

# The Technical Training & Education Equipment Company



Training people to  
engineer the future



*"If you think education is expensive, try ignorance."*

Derek Bok, 1971, President of Harvard University



Rolf Lucas-Nülle Dipl. Ing.,  
Company Founder, Chairman

## *"The future lies in education"*

*A challenge successfully undertaken by the founder of the LN Group together with his three companies and approximately 300 employees.*

## "We focus all our efforts on our clients and employees"

Being the barometer of our market performance, the customer holds a special place. The success of our client relationships is based on the mutual understanding gained from long-term partnerships.

It is the professional and social competence, the cooperation and personal commitment of our staff that ensures the success of our company. Our teamwork derives from a team spirit that is lived out and anchored in a company based on a lean organisational structure.

## "Our product philosophy is oriented on the needs of the market"











By experimenting with our educationally optimised systems and equipment, theory is combined with industrial practice to turn knowledge into hands-on technical competence and skill.

In addition to our classic, experiment-based training programs, our new generation of PC-supported systems provide the answer to the world's growing demand for "blended learning" solutions in the field of technical training and engineering.



## Committed to technology and quality

For more than 30 years, Lucas-Nülle has been developing and producing sophisticated high-quality training systems in Kerpen near Cologne. These systems cover areas such as:

- |   |                                    |   |                                  |
|---|------------------------------------|---|----------------------------------|
|  | Electrical wiring                  |  | Electropneumatics and hydraulics |
|  | Electrical power supply technology |  | Microcomputers                   |
|  | Drive technology                   |  | Automation                       |
|  | Electrical engineering/electronics |  | Vehicle technology               |
|  | Communications technology          |  | Laboratory systems               |

Lucas-Nülle training systems are deployed throughout the world where they are seen as the benchmark for quality, efficiency and technology.



Company headquarters Kerpen





Volker Haggmann, Dipl. Ing, Managing Director

*"In a global market, a country's wealth – both in terms of creation and retention – depends on whether the national economy is internationally competitive."*

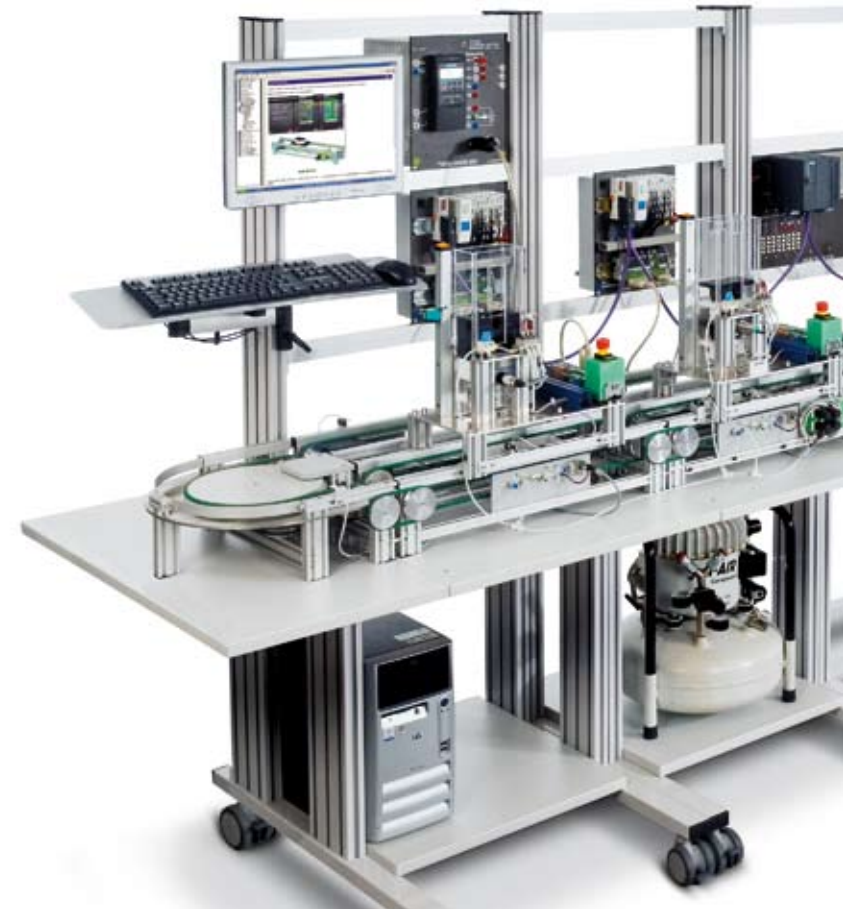


## Mastering technology

Today and in the days to come, skilled workers, technicians, engineers and scientists will face the challenge of developing the know-how required not only to master modern processes and technologies, but also to comply with internationally required standards and the growing demands for quality.

## Ensuring a successful future

Lucas-Nülle has devoted itself to this challenge. Working within a German tradition of demanding vocational training and engineering schooling, we have been developing and manufacturing training equipment and systems for key technologies.



## Vocational training in Germany – a tradition of success

Vocational training and education in Germany can look back on a tradition rich in experience. This is true not only for professional trades and skilled workers but also for technicians and engineers.

## Knowledge + practice = professional competence

A high percentage of practice-oriented vocational training leads to the technical qualifications required by trade associations and industry. Technical skill and proficient competence are the prerequisites for mastering sophisticated technologies. This calls for knowledge and ability. Performing experiments with didactically optimised equipment and systems combines theory with practice and thus ensures confident professional competence.

## Concepts designed to meet the highest demands

Our didactic approach to Lucas-Nülle training systems aims to evoke the student's curiosity and enthusiasm, convey insights into technical relationships and also permit the development of practical applications.

These technical systems are supplemented by extensive, high-quality documentation, handbooks and experiment instructions designed to provide the necessary background information and demonstrate how experiments are conducted safely and successfully.



Industrial Mechatronic System IMS®





## Theory and practice – at the same time and the same location

Lucas-Nülle recognised early on that the PC posed enormous opportunities for improving training and education while at same time having the potential to reduce acquisition and operating costs. This insight led to the development of an entire range of PC-supported systems for technical training and education based on the "Theory and Practice" principle of same time, same location. Moving beyond teaching pure theoretical knowledge, the interfaces designed by LN connect the PC and the most important multimedia training systems

- UniTrain-I®
- InsTrain
- Connect®

to the real world of experimentation. Such a system permits a dialog to take place between the courseware, the student and the experiment. The interface contains all of the instrumentation needed and even allows faults to be systematically added to the exercises.

## UniTrain-I®

There is a broad spectrum of more than 100 UniTrain-I® courses available for use with the multimedia desktop laboratory. They cover the entire field of electrical engineering / electronics, as well as related subjects such as mechatronics and automotive technology. Every course consists of an experiment card and topic-specific courseware with animated theoretical information, tests and experiment instructions.





## InsTrain

The InsTrain Multimedia Installation Lab is a training and experimenting system designed especially for the area of modern building system technology. The courses cover all the relevant topics such as building supply connection, lamp and appliance circuitry, bus systems, network technology, alarm systems and building intercom as well as communications technology. One essential component of InsTrain is a professional CAD planning software for drawing up electrical installation plans.

## Connect<sup>®</sup>

Connect<sup>®</sup> is a highly effective and efficient training environment with multimedia functionality covering topics ranging from engine management to the brake systems found inside motor vehicles. The modular experiment panel system with original car components allows students to gain immediate and practical experience on a variety of automotive component subsystems of all leading manufacturers, for example: Motronics 5.1, Common Rail, FSI as well as ABS, ASR, ESP.

## Classroom Manager

By networking workstations, it is possible to make content such as training programs, experiment instructions and tests available from a central server. The LabSoft Classroom Manager performs system administration and enables training units and tests to be created individually. Group and individual student results can be assessed and large amounts of data administered and managed.

System UniTrain-I<sup>®</sup>













## Technology and professional competence

Besides knowledge and skill, the mastery of complex technologies requires confident professional competence in particular. The modular and compact experiment-based system for the equipping of laboratory workstations and complete technology labs are outfitted with industrial components and equipment.

A broad spectrum of systems is at our disposal for carrying out experimenting, configuring, switching, measuring and evaluating in the training of technical competence and skill:

-  E1: Electrical Installation Engineering
-  E2: Electrical Power Engineering
-  E3: Power Electronics, Drives, Electric Machines
-  T0: Communications Technology
-  I0: Process Control
-  C0: Microcontrollers
-  C1: Automation Technology, Mechatronic
-  A0: Automotive Technology



# CUTTING-EDGE TECHNICAL TRAINING

## Laboratory equipment systems

The laboratory equipment system SybaLab with its top-of-the-line workstations, power supply units in 3 HU / 19" international standard including lab networks, rounds off the LN offering for the installation and outfitting of complete technology laboratories.

## Didactically designed technology

Teaching complex technology requires holistic concepts and solutions which are didactically conceived. For that reason, LN offers a complete package covering equipment, media and commissioning services:

- Industrial experimenting systems (hardware)
- Experiment handbooks
- Sets of presentation slides
- Multimedia courses
- Quick charts
- Train the trainer support on site or at headquarters
- Communications



Experiment setup "Drive Technology"





Christoph Müssener, Dipl. Ing.;  
Head of Research & Development

*"Innovation is what our company is all about because product innovation is crucial for survival in global markets. That is why our engineers are constantly in close contact with universities, vocational schools, training centres and industry.*

*This enables us to find out what the needs of our clients are and we also keep in touch with the latest trends in technology. Of course, being the trendsetter yourself is the nicest of all."*



## Investing in innovation

At Lucas-Nülle, investing in the future has always had special importance for our business. More than 12% of our turnover is reinvested in research and development every year. This gives us an edge in terms of being able to respond faster to market needs, allowing us to deliver up-to-date training systems that satisfy clients.

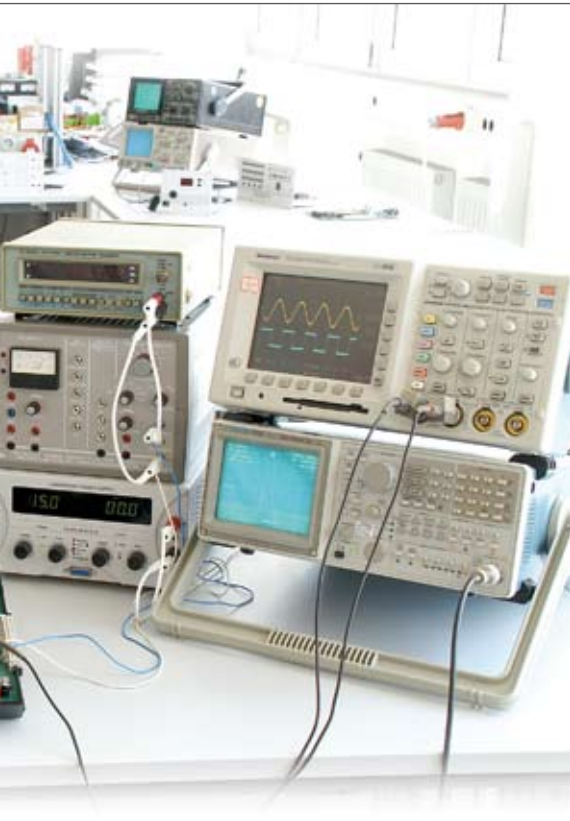
## Excellent results

Technological change, progress, science and theory – these are the elements that drive product management and fuel our company's development efforts. We ultimately measure ourselves by how well we accomplish this.

The worldwide success of our state-of-the-art training systems proves that our know-how is consistently finding its way into our products.



# STRONGER AS A TEAM



Developing and testing prototypes

## Success with competent partners

No one knows what the market needs better than our customers.

Stable, long-term partnerships have always been important to us. Collaborations and joint projects with professors, academics and experts from business, higher education and vocational schools have produced pioneering results.

We are even working closer together with international players from industry who are seeking to benefit from our special expertise in training young recruits who need to be more skilled at handling their own complex industrial equipment.

## Opportunities for the next generation

In order to develop its own future generations of competent staff, Lucas-Nülle carries out the training of committed young people by itself. Many of these trainees from local universities and colleges get their initial professional training on our premises.

We never cease to provide opportunities to young engineers to complete their diploma theses by applying what they have learned at school and putting it to practical use in the development of a technical training system. Many of these young graduate engineers found their true calling developing technical training systems for us and have remained with us to this day.

University of Applied Sciences (FH) Mittweida

•

University of Applied Sciences (FH) Köln

•

University of Applied Sciences (FH) Aachen

•

University of Applied Sciences (FH) Bonn- Rhein-Sieg

•

University of Applied Sciences (FH) Aalen

•

Wago, Busch-Jaeger, Dehn, Hager-Tehalit

•

Bfe Oldenburg

•

Lenze

•

Siemens

# WE STAND FOR QUALITY



Ralf Kreider, Dipl. Ing., Head of Production

*"The secret to our success is, first and foremost, our highly qualified and motivated employees. Naturally, our products have also benefited from internal processes that are constantly being reengineered and reviewed so that we can continue to deliver good quality products on time."*



## The highest standards of production

Lucas-Nülle training systems are manufactured in our own factory at our headquarters in Kerpen, Germany.

It is only possible to cope with such a complex and diverse product range when you have a highly motivated team of competent, responsible and experienced staff, technicians and engineers.

## Efficient production processes

We use a cutting-edge PPS system to manage our production process. This system is the reason why we can guarantee our customers that all our delivery deadlines can be kept.







## Always at your service wherever you are

Thanks to our global market presence including national and international trade fairs, we are well aware of regional peculiarities in the training and education market. We like to remain in close and continuous dialog with our partners and clients so that new trends can be recognised early on.

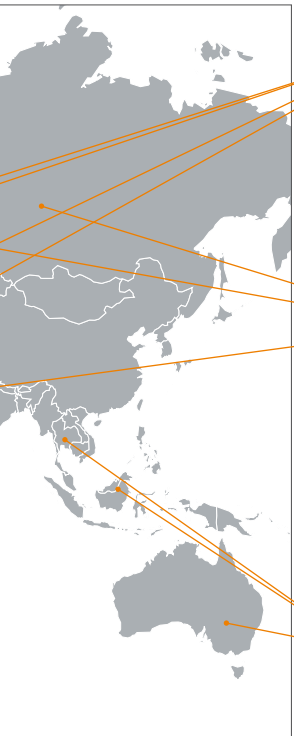


Team Germany, Austria, Switzerland



Team Americas, Western Europe and Africa

# A NETWORK OF STRONG PARTNERS



Team Netherlands, France, Africa



Team Arabia, CIS, Northern, Eastern and Southern Europe



Team Asia-Pacific Region

Worldwide Sales

## Our actions and thoughts are customer-oriented

Having five sales teams operating worldwide means that we are always in the clients' proximity wherever they may be. Keeping up-to-date on all the latest regional requirements allows us to accommodate any client needs which have been determined during consultation and planning. Solutions can then be found that are tailor-made, groundbreaking and all encompassing. This approach translates into lower costs along with more efficient and sustainable results.

## Gaining and justifying our customers' trust

Our most important goal is to convince our clients of the quality and sustainability of our work. We constantly strive to stay in close contact with our clients. A comprehensive and long-term approach to after-sales service is an essential aspect of our product strategy. This includes giving the client's team extensive training on our equipment so that they can take full advantage of our multifaceted training systems. When problems or questions arise, our service team is at your disposal, here and on location. This is only possible because we offer our clients short communication channels the world over.

## Reliable partners

With over 60 sales partners worldwide, Lucas-Nülle enjoys expert global representation. Smooth cooperation between local contact partners and sales teams serves as a guarantee of the highest standards in project planning, commissioning and training.





## We provide planning, consulting and project management

The installation and outfitting of a sophisticated high-tech laboratory requires careful and professional planning. The client's requirements need to be defined in detail prior to being clearly compiled in technical specifications. This means that training and learning objectives must be given as much consideration as locational or architectural aspects.

This is where experts from Lucas-Nülle have accumulated so much experience and know-how over the years.



## We think logistically

We organize large- and small-scale projects alike for smooth implementation. Our logistics are planned with a view to efficiency and razor-sharp precision. Using our systematic process management methods, you can monitor the progress of any project. Should some hitch arise, there is a rapid and flexible response. This means you can rest assured that every training system arrives on time and that your training plans are implemented on schedule.



# INSTALLATION & TRAINING



LN Training Centre in Kerpen,  
Seminar in "High Frequency Technology"

## We take care of assembly and commissioning

In conjunction with our local partners, we make sure that your systems are installed and commissioned correctly so that training and work can begin on time and without any problems.

## We train you personally

We pay special attention and give added care to the training seminars we hold for our customers, instructors, teachers and lecturers. We familiarise you with the use and operation of modern laboratory equipment technologies and their training objectives, either here in our attractive high-tech seminar centres in Kerpen, or on site in your newly equipped facility.





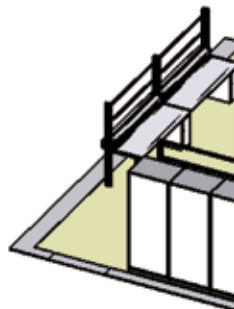
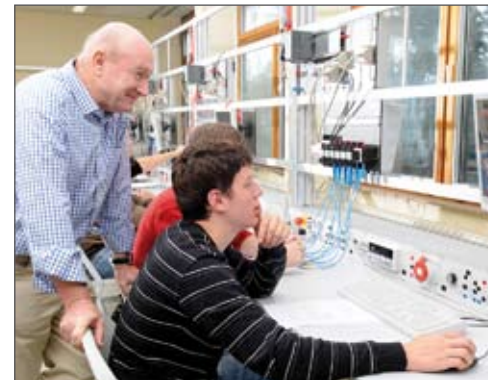
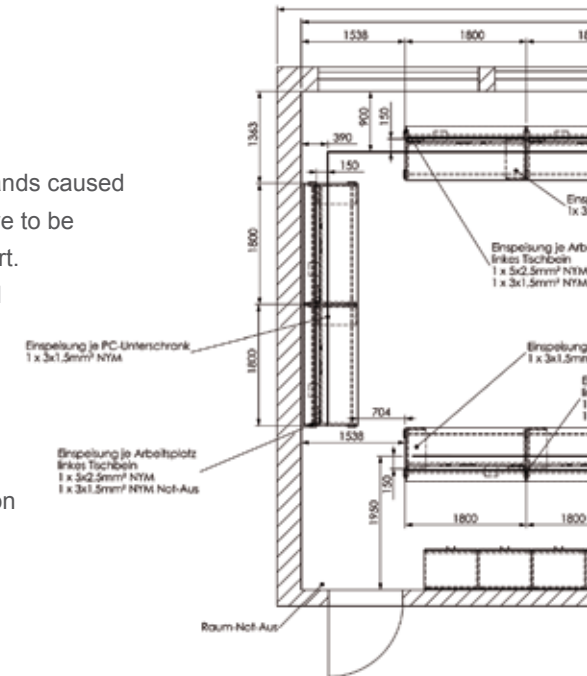
## The high standard of training and education in Germany demands constant investment

### The time is right for new investments

Schools, training centres and institutions are responsible for coping with the rising training demands caused by the rapid pace of technological innovation. In order to achieve this, not only does content have to be continuously upgraded, but the labs themselves have to be modernised to remain state-of-the-art. This factor was what motivated a substantial investment in the construction of two new electrical engineering labs for the Wittlich centre and its student body of 1800.

### Collaborative partnerships

The planning phase goes hand-in-hand with fact-finding trips and workshops, targeting teachers and experts so that detailed project documentation is created for the procurement and installation of high-quality, price-efficient equipment and facilities.







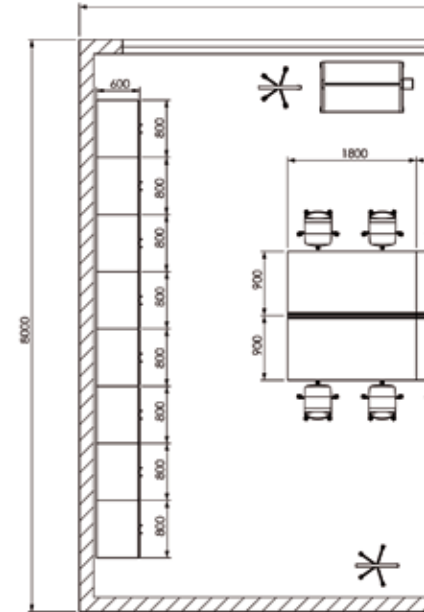
## The success story of the year: Grainger Laboratories at the Illinois Institute of Technology (IIT), Chicago

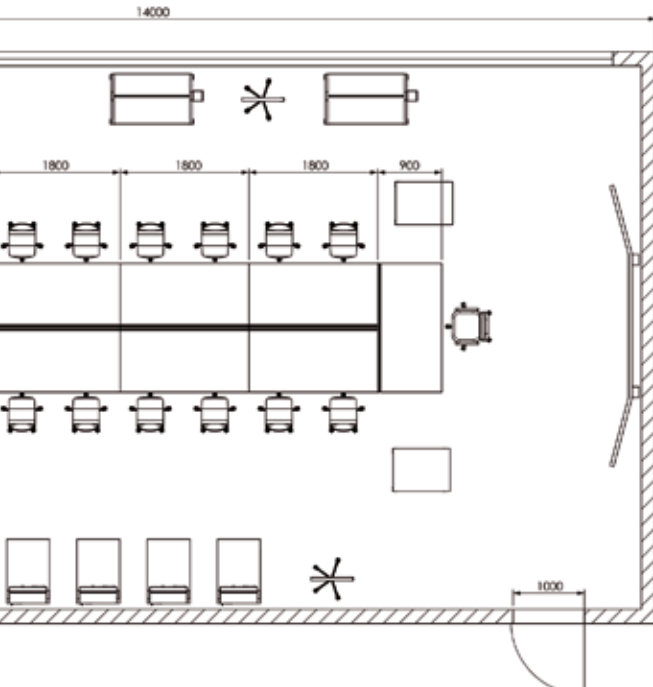
### Decision to purchase systems from Lucas-Nülle

The prestigious Electric Power and Power Electronics Centre (EPPEC) at the Illinois Institute of Technology (IIT) near Chicago and the heart of the American automobile industry has decided to purchase Lucas-Nülle systems for the outfitting of two new technology labs. This was achieved despite fierce competition from a local American supplier.

### Adapted to the specific requirements in the USA

The systems that we delivered were completely modified and adapted to the special stipulations prevailing in the USA regarding training objectives, experiment literature and local safety requirements.





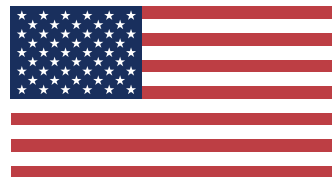
## Implementation

The following were supplied and installed:

14 lab bench workstations with systems

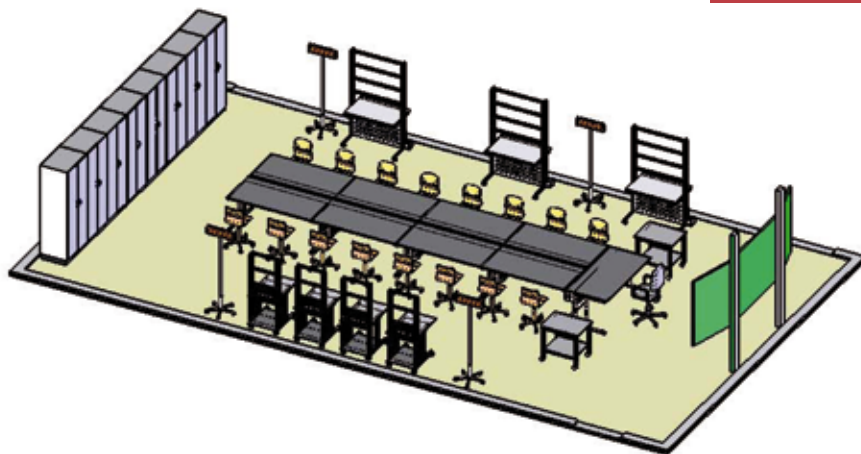
For the topic areas:

- Power engineering
- Power electronics
- Drive technology
- Automation engineering
- Photovoltaic technology



The institute's Director, Dr. Ali Emadi:

*"We now have one of the best equipped labs for power electronics and drive technology in the USA. And the group of people set to benefit the most will be the more than 150 soon-to-be engineers annually enrolled at the EPPEC. After graduation with a masters degree in electrical engineering and electronics, they will be highly sought after by industry."*





## The Asian tiger situated on the Malaccan straits is investing in technical training and education

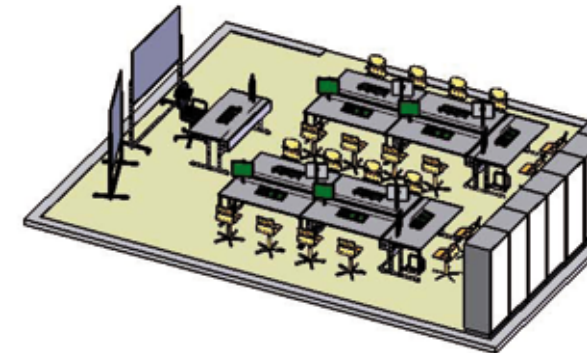
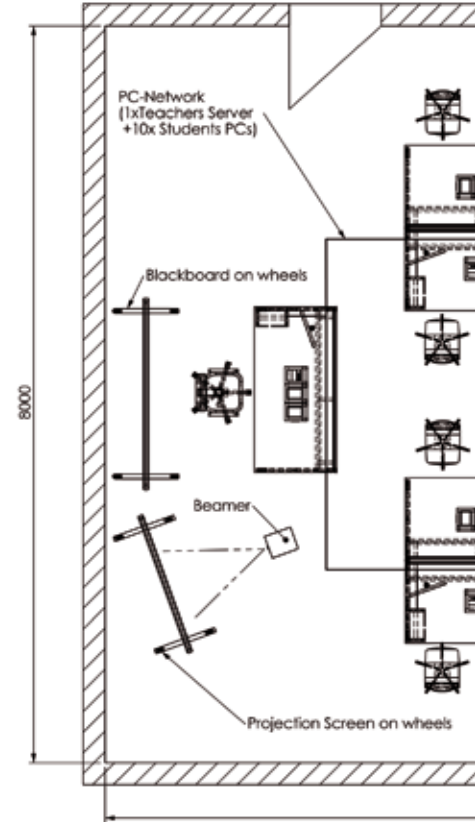
### Malaysian economy experiencing fast-paced growth

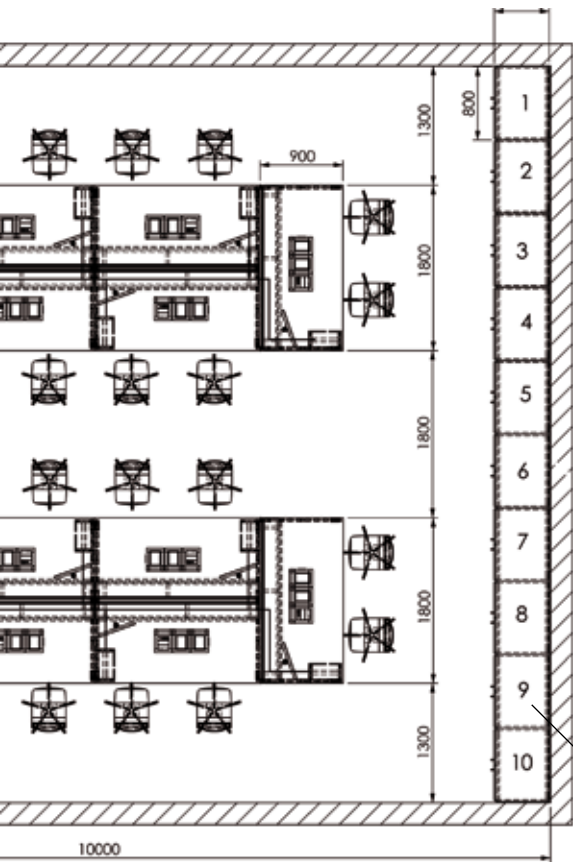
The technicians and engineers being trained here on an internationally high level are a guarantee for the continued and unprecedented growth driving the Malaysian economy.

### Industrial site of Penang

The island of Penang right off the Malaysian coast in the Malaccan straits and also known for its tourism has slowly developed into one of the most important industrial centres for the country's rapidly expanding chip and automotive industry. The resulting demand for well-trained and qualified labour such as electronics and mechatronics specialists has called for the building of a new training centre for engineers and technicians, the Technical Institute "Kolej Kemahiran Tinggi Mara".

For almost two decades now, Lucas-Nülle – together with its partner firm LN-Makmur – has enjoyed a strong reputation as a provider of sophisticated projects for the areas of Vocational Education, Bachelor and Master of Engineering in Kuala Lumpur.





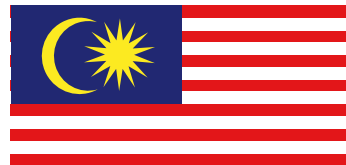
## Implementation

The following was supplied and installed:

- Two multimedia labs equipped with UniTrain-I® system
- Eight labs for these areas and workstations including systems

for the following topic areas:

- Sensors and control technology
- Power electronics
- Digital, microprocessor and microcontroller technology



Prime Minister Dato Seri Abdullah Ahmad Badawi at the grand opening of the institute:

*"The KKTm institute is an important step for Penang as it moves toward becoming Asia's biggest outsourcing hub."*

Storage cabinets for the Multi-Media Blended-Learning Courses

Each storage cabinet contains 11x courses  
[1 teacher + 10 students hardware and software]

1. Electrical Engineering
2. Electronics
3. Digital Technology
4. Electrical Machines
5. Measurement Technology
6. Industrial Electronics
7. Communication Technology
8. Automation Technology and Mechatronic Fundamentals
9. Microcomputer Technology
10. Automotive Technology



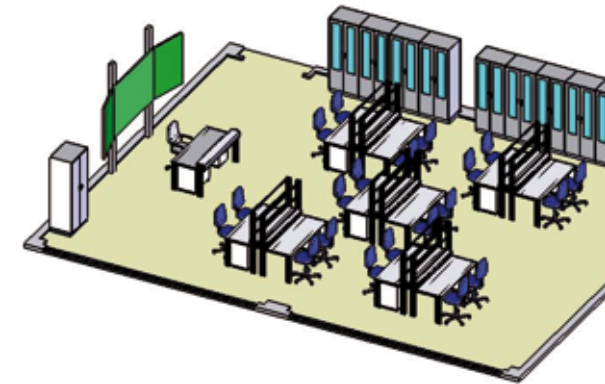
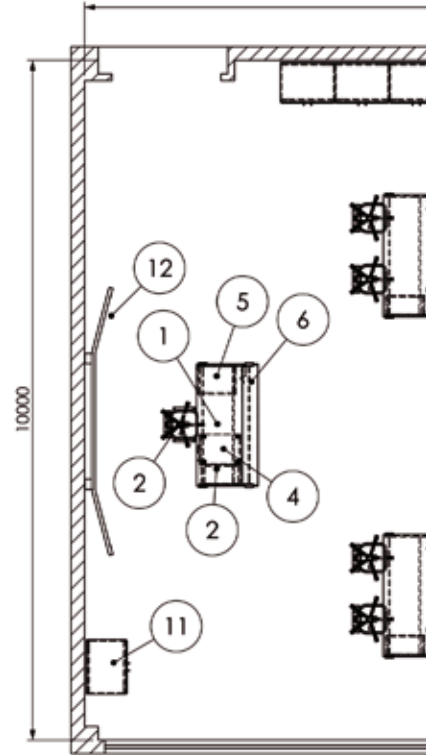


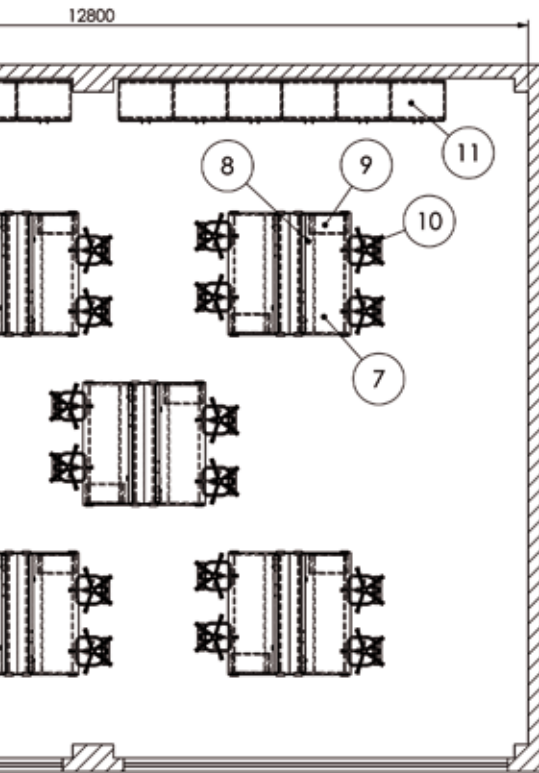
## Becoming independent through education

With the aim of making itself less dependent on the ever-scarcer resource of oil, the Yemenite government has set up a program to promote economic growth. Part of this program is aimed at improving and modernising vocational training and education. Training and assistance for engineers is to receive top priority.

### German standards and quality are in high demand

Against the background of these investments benefiting the University of Hadramaut, Lucas-Nülle outfitted one of the most modern electrical engineering labs to be found in the Arab world. And thanks to excellent teamwork, knowledge of local conditions and needs as well as German training system standards, Lucas-Nülle also won the contract to equip the Universities in Aden, Taiz and Thammar.





**Legend:**

- 01. Teacher working place 1800x900x750mm
- 02. Swivel chair
- 03. Under-table cabinet, for PC
- 04. CPU cabinet
- 05. Container on rollers
- 06. Console Power channel
- 07. Students working stations
- 08. Console power channel
- 09. Under-table cabinet, for PC
- 10. Swivel chair
- 11. Storage cabinets
- 12. Black board (not included in the offer)

## Implementation

**The following was supplied and installed:**

Five complete labs with six to eight workstations each

**Topics included:**

- Fundamentals of electrical engineering
- Drive technology
- PLC control systems
- Mechatronics
- Information technology



**Project-Engineer Hamza Al Huraibi was quoted:**

*"As the lecturers obtained support from Lucas-Nülle, both in commissioning of the training systems as well as in working with the equipment, the instruction ran smoothly from day one. The potential of these new training systems is so vast that work with them always means discovering new possibilities."*





## Large-scale "Nationwide launch of IT technology" project

LN was able to make a sustained contribution to the modernisation of IT vocational training in Uzbekistan. With the objective of strengthening the national economy, the training and education of IT engineers was pushed at the country's 32 vocational schools by equipping labs for IT technology training for the first time.

### Expertise above and beyond training systems

Lucas-Nülle was given the responsibility for the overall project conception and planning. In addition to supplying training systems, we also delivered the instruction media and commissioned a local producer to supply the laboratory furniture. Prior to commissioning the laboratories, we provided the trainers with intensive seminars and schooling.

### Handbooks in the native language

A special challenge was posed by the translation of the handbooks and electronic course material into the Russian and Uzbek languages. This marked the first time that technical instruction material had ever been translated into Uzbek.





## Implementation

### The following was supplied:

Five labs per school with 14 sets of the UniTrain-I® system and 14 sets of the MCLS-Modular® system

### Topics:

IT technology



**Thomas Lux, advisor on behalf of the GTZ:**

*"The labs equipped in connection with the "Labour-oriented vocational training initiative in IT" joint venture,*

*which was sponsored by GTZ/ KfW, are now being utilised very successfully in both traditional theoretical instruction as well as for practicals.*

*One exceptional factor worth mentioning is that all the lab experiments are described for the students in simple Uzbek and Russian. This is a basic essential for the use of the technology during instruction."*





Lucas-Nülle, Kerpen



## Committed to future generations

The Lucas-Nülle Group is a global player comprised of three companies, each with rich traditions specialising in vocational training and education in the fields of technology and the natural sciences. "Made in Germany" is the badge of quality for our products and services that come from the over 300 competent men and women in our group. In the international market of training and education, LN holds a leading position.

### Lucas-Nülle Lehr und Messgeräte GmbH

For more than 30 years, Lucas-Nülle Trainingssysteme GmbH with its headquarters in Kerpen has been developing and producing training systems in key technologies in areas such as electrical engineering and electronics, automation technology, mechatronics, communications and automotive technology. Lucas-Nülle works with more than 60 sales partners worldwide. The LN-Middle East Company, in conjunction with its branch office in Dubai, focuses especially on the markets in the Near and Middle East.



INTEA, Kerpen



### INTEA GmbH

INTEA GmbH is based in Kerpen and is a provider of qualification measures for the automotive industry in the areas of technology, service and human resources. INTEA trainings provide commercial and technical skills as well as manual skills and creativity in solving tasks. With training centres in Germany, Austria and Spain, INTEA is in demand as a global service partner for manufacturers, importers and those involved in trade.



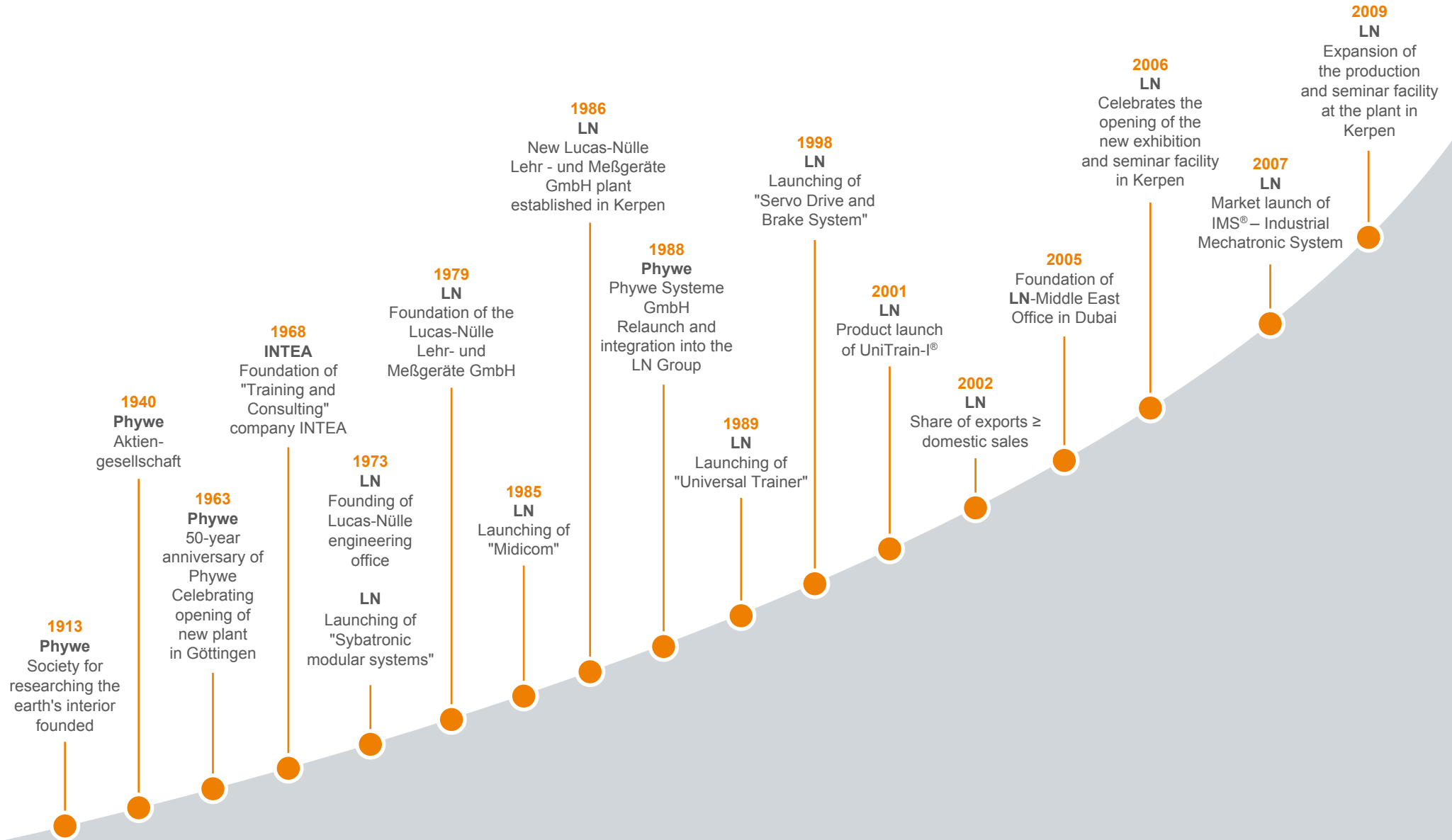
PHYWE, Göttingen



### Phywe Systeme GmbH

Phywe Systeme GmbH & Co. KG, based in Göttingen, was founded over 90 years ago and has been owned by Lucas-Nülle since 1988. Phywe has built up a reputation as one of the largest global providers of training materials for physics, chemistry and biology lessons. Devices and experiments devised by PHYWE are deployed across the board from primary schools to universities wherever people teach, learn and do research.

# THE SEEDS OF PROGRESS





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