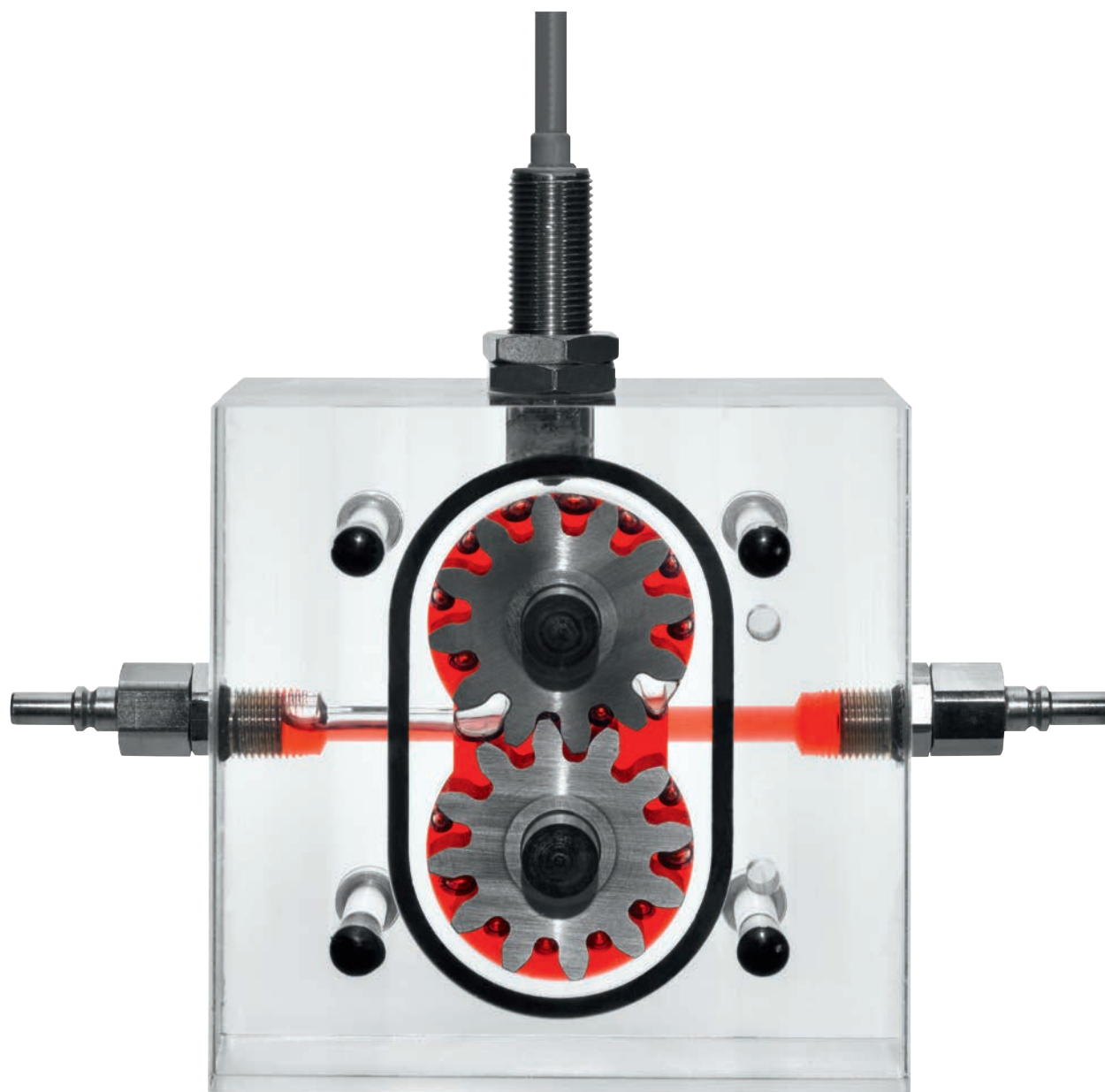


has changed fundamentally: Festo Didactic has grown as a company by more than nine per cent each year, not only since 2005, and today it contributes substantially to the corporation's overall bottom line.

Those figures express what Wilfried Stoll refers to as “educational entrepreneurship”: For the managing partners, Festo Didactic is a business operation whose most important key performance indicator is of course its income; nonetheless, the owners make allowances for the long cycles that prevail in the educational market. “Education is a long-term asset and a long-term investment rather than something that pays dividends fast,” Wilfried Stoll explains. In the business area of Learning Systems, for example, three to five years pass between initial client contact and the first order, as managing director Theodor Niehaus explains. In the public sector, the process can take even longer, especially in developing countries with their sometimes unstable policy frameworks.

Perseverance, the courage of one's convictions and patience are all indispensable for success in the education market. At Festo Didactic, with its roots in Swabian craftsmanship and its extraordinarily dedicated management, those qualities – today often subsumed under “sustainability” – are evident to a high degree. “Only family-run businesses can count on having regular successes, because their business model is more long term,” managing director Theodor Niehaus avers. Or phrased the other way around: At a publicly held company, every year that a training subsidiary failed to meet its revenue goals would be a year when its existence was called into question. The division would be sold off, closed down, written off, or deprived of necessary investments and allowed to stagnate.

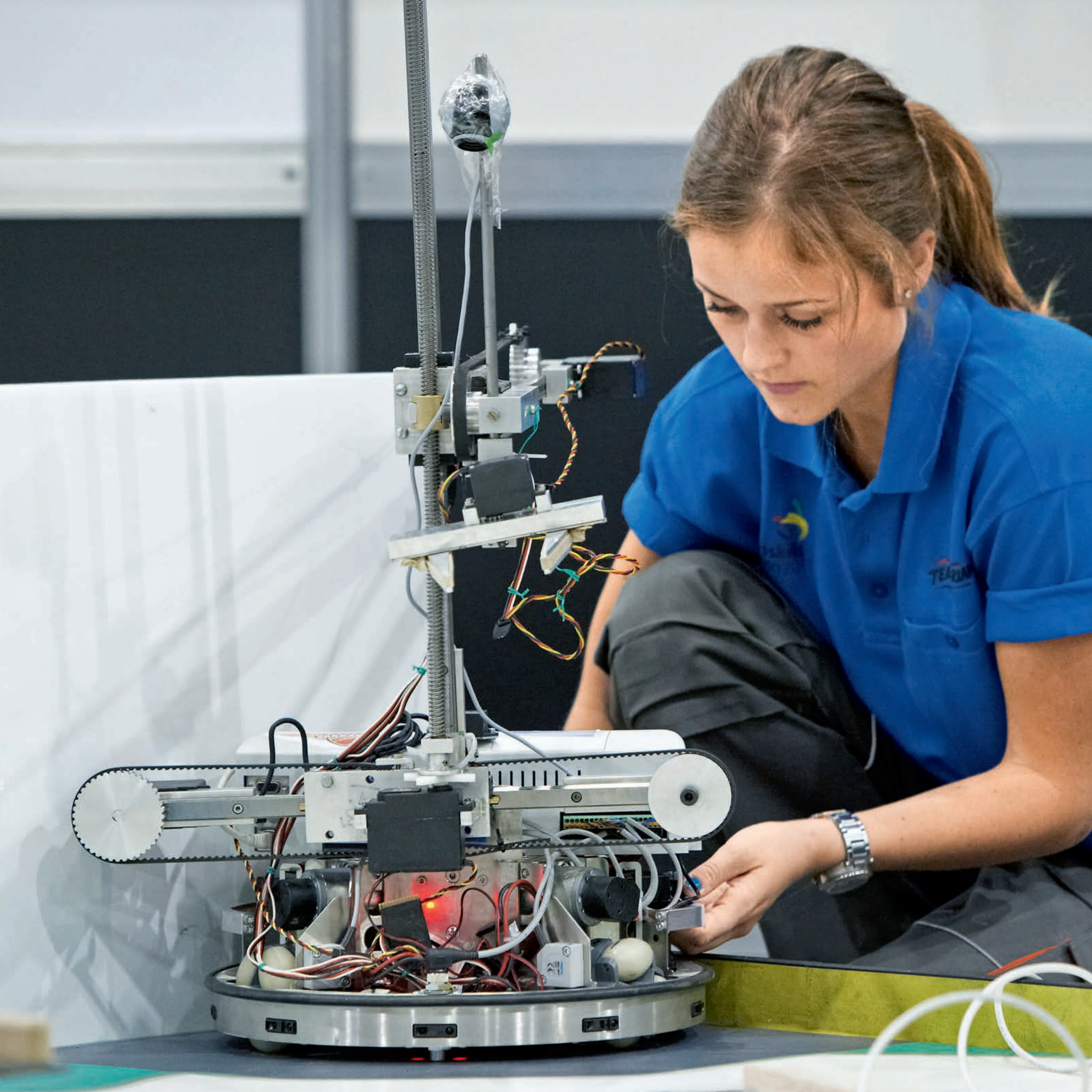
In fact, entrepreneurs have repeatedly approached Theodor Niehaus to express their desire to copy the idea of Festo Didactic in their own industry. They are fascinated by how successful Festo Didactic has been in establishing long-term awareness of the Festo brand among so many young people. But they step back from the idea when they realize just how much ongoing attention and support it would take to make the idea a reality. Festo Didactic's managing partners never shied away from shouldering long-term responsibilities, and today they are reaping the rewards of their efforts. Asked about the company's position today after five decades of development, Wilfried Stoll says tersely but with assurance: “More secure than ever.”



Hydraulic Transparent Model gear motor.

Not long ago, managing director Theodor Niehaus found just how far Festo Didactic's good reputation has spread: He was invited by Switzerland's renowned business school the University of St. Gallen to give a presentation on the company and its services. In their first conversation, the university representatives explained to Niehaus that for many years, they had been citing the case of Festo Didactic as a model of successful innovation. It is thus hardly surprising that Hermann Simon, in his 1996 book *Hidden Champions*, singled out Festo and drew particular attention to its activities in the field of training and further education.









## Pneumatics Missionaries

From the lecture to the seminar to sales of teaching materials – and the “Training Services” division

The foundations of Festo Didactic's present position as the world market leader in technical education were laid in 1957, when, only a few years after the pneumatics division had been founded alongside the then dominant wood processing machines production arm, Kurt Stoll was invited by the Association of German Engineers (VDI) in Schwenningen to give his first lecture on the subject "Introduction to Pneumatics". The strong interest displayed by the 200 participants, who continued bombarding the speaker with questions for some three hours after the lecture, served to confirm Kurt Stoll's suspicion that the young and swiftly evolving discipline of pneumatics and its range of applications needed to be explained to potential customers – as the Festo workforce had been trained from the very outset. "We saw tremendous demand, since there was no competition and still no instruction in pneumatics in schools or universities," Kurt Stoll reports. "People wanted to find out how this young technology could save time and cut costs for their operations."

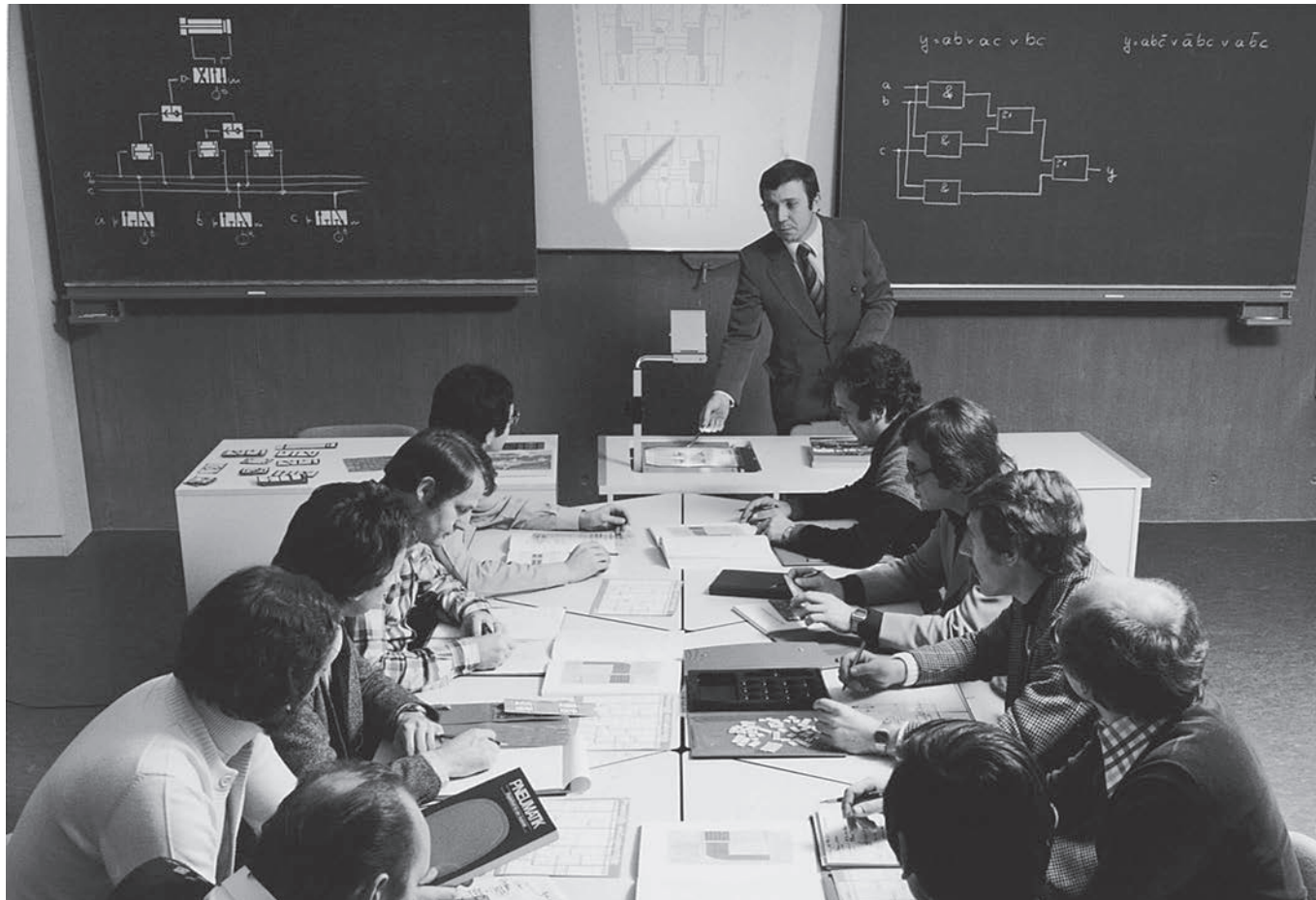
That there was considerable demand for information on the subject of pneumatics was also the impression gained by mechanical engineer Rudolf Kobler, who signed on at Festo in 1961 as a technical bids expert and initially worked in customer service. A hydraulics specialist, Kobler experienced the lack of knowledge among his clients at first hand: "Hardly anyone had any idea how pneumatics could be usefully applied to automation. In those days, factories used compressed air to clean the machines, but not to drive the machinery," Rudolf Kobler explains. He recollects how his career, which saw him promoted first to head of seminars and later to senior section head, really first started when he had to fill in giving a lecture for Kurt Stoll, who was on his honeymoon. And not much later, teaming up with two other colleagues, Rudolf Kobler began lecturing to an audience of 150 engineers, technicians and master craftsmen at Esslingen Vocational College two evenings a week. "The more often we held such talks, the more we felt just how great the demand for training in pneumatics was," Kobler recalls.

Festo responded to that need. As a first step, it increased the number of lectures. As of 1963, it began offering not just the lectures but parallel to them one- and two-day seminars. Initially those took place in external facilities but beginning in 1964 the company had its own seminar room on the third floor of the old company building in Esslingen's Berkheim district. At the end of the seminar, participants would often pose for a group photograph on the staircase leading up to the entrance – and this soon became a regular sight. In the early days classes were

We saw tremendous demand, since there was no competition and still no instruction in pneumatics in schools or universities.

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**Kurt Stoll** Managing Partner Festo Holding GmbH



**Training** A seminar at Festo Didactic in 1977 – holistic knowledge transfer through teaching and learning media.



taught using the customary teacher-centred approach of the day: As in school classrooms, the students, all of whom were adults, sat in rows with the instructor standing at the front. Occasionally, the teacher would chalk something on the board or present a sectional model of a cylinder or valve. This method soon gave way to a new didactic principle: Learning was found to be more effective if students became actively involved in the goings on through the use of dedicated learning and teaching materials. Thus it was that fixed rows of desks were abandoned in favour of a U-shaped array, and participants with increasing frequency found themselves studying materials that had been specially designed for autonomous, hands-on learning. The year 1965 saw the publication of Festo's first textbook, "A Short Introduction to Pneumatics", and for the first time seminar participants were given the opportunity to assemble pneumatic controls from original components at a training assembly board. Soon there was an entire range of teaching materials, including books, brochures, wall charts, sets of transparencies, assignment sheets, drawing templates and series of slides. The first educational film was created as early as 1963, a three-part piece available in eight, sixteen or 36 millimetres entitled "Air at Work" and featuring texts by Rudolf Kobler. Films were screened not only at seminars but also at trade shows, for clients and in the Festo sales offices. Rudolf Kobler recalls how Kurt Stoll returned from a trip to the United States, where he had discovered innovative playback devices that were able to play short films in infinite loops. "Kurt Stoll asked me how many of these devices we needed for our external classes. When I said sixty he did not hesitate for a moment, but went and ordered sixty of these projectors the very next day." Another anecdote that serves equally well to demonstrate the Stoll brothers' foresight and self-confidence involves Wilfried Stoll: In the late 1960s Kobler bumped into Wilfried Stoll in the stairwell at Festo, and the latter (who had likewise just returned from a trip to the United States) announced: "Mr Kobler, in just a few years you will have double the number of employees conducting seminars."

Indeed, the expanding range of seminars and hardware on offer generated ever greater demand, such that Rudolf Kobler and his growing team were hard pressed to meet it. One almost inevitable result was that as of 1967 the company decided to make its educational materials available for sale, and in 1970 the team led by Rudolf Kobler was turned into a Training Services department in its own right. The coaches and sales staff providing the training services travelled the length and breadth of West Germany confident that they were truly Festo's "spearhead" –

**MPS® PA** Process automation and control engineering – hands-on training using real-life models from process engineering and industrial systems.









**Print media** Examples from the comprehensive range of catalogues, manuals, client magazines, teaching and learning media.

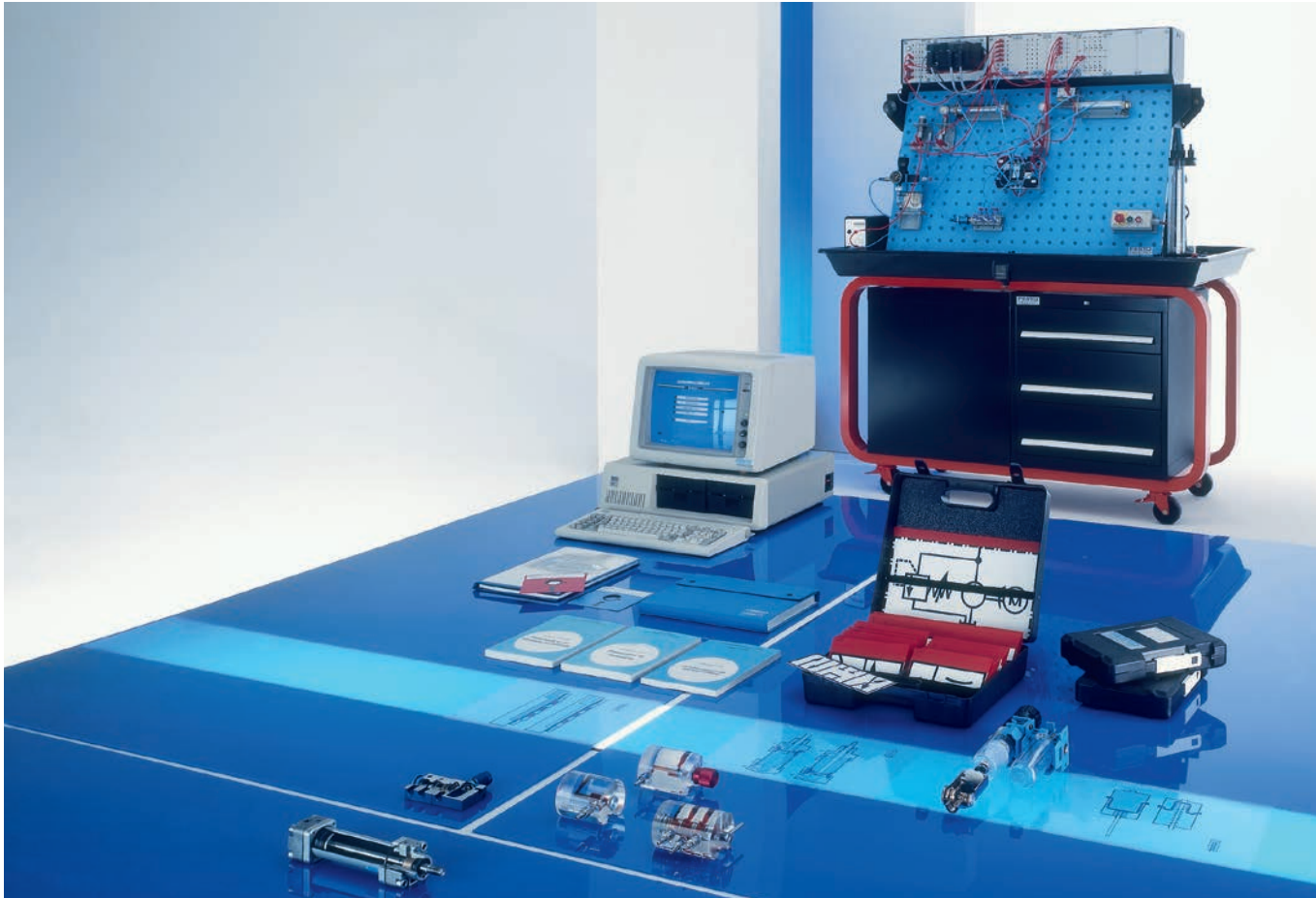


just as Wilfried Stoll repeatedly assured them: “You are the ones blazing the trail in technical education; you are the vanguard that precedes sales. You raise people’s awareness of pneumatics and show them what it can do.” His brother Kurt Stoll once wrote in a letter to Rudolf Kobler: “You are our pneumatics missionary.”

It was during this pioneering phase of growth that, in 1970, Helmut Meixner, a toolmaker and engineer, joined the Berkheim training services team. Meixner, who was involved in volunteer youth work at his church, enjoyed teaching people who were curious and willing to learn. Soon he found himself travelling all over West Germany as an instructor, teaching sometimes in Berkheim, sometimes in the Festo sales offices, sometimes on clients’ premises. Helmut Meixner remembers a seminar at a Bavarian company where his listeners were especially enthusiastic: “They were so excited by the new technology and the opportunities it opened up that the plant manager presented me with a vase as a farewell gift. The man just wanted to show his appreciation. After all, the seminars were free.”

That story is particularly revealing because it took place at a time in the early 1970s when a controversy arose in the Training Services section over whether Festo should charge for its seminars. Expenses for the instructors and their travel expenses in addition to the teaching materials for participants mounted up, but there was no income to balance it. Accusations such as “You just cost money”, or “The participants accept free seminars from you, and then they buy somewhere else” – the instructors heard such attitudes time and again from one colleague or another in Sales or Production. Training Services found itself in what seemed to be a hopeless predicament. Introducing fees would put to rest the claim that they did not contribute to corporate profits, but it would give rise to a new reproach: that they drove off loyal Festo customers by suddenly demanding payment for services that had been provided free of charge for years. “I fought it tooth and nail,” Rudolf Kobler, then head of seminars, recalls. “I was convinced that the market was not yet ready for it, that it would lose us business and put jobs at risk.”

Ultimately, however, seminar fees were introduced, and with them came the dip that Rudolf Kobler had anticipated. Outraged, a major customer of long standing turned its back on the company for many years. However, it was not long before



**Hardware** Lab trolley with a training board to teach electropneumatics. A PC for Computer-Based Training and a plethora of teaching and learning media round off Festo Didactic's training and further education curriculum in the 1980s.

Rudolf Kobler succeeded in signing up the first paying seminar client in the form of Thomae, a manufacturer of pharmaceutical products in Biberach: “I went to Dr Wilfried Stoll and said, ‘I think it’s working.’”

Among the employees in Educational Relations, as the division was called between 1971 and 1973, a sense of relief spread along with the good feeling that their work, which had always been valuable, would now generate income for the corporation. The team was possessed by a new spirit that Rudolf Kobler and Helmut Meixner unanimously describe as: “Now that we are charging fees, we need to offer our customers even more.”



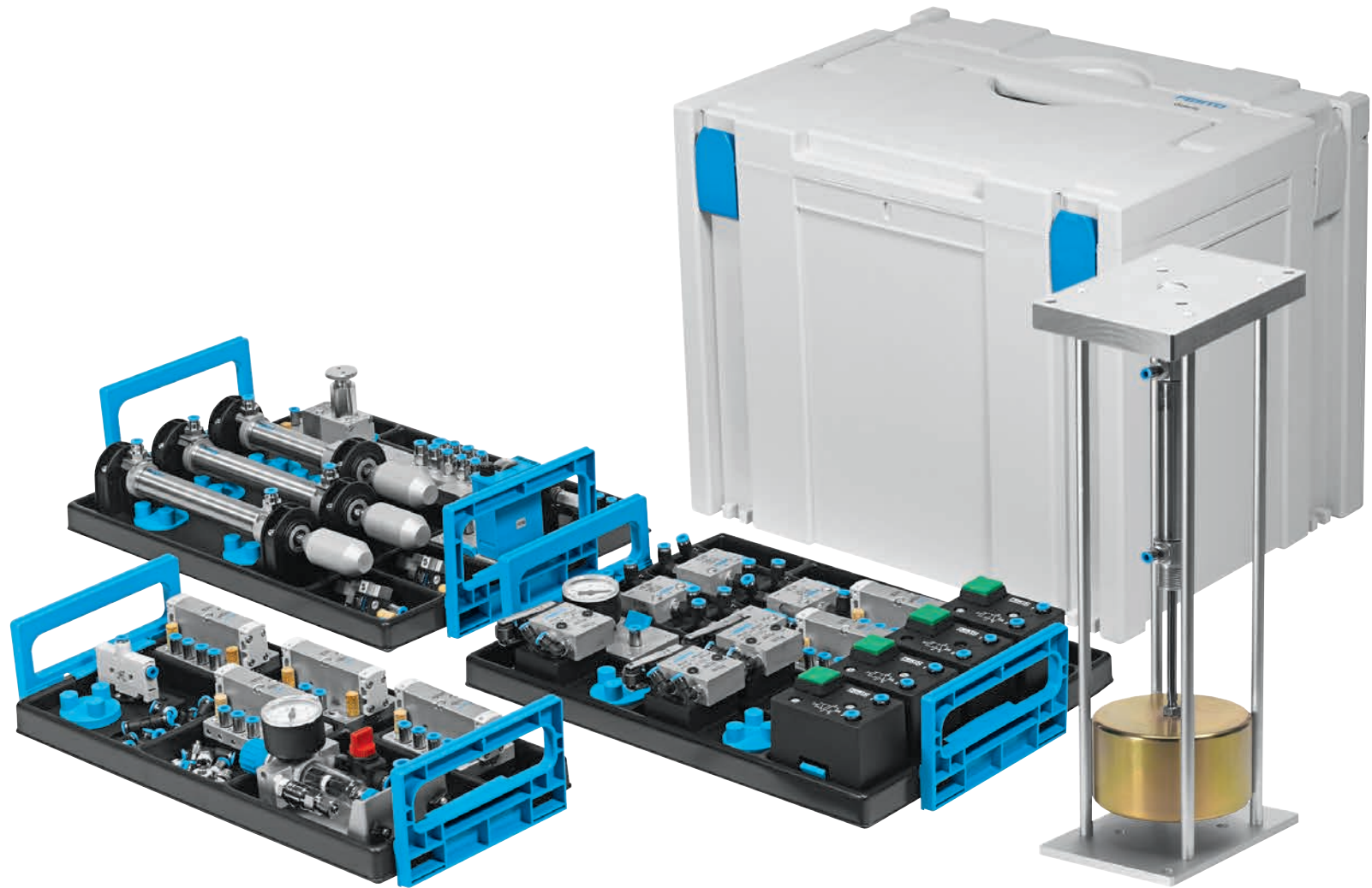






## Building Blocks for a Dual Education

Festo Didactic emerges as an all-round service provider: new technical fields from hydraulics to control technology are integrated into seminars and teaching programmes



**Pneumatics equipment set** suitable for the BIBB pneumatics course “Control Engineering: Pneumatics” featuring exercises and practical assignments.

Along with Kurt und Wilfried Stoll, the late Dr Walter Grosse was one of the forces driving the swift expansion of training services during the 1970s and 1980s. Grosse had known Wilfried Stoll from their days at university together, and he is considered by many to have been just as much a visionary as the Stoll brothers: “He was immensely well networked, and was able to sense what direction Festo Didactic should take years in advance,” one of his long-serving high-ranking subordinates recalls. Walter Grosse, who joined the company in 1964, was a highly competent, dynamic man who demanded a lot from his team – but even more from himself. In his dual function as director of Festo International and division manager at Festo Didactic (as the Training Services division was renamed in 1976) Walter Grosse was the living embodiment of the symbiotic relationship between Festo and Festo Didactic; at home in both worlds, Grosse lent direction to visionary approaches and linked them with the companies’ existing commitments to the reciprocal benefit of both.

That unusual level of involvement is indicated by what could be termed a landslide of seminars that laid the foundations for what was later to become the Training and Consulting division. A survey conducted in 1980 revealed that since the launch of the new, four-day seminars with a strong emphasis on hands-on training in 1972, the section had totted up 1,000 pneumatics training sessions with close to 18,000 participants in West Germany alone. After just under twenty years of training, Festo as a smallish medium-sized company was posting even more impressive international figures: Since the beginning of the 1960s, more than 60,000 participants had attended 3,500 seminars held in more than fifteen different languages to acquaint themselves with “the pneumatic idea” in theory and practice. The late 1970s saw 47 instructors on Festo Didactic’s payroll, teaching as far afield as Singapore and New York. And despite the fact that Festo Didactic was the only training provider in the field to have introduced fees for its services, the training facility at the Festo plant in Berkheim was already bursting at the seams. It was only logical that in 1976 training was relocated to rented premises at Esslingen Technical Academy in Nellingen, part of the city of Ostfildern.

When clients preferred that courses be held on their own premises, the Festo instructor would travel wherever was needed nationwide, in a car filled to the brim with blue training assembly boards and the relevant training media, fold-down stands, overhead projector, movie projector and a folding magnetic board for control icons; occasionally the car was too small to hold the sheer volume of teach-

ing equipment, in which case a small van would be dispatched in advance. Be it Berlin, Bremen, Düsseldorf, Frankfurt, Fürth, Gummersbach, Hamburg, Lüdenschheid, Munich, or Reutlingen – with 34 years of service as an instructor at Festo Didactic under his belt, Helmut Meixner had covered more than a million kilometres on the road by the time he retired in 2004. “There were sixty and seventy-hour work weeks, we had around a hundred nights away from home each year, and we often travelled to seminars on Sunday evening and didn’t come home until Saturday,” he recalls. But he also tells of the strong cohesion in the instructional team. Great attention was paid to making sure that no one stayed away from his family for too long. And because the seminar participants needed something in writing to take home, Helmut Meixner also wrote – in his spare time – a number of books, including “Introduction to Pneumatics” and a volume on electro-pneumatics.

The books written by Helmut Meixner and his colleagues are an indication of the surge in the range of content covered by Festo Didactic in the 1970s and 1980s, a move that carried more weight than geographical expansion or the growing number of seminar participants. Based on the strategic rationale that unless it offered the full range of relevant subjects Festo Didactic would not be considered persuasive as a technical education provider, the company gradually expanded the portfolio to include hydraulics, electro-technology, electronics and ultimately PC-based machine control. In the process, it brought together the various disciplines involved in automation technology and integrated them as the all-encompassing palette of hardware and learning programmes spanning the whole gamut of technologies. As a result, the trainers also had constantly to keep up with new materials: “Teaching electro-technology on its own was not the problem, but when it came to linking pneumatics with PLC controlled systems, things got tricky, as for us as mechanical engineers the topic was initially simply a ‘black box’,” Helmut Meixner recalls.

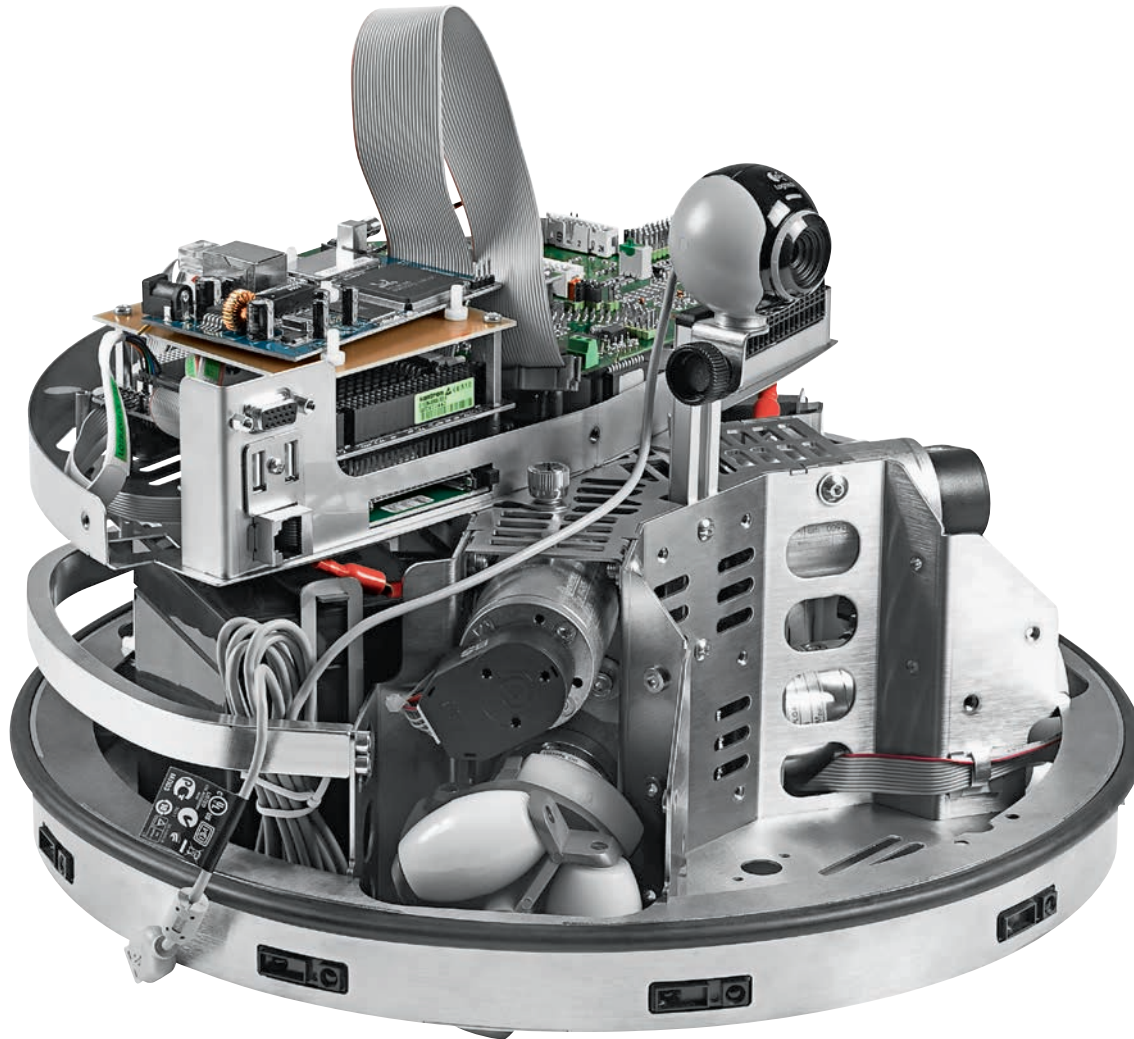
By refusing to rely simply on the parent company’s product portfolio but instead complementing it as well, Festo Didactic was able to reinforce its credibility as an independent provider of educational services. Festo materials and components continued to be used in seminars, but great care was taken to maintain strict neutrality. “Festo-specific designations on circuit diagrams or books were changed to standard designations that made no reference to the brand,” Rudolf Kobler explains. Wilfried Stoll is convinced that: “That neutrality was a decisive



That neutrality was a decisive prerequisite for our being able to expand our original business customer base more and more into state-run educational institutions. They would certainly not have accepted our using the education of young people in schools and universities as an advertising platform for Festo products, and rightly so.

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**Dr Wilfried Stoll** Managing Partner Festo Holding GmbH



**Robotino®** Mobile mechatronics learning system that enables pupils to experience technology, understand it, and apply it effectively. Learners use the Robotino® to integrate disparate technologies such as electric drive technology, kinematics, sensorics, control engineering, image processing and programming skills.

prerequisite for our being able to expand our original business customer base more and more into state-run educational institutions.” And he elaborates: “They would certainly not have accepted our using the education of young people in schools and universities as an advertising platform for Festo products, and rightly so.”

The seminar programme became ever more differentiated as Festo integrated new teaching fields into its portfolio and expanded its client base. In the early 1970s the range of seminars was distinguished by the letters A to F, but by the mid-1980s a more elaborate system had been introduced, with P (pneumatics), PE (electro-pneumatics), E (PLC controlled systems), H (hydraulics) and HE (electro-hydraulics) as the main headings, with two-digit numbers specifying further differentiation. Only a few years later, in 1989, the seminar programme had matured into a fifty-page brochure providing detailed information on advanced seminars from P111 (“Introduction to Pneumatics”) to H521 (“Hydraulic Control Systems”) and PH711 (“Introduction to Proportional Hydraulics”).

However, despite its comprehensive portfolio of offerings Festo Didactic was still not breaking even. “We often felt uneasy,” says Fritz Eisele, who started out at Festo Didactic’s Marketing division in 1977 and was Head of Marketing for Germany and Europe by the time he retired. However, Eisele continues, Walter Grosse and Wilfried Stoll “had an unswerving faith in their business idea and they turned out to be right. Looking back it is indeed an extraordinary story,” he muses.

Among the most important milestones on the long road to success was the reorganization of the metalworking and electrical trades in West Germany in the second half of the 1980s. As a consequence, the technological fields Festo Didactic was already covering with its seminars, teaching equipment and media became mandatory elements in vocational training and qualification. That restructuring was preceded by a process lasting many years, during which Walter Grosse, Rudolf Kobler and other members of the various committees of the Federal Institute for Vocational Education and Training (BIBB), the Association of German Chambers of Commerce and Industry (DIHT) and related organizations urged strongly that vocational training be adapted to reflect advances in technology. The reform was long overdue, as graduate engineer Helmut Müller, himself a vocational college teacher, training supervisor and executive director of the

**Complex learning situation** Mechatronics and factory automation with the complete programme for flexible manufacturing and integrated systems from Festo Didactic.







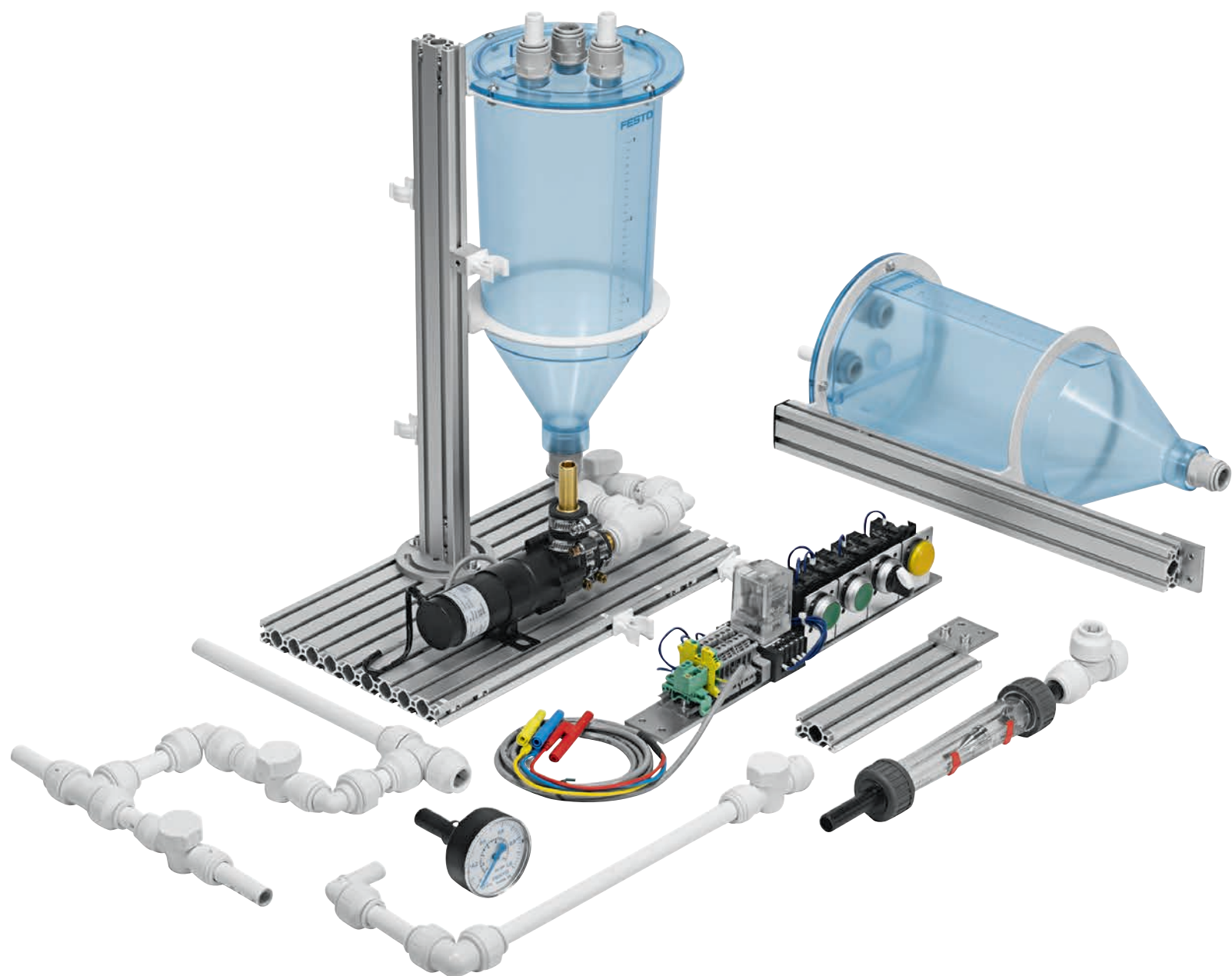
Heilbronn Chamber of Commerce and Industry before joining Festo Didactic's International Consulting Team in 1989, points out: "Before the reorganization, young people training as mechanics, machine fitters or toolmakers were in part trained to fulfil requirements that had been set before the war. The revisions were absolutely necessary." The implications for Festo Didactic were hardly surprising: Not only did the reform lead to the establishment of waiting lists for seminars, but there was a boom in hardware sales as well. Sales of the Festo training boards doubled between 1986 and 1989 from 10,000 to 20,000, as did the overall revenues of Festo Didactic. It was above all the lab equipment for training facilities that drove that development, the predecessors to the MPS® stations, which as of 1991 depicted the integration of technologies up to and including robotics in an increasingly realistic way.

If this particular success can be attributed to unrelenting committee work by many of those in responsible positions at Festo Didactic, another milestone in the history of the company was simply a matter of good fortune: the fall of the Berlin Wall in 1989. German reunification blessed Festo Didactic with an unprecedented boom in sales. "We acted immediately to seize what was an absolutely unique opportunity," Fritz Eisele, then Head of Sales in Germany, remembers. Colleagues from the field sales forces in Bavaria and North Rhine-Westphalia were briskly dispatched to the East German states. Given the shortage of hotel beds, they toured the largely unfamiliar territory in a rented mobile home. Together with a whole raft of newly hired colleagues, they set about forging links to technical universities, universities, teacher training academies, vocational schools and training instructors at the large industrial combines. "We were faster-moving than industry, so we were in a very unique position," Fritz Eisele relates.

Berlin-born Jörg Weber joined Festo Didactic in 1973, where he was Head of Seminars for several years, and says that he "came to the company as an engineer and left as a teacher". For him, development efforts in the East were a very special experience. "I witnessed the workers' uprising of 1953 and Khrushchev's ultimatum first hand. I will never forget how at the 1989 Christmas party, Dr Grosse came up to me and said, 'Mr Weber, from now on you are responsible for the former East Germany, too.'" It was during this time that Festo Didactic secured the single largest contract in the history of the company: The Employers' Association in the German Metal and Electrical Industry requested nationwide tenders for the provision of equipment to numerous industrial and technical training facilities –

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**Helmut Müller** graduate engineer and international business consultant



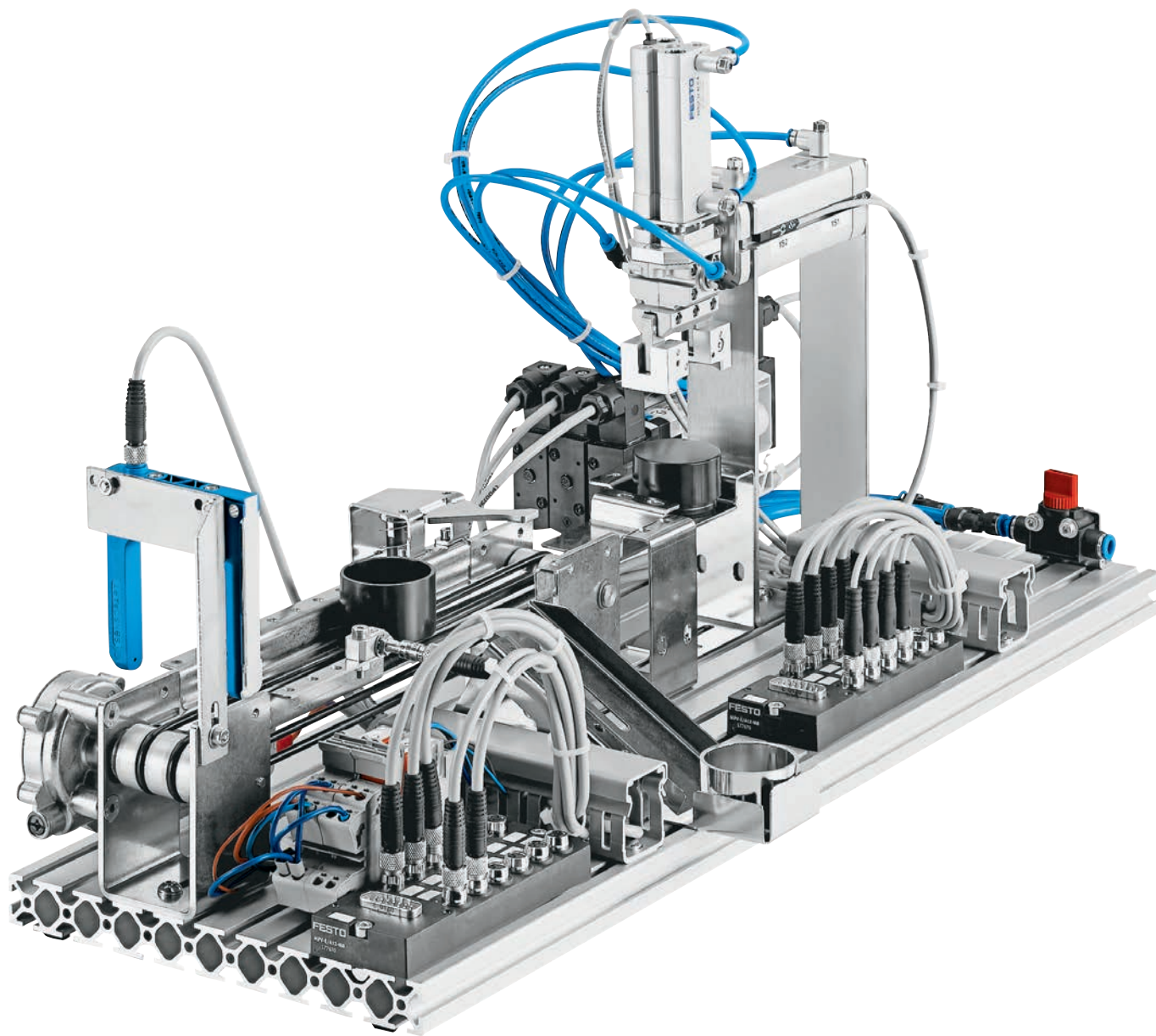
**EduKit PA** Component set for the introduction to measurement and control technology – designed for training and advanced training in process automation.



and Festo Didactic won the largest tranche awarded to any individual company, with an order volume in the region of six million Deutsche Mark. Another opportunity also arose in the wake of German reunification. As part of the integration process of East Germany's railroad 'Deutsche Reichsbahn', its West German sister 'Deutsche Bundesbahn' wished to procure 3,000 testing packages for administering the practical section of its final examination to trainees – and Festo Didactic managed to decide the entire request for proposals in its own favour. Admittedly, as Jörg Weber recalls, some projects did not work out as planned. After Festo Didactic had invested a substantial sum in new seminar rooms in Berlin, he received a tip that their business partner was threatened with bankruptcy. "I grabbed two colleagues and in the space of 24 hours we moved out the heavy hydraulic equipment, tables and other inventory. We managed to keep things from going seriously awry."

Some of the Festo Didactic executives got a bit carried away with the economic boom in eastern Germany. They assumed the growth they saw was there to stay. In fact, the opposite was the case. At its 1991 peak, Festo Didactic posted revenues in excess of 55 million Deutsche Mark, yet by 1994 the company had seen business contract by some twenty percent and was posting massive losses. That predictably caused internal turbulence. In 1995, Theodor Niehaus, formerly of IBM, joined the company as managing director. He describes the key elements during the initial phase of his strategy for going forward this way: calm things down, stabilize, enhance processes and structures, gain transparency about which areas of the business were cost centres. "Those were tough times," says Theodor Niehaus, especially as the company was forced to downsize.

Subsequently Theodor Niehaus and his team set about developing new growth segments by extending the product portfolio and expanding the client base. A good example of the new strategy is provided by the learning factories, which became a success story the moment Festo Didactic began incorporating large-format posters in its customer marketing campaign. "We were able to show university professors a near-finished concept that could be tailored to their individual requirements by adapting just a few details," Niehaus says. In the past each solution had been customized, a burden on profitability, but with the new modular design the learning factories were able to raise their economic returns. With around 100 of them sold around the globe each year, today learning factories are Festo Didactic's core business, with annual revenues poised to top 20 million

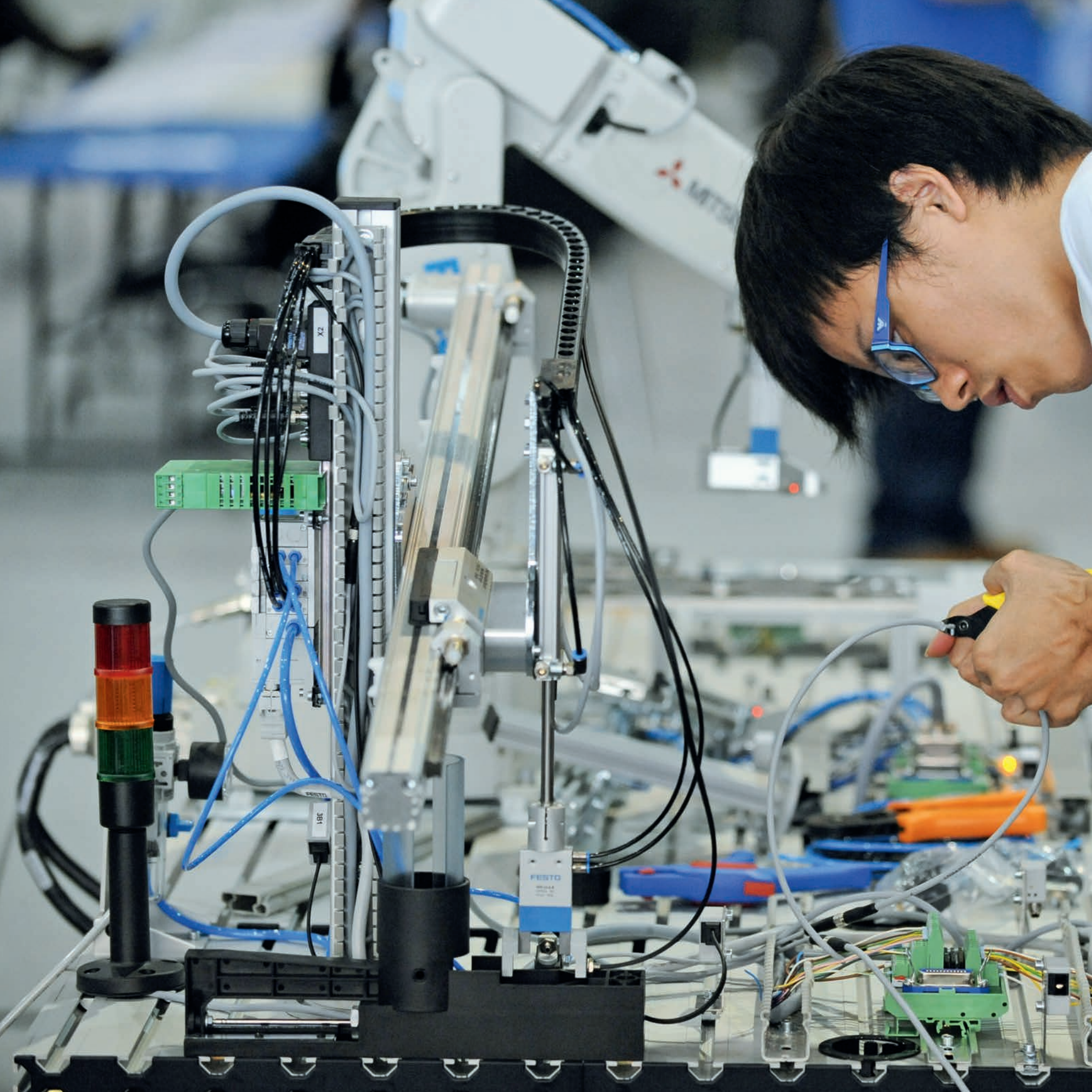


**MecLab®** Automation technology for use in secondary schools – assembly example employing the handling and conveyor belt stations.

Euros in the near future. “Today you can find learning factories at nearly every well known German university. They appeal to professors for purposes both of teaching and research,” Niehaus says. Of growing significance since 2009 is the field of electro-technology, which represents the largest educational market in the field of engineering. “In contrast to the metal industry, we are dealing with entirely different contact people, a different vocabulary, and a different mind-set. It’s no longer about new versions of the familiar but about entirely new products,” Theodor Niehaus explains. As new as the product segment is, Theodor Niehaus is equally determined to keep working on it for Festo Didactic: “We want to make electro-technology number one in our business.”

Thanks to this new approach Festo Didactic is now making inroads into the university market and expanding its client base considerably, after having spent a long time focusing exclusively on companies and vocational colleges. In addition the company has started to bring the brand closer to younger target groups. The “Bionics Suitcase”, for example, allows schoolchildren to experiment with hook-and-loop fasteners or the “Fluidic Muscle”, which works with compressed air. With the MecLab® learning system, which is already being exported, pupils can immerse themselves even more deeply in the authentic world of technology: The system is used in technology classes to emulate real industrial production line that can then be modulated almost at will from a PC interface. Last but not least, Festo Didactic’s Robotino® has made its way into non-academic secondary schools, enabling young people to gain a sense of what it is like to work with robotics. As is customary at Festo Didactic, the hardware becomes a comprehensive learning system through the inclusion of modern teaching materials and the option of online instruction.









## Festo Didactic International

From China to Columbia –  
spearheading the growth of  
the parent company

There are probably only a few corporations in Germany on a scale with Festo Didactic that are similarly international in their reach. You only need to spend a few minutes in the corridors or meeting rooms at the Didactic headquarters in Denkendorf to sense how cosmopolitan things are. You'll meet staff members who speak German with a bit of a foreign accent, and Germans, whose native language is in evidence when they speak English, French, Russian or Spanish. You'll encounter employees in command of five or six languages who carry several different passports, Swabians who can hold lectures in fluent Turkish, and managers who were born and grew up in one foreign country, moved to another to finish their degrees, and finally settled near Denkendorf. "We have become so international that today in the Marketing section the lingua franca tends to be English, and there have been times when none of the executives responsible in charge of our international subsidiaries were German. That internationality is a real boost for the company," Festo Didactic managing director Theodor Niehaus comments. Having just returned from a meeting with eighty Festo Didactic managers in Istanbul, he is getting ready for the next meeting to be held in Cambodia. Hardly a month goes by without foreign visitors arriving at Festo Didactic headquarters, be they ministers or director generals, a delegation from a foreign university or an industry association. Catalogues are produced here in more than forty languages, and the corporate Website boasts versions in a dozen languages – with Arabic about to go live.

The then director of Festo International and Festo Didactic, Walter Grosse, was one of the key figures driving internationalization of Festo Didactic. When he celebrated 25 years of service to the company back in 1989, his restless activity was borne out by some striking figures: 2.5 million frequent flyer miles, ten years on the road, and under his leadership, the number of Festo Didactic's international subsidiaries grew from six to 36. In the early 1980s, when the term globalization was still obscure, Rudolf Kobler as head of trade press relations for Festo Didactic was already shooting image films at foreign subsidiaries. He travelled the world with a six-person film crew, capturing how global Festo and Festo Didactic had already become in terms of their product reach – they shot footage in a Canadian milk factory and a chemicals factory in Mexico and recorded university students and industrial apprentices using Didactic training boards in New York, India and Singapore. The trained mechanical engineer and first seminar director at Festo Didactic was temporarily transformed into a filmmaker.

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**Dr Theodor Niehaus** Managing Director of Festo Didactic GmbH & Co. KG since 1995



**FLZ Saar** The Festo learning centre offers the latest in management concepts and technical know-how along with general knowledge, providing companies, public institutions and individuals with an optimum learning environment for training and further education.



That development was once again triggered by Wilfried and Kurt Stoll, with their clear vision of Festo Didactic as the “spearhead” of the corporation. While by the 1970s Festo and its products were already very well known in the industry in Germany, the company was just starting out in many developing countries with their still young industrial traditions. “The company leadership recognized at a very early date that Festo Didactic could play an enormous role in terms of brand awareness and act as a door opener for the entire corporation. That was a wise insight,” Fritz Eisele says, head of Distribution for Germany and Europe during that era. Wherever Festo opened a new international subsidiary, a Didactic manager was automatically put on board, and although he might be operating on his own, he always had two employers in mind: the industrial technology corporation and the education provider. To this day, the strategic orientation of Festo Didactic as Festo’s vanguard can be discerned in the fact that it is present in more countries than is the parent company. Thanks to the early contact Festo Didactic establishes with government authorities, professional and industrial associations, public educational institutions such as universities and vocational colleges and private institutions such as in-house corporate education and training centres, it can prepare the market and ultimately lay the foundations for development and prosperity.

A job description for Dr Nader Imani would be a recap of that rationale. As a member of Festo Didactic management and Head of the Sales Region Direct Markets, he is responsible for those countries where Festo does not (yet) have an international subsidiary. Nader Imani was born in Iran and attended school in France. There he went on to study and work at a university until, after an internship at Festo France, he joined Festo Didactic in 1992. With his knowledge of the French educational system, he started working in the Francophone countries of North Africa and remembers the day he closed his first deal – it was in Morocco in 1994. A government agency responsible for vocational training development and the labour market chose to buy books, overhead transparencies and learning systems for pneumatics and hydraulics from Festo Didactic. Many years later, Nader Imani now manages a project in Iraq, where with help from Festo Didactic a training centre is being installed in a revitalized bus factory to convey rudimentary knowledge of welding and machine maintenance to unskilled workers. “For the project, money originally earmarked for weapons was diverted into education,” Nader Imani says proudly. The project has taken him all the way to the Pentagon in Washington D.C. One of his longest-lasting projects has taken over

12 years owing to the multiple tenders involved: At the university in Damascus, Syria, Festo Didactic is helping to equip a learning laboratory in the department of mechanical engineering that will serve both to train students and to aid in professional development for employees of industry.

It is precisely such projects taking place in such politically unstable, at-risk countries that show the importance of policy-based aid to industrial and educational development. It also explains why the Didactic staff does not see themselves primarily as salespeople: “Under such conditions, we do not talk with clients about this or that Festo product, but about solutions for their labour market, about enhancing qualifications in schools, corporations and universities,” Nader Imani explains. “We show that we are partners who are willing to support their development for the next thirty or forty years.” Just how much trust can be forged in the process is something Nader Imani recently found out with a client from the Arabic-speaking world who overpaid on a Festo Didactic invoice. When Imani sought to reimburse him, the client responded, “I will go on ordering materials from you. Leave the money where it is. I trust Festo Didactic as I trust my own bank.”

Developments that admittedly do not always run smoothly but display immense potential are likewise reported by Dr Theodoros Ktistakis, Head of Festo Didactic Sales for Europe & the Americas with responsibilities extending to sub-Saharan Africa and nations including Kenya, Congo, Ruanda, Angola and Mozambique. However bumpy the road may be, annual business volume is growing at astonishing rates and there are good prospects for substantial achievement over the coming decades, he says.

Countries that have posted impressive developments include Brazil, where Festo Didactic held its first seminar back in 1974 and only ten years later could proudly look back on having trained over 7,000 seminar participants. The company’s milestones in Brazil include an agreement signed in 1997 with Mercedes-Benz that covered a three-year training programme for the employees at the carmaker’s Brazilian plant, outfitting the Catholic University in Paraná with a CIM lab, and establishing pneumatics and hydraulic labs at forty locations for the industrial training service SENAI (Serviço Nacional de Aprendizagem Industrial). Such contracts have enabled the Brazilian subsidiary to make the second highest contribution to Festo Didactic revenues after Germany. Festo Didactic has been no

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**Dr Nader Imani** member of Festo Didactic management and Head of the Sales Region Direct Markets



**IFF Stuttgart** Courtyard of the Institute for Industrial Manufacturing and Management (IFF) at the University of Stuttgart's Vaihingen campus, location of a Learning Factory for Advanced Industrial Engineering built in cooperation with Festo Didactic.



less successful in Mexico, where despite strong rivalry it is number one in the market. “Between 2002 and 2011 we grew by an average of fifteen percent a year,” Festo Didactic manager Armando Ramirez Loya reports. “Our job training courses improve many people’s standard of living and thus contribute to attracting foreign investment.” Each year, in excess of 2,500 people attend Festo Didactic’s seminars, most of them from international corporations such as Nestlé, Procter & Gamble, Unilever, Ford, General Motors and Volkswagen. Countless dozens of vocational and engineering colleges as well as universities now boast Festo Didactic learning systems, and since 2010 this list has included the FACT Centre (Festo Authorized and Certified Training Centre) at San Luis Potosi Polytechnic, where among other features an iCIM plant and a learning factory for the food and beverage industry have been installed. In Iran, the company offered its first pneumatics seminar in 1984 and by 2011 the total number of attendees had passed the 40,000 mark. After launching Festo Singapore in 1981, the company has supported the first national mechatronics competency competitions, was main sponsor of WorldSkills 2006 and develops certified skill benchmarks for the mechatronics industry. In South Africa, where it first established a foothold in 1973, Festo Didactic swiftly emerged as the market leader with a market share of well over fifty per cent. In 2003, it was appointed the first official training partner for a new nationwide qualifications programme.

The example of Turkey can be taken as a kind of blueprint for what can be attained. Within the space of two decades, Festo Didactic has emerged as the undisputed market leader. The company today has an amazing track record: some 400 vocational colleges, 120 universities and 300 engineering schools have been equipped; to date well over 400,000 young adults have gained new qualifications at the vocational colleges, and each year around 3,000 technicians, developers, engineers and trainers from industry take part in Festo Didactic’s advanced training seminars. The Turkish/German and Turkish/English dictionary of automation technology has already run to three editions, and through its membership in a major foundation Festo Didactic is able to present itself to thousands of companies as a brand-neutral technical education partner. At present, the company is busy working with partner companies to implement a modified dual education system with shared certification.

Physicist and business engineer Otto Bauer has been supporting the Turkish subsidiary since its founding in 1989. In the past he was closely concerned with



**China Tianjin** Public Vocational Training Center – China's largest training facility for highly-skilled employees offering superb facilities and an outstanding range of functions.

providing back-up for countries where Festo Didactic had established new business relationships, travelling above all in South America. Although only ten of the 130 people at the international subsidiary are Festo Didactic employees (with support from external freelancers), Otto Bauer is convinced that the education experts gave business a decisive boost: “At the beginning it was 100 percent Festo Didactic. We then gradually familiarized people with our technology. That was the only way to achieve success as a corporation.” To this day, Otto Bauer sees himself “almost in the role of a missionary”, on the road with the Stolls’ vision of knowledge transfer. “No company in the field of technology has established such a great knowledge network in so many languages as Festo Didactic.” Providing training and further education as a for-profit business is a tough balancing act, Otto Bauer suggests, “but in the end what counts is not just the return but also the number of people who have increased their knowledge. We have to do it, or someone else will do it for us.” He sums up, “We’ve achieved a lot and want to achieve even more. The Turkish market still has a long way to go, and we want to play a part in shaping it. That’s the track we’re on.”

Festo Didactic has already put a long path behind it in the People’s Republic of China. Just how long, can be seen from the growing competition there. While in the mid-1980s Festo Didactic was practically the only provider of technical training services, by the end of the 1990s rivals – most notably domestic – were “popping up like mushrooms”, as Hermann Nagel quips, the manager responsible for China. Among the competitors are companies that more or less copy Didactic’s products. One of them even shows a Festo building in Germany on its website. The competition is hardly surprising given the gigantic growth potential: The most populous country on earth has about 1,000 universities, 4,000 colleges and 20,000 vocational colleges, not to mention the countless industrial, commercial and crafts operations. Festo Didactic, which at present has a base of some 500 clients, thus expects to double its sales every three years going forwards.

Festo Didactic had already established initial contact with Tongji University in Shanghai years before the Festo subsidiary opened for business in Beijing in 1993. It had first equipped a Beijing lab with automation equipment in 1985 in connection with a pilot project through which the Ministry of Economics of the state of Baden-Württemberg and Chinese agencies is testing vocational training based on the German dual vocational education system. Hermann Nagel was taking part in the project on behalf of the German technical cooperation agency

**China Tianjin** One of three laboratories equipped with pneumatic drives from Festo. The centre offers highly qualified training and service for more than 120 professions in seven technical disciplines including modern manufacturing, control technology, logistics, electronics, welding technology, information processing and creative design. With a capacity of 1,700, the centre can train 200,000 students per year.











**FACT Centre Oman** Between 2007 and 2010, the FACT Centre was established in three phases: Basic Technologies of Mechatronics, Factory Automation and Packaging Systems, and Process Automation. Marketing Strategy workshops top off the training programme for the local industry.

GTZ when he encountered Festo Didactic for the first time and met Kurt and Wilfried Stoll. “That pioneering work is now bearing fruit,” Hermann Nagel says with a smile more than 25 years on. Not only is the school soon to boast a mechatronics competence centre using Festo Didactic equipment, but “the Chinese government has resolved to introduce basic elements of the dual vocational educational system nationwide.” Moreover, the Chinese Ministry of Labour, with which Festo Didactic maintains good relations, is constructing major training centres in various regions in the country, with Festo Didactic already involved in every case. This again is a reason to anticipate that the company’s fortunes will surge, especially as an increasing number of seminars are being requested by the subsidiaries of German and other foreign industrial corporations in China. Hermann Nagel is therefore heading back to China for a second time in September 2012. He wants to be present for the further expansion of the Chinese subsidiary, help implement the increase in the Festo Didactic workforce to forty employees, and open two additional offices in China.

Even in the highly developed nations with long industrial traditions there is still great deal of latent potential for Festo Didactic, as the example set by the US demonstrates. “In many countries, and this includes the United States, technical training does not take place in industry,” regrets Wilfried Stoll, alluding to the “incredibly long and in part tortuous processes” that he has experienced in the States when it comes to the topic of dual education. “But the country is now beginning to focus increasingly on the German model.” That assessment is shared by Theodoros Ktistakis, who is encountering a growing interest in industry-aligned training schemes for new staff in the USA; he discerns a sea change in the local approach, with a renaissance in the appreciation of blue-collar skills. “Only ten years ago, hardly anyone in the States wanted to talk about mechatronics,” Theodoros Ktistakis reports. “They preferred to speak of ‘industrial automation’. That has changed, and I see here a great opportunity for Festo Didactic.”

Theodoros Ktistakis is Greek by birth. He studied Electrical Engineering in Athens and then pursued a masters at the University of Johannesburg in South Africa. When he needed assistance for his project, in which he aspired to automate a robot assembly cell, his professor – with the words “Go to Festo” – sent him to the South African subsidiary. It marked a decisive turn in his career. Ktistakis has



**FACT Centre** This training centre in San Salvador, El Salvador is a joint project run by ITCA (Instituto Tecnológico Centroamericano) and GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit) in a bid to establish a dual education programme based on the German model. Festo Didactic designed the lab's layout and assisted with coordination of the project.



now been with Festo Didactic for 23 years. And in the future the sentence “Go to Festo” is likely to be heard more often in the US, too, thanks to Central Piedmont Community College (CPCC) in North Carolina, with whom Festo is partnered. There are many industrial corporations in the area, including German companies such as Siemens. To provide a sufficient number of qualified staff, the college is offering a new training and further education course for skilled workers lasting several years, based on the German model and certified by the Karlsruhe Chamber of Commerce and Industry, another project partner. The CPCC project is so impressive that President Barack Obama mentioned it by name in a speech in early 2012. And Festo Didactic is in the thick of it all: A FACT centre is to open at CPCC in 2013. “The ink is on the paper, and the first shipments have already arrived in North Carolina,” Theodoros Ktistakis says. “Now we need only to implement the training methods and adapt the premises to match the Festo corporate design.” FACT centres such as this, where people receive qualifications to work in local companies by learning about hydraulics, fluids, control or CIM technology in the various labs, and obtaining the relevant certificates at the end of their time there, are something Festo Didactic already operates in twelve other countries including Cambodia, Indonesia, Mexico, Oman and Sri Lanka.

Just how much the Americans are looking forward to opening the next FACT Centre can be seen from a statement by an employee of a foundation in North Carolina that is providing financial backing for the project. When Theodoros Ktistakis was giving the greatly impressed administrator a tour of the Festo and Festo Didactic facility, the latter said: “I have seen the future of industrial production, and its name is Festo.” Ktistakis is therefore convinced – with good reason – that in key market of the US, where one of its main rivals is already highly successful, Festo Didactic can now go on the offense with renewed momentum. Ktistakis: “We are headed in the right direction.”

And the expansion continues, even though Festo Didactic is already active in some 140 countries. “It’s not as if we’re running out of new markets,” Wilfried Stoll points out. “You could instead ask, what is Festo Didactic doing for example in Burma, in Mongolia? What about developing nations in Asia and the Americas, and Africa with its 54 nations? For Festo, Africa could be the key continent for the coming decades, most significantly in the area of education. The World Bank estimates that around 100 billion US dollars will be needed to guarantee education and training for young people in Africa. And where we already have a presence,

what matters now is the intensity of our involvement, speed, reaching new audiences deepening our presence in keeping with the structure of individual sectors, which always demand application know-how, which we can respond to with new teaching materials and seminars. This is not the only sense in which the terrain is almost infinite. The development in the emerging markets of the future will become even more dynamic, a speeded-up version of the path of economic development being taken by today's more advanced nations in Asia and the Americas."

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**Dr Wilfried Stoll** Managing Partner Festo Holding GmbH



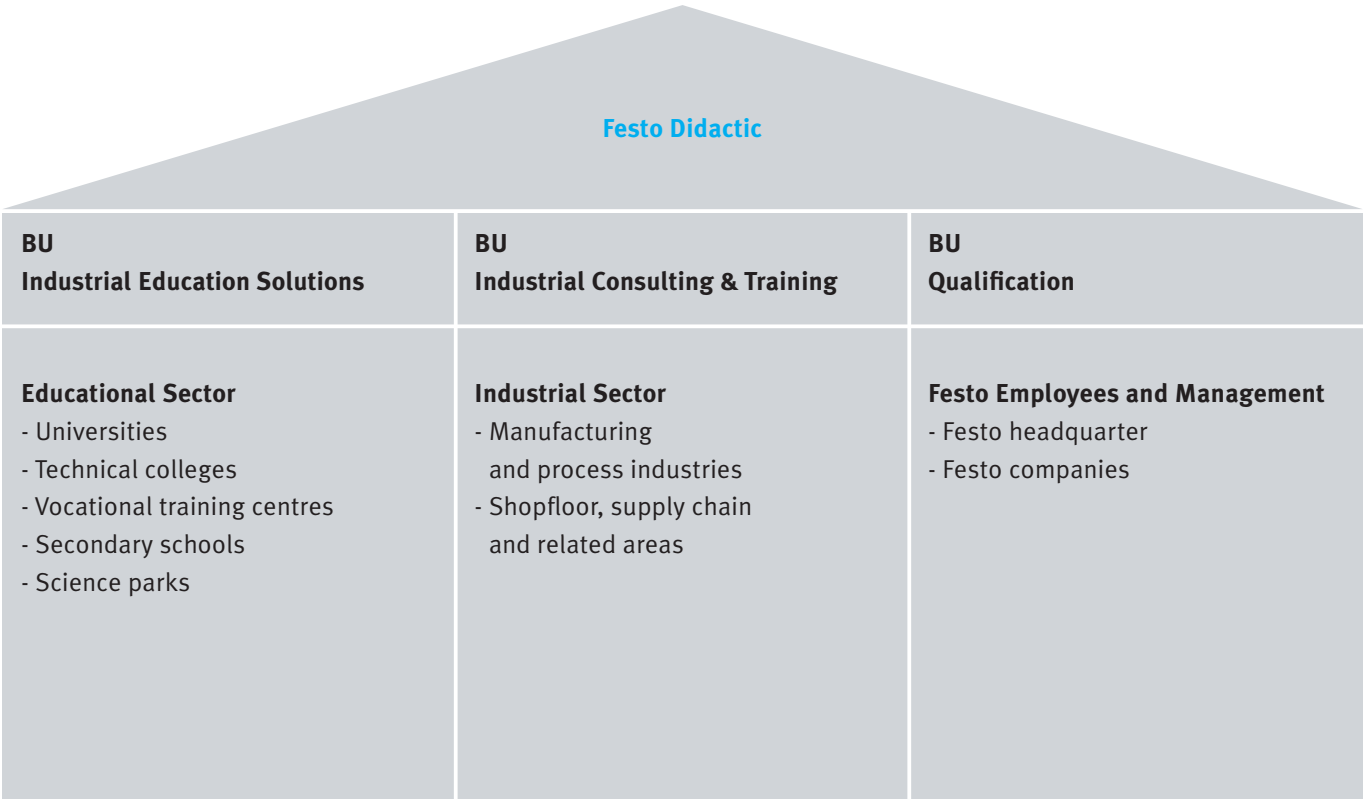






## Innovations for the Training Market

On the Modular Production  
System MPS® and other  
novelties:  
how a smart innovation policy  
keeps Festo Didactic on track  
for the future



Theodor Niehaus walks through the goods distribution centre located on the ground floor of Festo Didactic headquarters in Denkendorf. It is from here that robots, learning factories, laboratory equipment and CIM systems are dispatched to destinations the world over. The tall, slim man taps the wooden boxes on the floor with his fingers or tilts his head upwards if they are stacked high, reading out the destinations on the waybills: “Turkey, Panama, Mexico, Malaysia, Vietnam, USA, India, China, South Africa, Brazil – and that’s only those going out today.” Some weeks ago, he says, laboratory equipment left the warehouse destined for 400 schools in Indonesia.

Things are looking very good for Festo Didactic and its three business units (Industrial Education Solutions; Industrial Consulting & Training; Qualification): The company is developing profitably and is the world market leader in technical education with a market share of twelve per cent. Exports account for eighty per cent of its sales, and thousands of clients around the globe know the brand and are happy with its products. What next? What new concepts and innovations do the engineers, trainers, software developers, sales personnel, editors and marketing experts need to keep the competition at bay? How will they respond to the swiftly changing media landscape? Will the company undergo transformations similar to those seen in the past?

Festo Didactic can look back on a long history as an innovator. But not everything the company tries its hand at is a success. Sometimes its attempts fail to bear fruit, leading to the termination of projects that prove to be unsuitable or simply too expensive. “But we were always trendsetters. We almost never failed to integrate the latest technology. We were always up to date,” former Head of Distribution Fritz Eisele recalls. He remembers the 1980s, when the CD had not yet been invented and the videodisc was all the rage in storage technology. “We produced several hundred, and many of our clients were very excited about them, but the disc readers to play them were simply too expensive,” Fritz Eisele says.

Festo boasted its own e-mail system by the end of the 1980s – a time when fax machines were first coming into use in German offices. Next up were video conferences, which in the early 1990s served to optimize interfacing with the company’s international subsidiaries. No expense was spared to set up an in-house

video room in the basement at head office, which involved laying a dedicated fibre optic cable from Stuttgart to Berkheim. And because it was the only company far and wide to boast such a facility, Festo Didactic was soon attracting visitors from other nearby companies who were interested in the technology. Some even used the room for their own video conferences. It was not long before the equipment was being employed for televised teaching as well, with Helmut Meixner and Rudolf Kobler giving a series of seminars from the studio via a long-distance line until the idea was judged less practicable than had been anticipated.

The Modular Production System (MPS®) made history in 1991. “We were the first to take two-dimensional training boards onto which components were attached and, by means of MPS®, transpose it into the third dimension,” Nader Imani remembers. Helmut Müller, then an executive director at the Heilbronn Chamber of Commerce and Industry and later an international business consultant at Festo Didactic, tells the story of how in the late 1990s, in response to an inquiry from Nuremberg Chamber of Commerce and Industry, he developed the company’s Computer-Based Training (CBT), a product of long standing, into the Web-Based Training (WBT) that remains a reliable seller for Festo Didactic to this day. “It was one of the secrets of our success that we never just sold a piece of metal. We always offered a seminar in the appropriate medium to go along with it, and we explored all the new electronic media in-depth,” says Fritz Eisele looking back.

A good ten years later, managing director Theodor Niehaus sits in his office with a tablet PC in his hand. Once the corresponding software has been loaded, the tool is able to communicate with any Festo Didactic learning station – it identifies it, supplies all the necessary background information and plays the relevant demo clips. “Mobile digital education is here to stay, because it gives access to the most current information no matter where you are. That’s why we are working on implementing the device as a useful aid to learning,” Theodor Niehaus comments. But he is equally convinced that the hands-on approach of practice-oriented training will continue to be the key to success in the workplace. The integration of the technical potential of tablet PCs into future learning situations is only one of many options that Festo Didactic is currently exploring.

Another idea, based on the model of the Festo Learning Centre Saar (FLZ), is to establish learning centres worldwide with the support of external private or public



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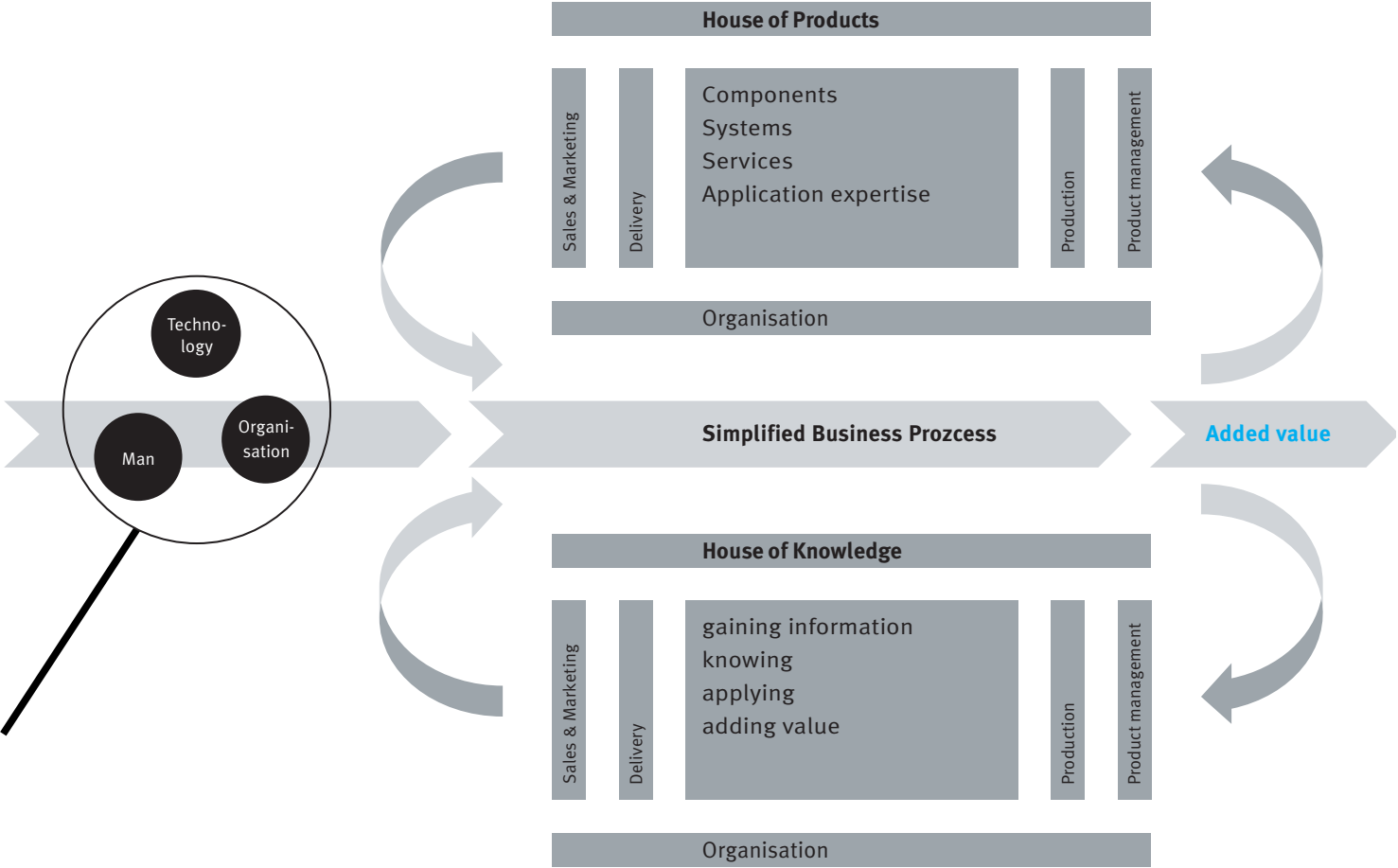
**Fritz Eisele** former Head of Distribution

The **iCIM system** is a platform for professional interdisciplinary CIM training in teaching and research. Flexible manufacturing systems serve to illustrate complex topics such as production logistics and sequence planning.





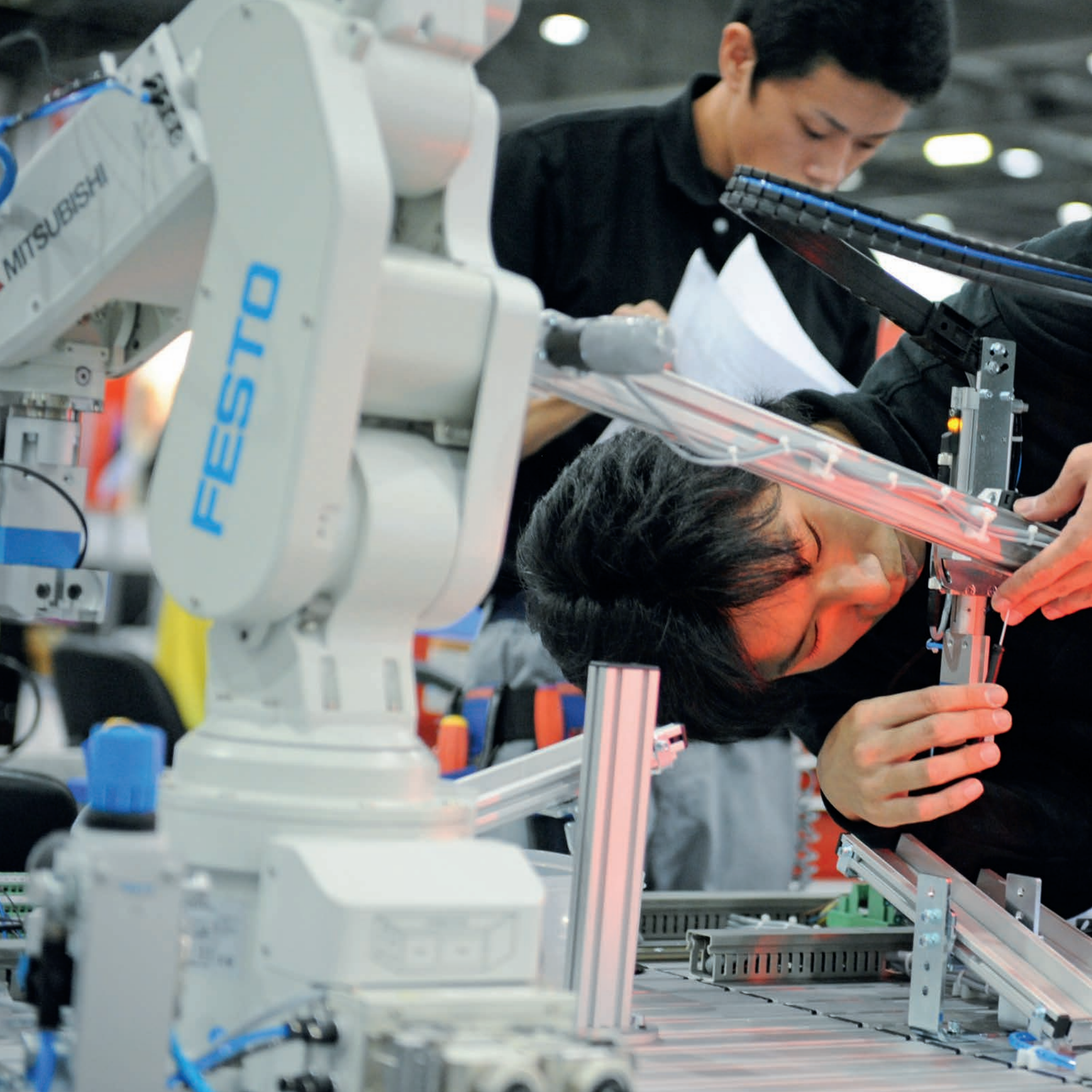




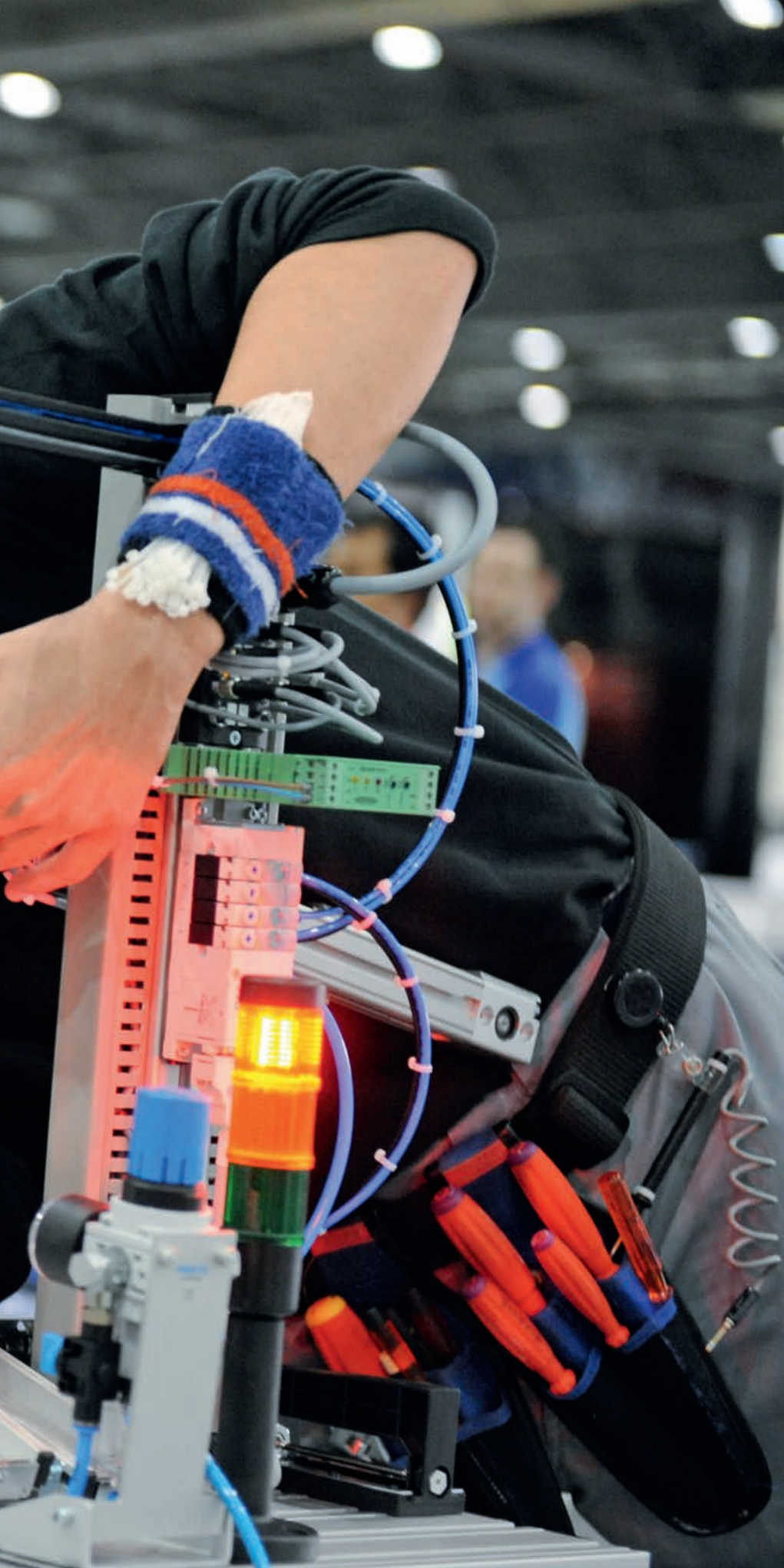


investors. In the German state of Saarland, the first Festo Learning Centre makes an important contribution to easing the situation on the German training and labour market. It was thanks to forward-looking government-funded action advocated by several ministries, labour agencies and chambers of commerce and industry that cooperative training schemes became possible and new job profiles such as that of the mechatronics engineer were created. As an independent training facility, Festo Learning Centre Saar played a pivotal role in this scheme, and with small and medium-sized company on board the result has been an additional apprenticeship with a special emphasis on new professions. “On such a model we are no longer exclusively in charge, which would be another quantum leap for Festo Didactic,” Theodor Niehaus points out. But he is convinced that the concept is a very interesting opportunity nonetheless: Learning centres could continue to bear the name of Festo, the teaching approach would still be based on Festo Didactic’s principles, and course certificates would still be issued by the company. In markets such as India, it could well produce a classic win-win situation in which local or regional investors offer tailor-made qualification programmes to local companies, while Festo Didactic benefits from a surge in public awareness on a scale that the company would not itself be able to finance. Ultimately the situation could create new opportunities for its learning system business.

In his Denkendorf office, managing director Theodor Niehaus opens a presentation on his laptop screen. The chart is made up of four squares. The square at bottom left represents Festo Didactic’s current business terrain. The other three are grouped around the first and symbolize the potential scope for development at the company – three new fields in which Festo could become active one day. This chart presents the findings of the “Didactic 2020” project, where those at the company’s helm explore where the company’s future direction. Niehaus will reveal only this much: “Our current programme of innovation will directly affect our business model. Our employees have put forward countless ideas for the next development stage of Festo Didactic and our task is to decide which can be progressed furthest down the road to implementation – not an easy task.” Basically it’s like having a raw diamond, the Director says: “All we need is to decide which facets need to be polished so it will sparkle even more than before.”







**WorldSkills**

Epilogue

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**WorldSkills** Excitement all around – the youthful audience at WorldSkills 2011 in London.



It will be his fifth world championships. Following Helsinki, Shizuoka, Calgary and London, July 2013 in Leipzig: WorldSkills, the world competency championships and the first in Germany for forty years. One thousand competitors from over sixty countries are expected to attend – and more than 200,000 in the audience, including education ministers, CEOs and human resources directors of major international corporations, media representatives based from China to Mexico, university chancellors, deans, professors... “Yes,” says Michael Linn and takes a deep breath, “it’s going to be a huge event for sure”, the largest professional skill championships ever.

Michael Linn graduated in engineering and freelanced for Festo Didactic for years before becoming a permanent staff member in 2004. He is now the product manager in charge of Festo Didactic’s MPS® Modular Production System – since the launch of the Mechatronics competition at WorldSkills 1991 it has been the official competition platform for all the mechatronics teams. Since 2007 Michael Linn has also concerned himself with Festo Didactic’s commitment to various vocational training competitions, but what he initially did “on the side” is now increasingly eating into his working hours: In addition to the Mechatronics competition, WorldSkills also includes the Polymechanics discipline, which is likewise sponsored by Festo Didactic, and there have been discussions about extending the programme to include other professions such as supply engineering. Furthermore, mechatronic engineers also compete at EuroSkills and national preliminary rounds, and last but not least there is the international competition RoboCup. Plenty of good reasons to relieve Michael Linn of his other duties – and since mid-2012, he has been Festo Didactic’s first ever full-time liaison to skill competitions. At WorldSkills 2013 in Leipzig, he will not be just anyone amidst thousands of participants but the chief expert on mechatronics. Is he nervous? “I wouldn’t say nervous,” Linn replies, “but as the deadline draws closer there is a certain tension.”

When mechatronics was admitted to WorldSkills as a discipline in 1991 – following years of ardent lobbying on the part of Festo Didactic – there were all of two teams competing for the title. In London the number had already jumped to 32, and now in Leipzig Michael Linn is expecting as many as 35 teams on the starting line including participants from China and India. For Kurt Stoll, who at the St. Gallen event in 2003 commented that WorldSkills would not be complete if these two major economies were not on board, this will indeed be a dream come

true. Incidentally, Festo Didactic has been awarded a contract in China as official supplier for the nationwide preliminary mechatronics competitions, as Hermann Nagel, head of Festo Didactic's presence in China, reports.

"For me WorldSkills is the biggest and best MPS marketing platform of all," says Michael Linn. "We get to demonstrate what our products can really do, we can act as a source of inspiration and motivation for participants and clients, and we get an opportunity to enhance awareness of our brand. But what really moves me is the enthusiasm, dedication and competitiveness that the top trainees and young skilled workers from around the world show as they're fighting to achieve good scores." Under time pressure they assemble MPS® stations step by step to create a small production unit. They strip cables and connect compressed air tubings, attach valves, sensors and filters. Later they perform maintenance work and identify internal faults, and finally they complete optimization tasks – all of this surrounded by the audience cheering them on, supported by their own experts, observed and assessed by the members of the jury. Not to forget the flags and the music when the teams enter and the awards ceremony at the end of the four-day competition. And at the heart of it all we see Michael Linn as the head expert, not merely the brain behind the various tasks and assignments, but also responsible for ensuring the entire competition runs smoothly.

One day in June 2013, four articulated lorries filled to the roof with Festo Didactic materials will set out on their journey from Denkendorf to Leipzig. And stress will be mounting by the minute for Michael Linn and his accompanying team of engineers: Do we have all of the materials they need? Will we succeed in assembling the MPS® prototype? Are all the numbers in the assignments correct? Will we be able to communicate with the team managers from other countries?

On day three and four of the competition the tension will slowly begin to ease, "once everything is running according to plan and all the teams have done super, clean work." And especially if it transpires that a good number of MPS® systems will not need to be shipped back to Denkendorf, because they have been sold to Brazil, Mexico, Sweden or elsewhere in the world. "It has always worked out so far," Michael Linn concludes. "Generating revenue is simply part of the job.

The Stoll family has made training and further education Festo's strategic focus for decades. Long before other companies, they anchored knowledge and education in the company's DNA – internationally. With that, they laid the foundations for the company's continuing success. We owe them our thanks.

**Dr Eberhard Veit** Chairman of the Management Board, Festo AG





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