



Hessische Landesstelle
für Technologiefortbildung
Dr.-Frank-Niethammer-Institut



Portfolio

International Training Programmes



Our Mission

In a fifty-year success story, we offer training programmes for teachers and trainers from partner countries of the Federal Republic of Germany in the following fields:

- Automation Technology and Electrical Engineering
- Renewable Energies and Environmental Technology
- IT-Systems and E-Learning
- Education Management and Vocational Education

Our training programmes have a modular structure and are tailored precisely to the respective target group. The training duration varies between one week and several months. We offer our courses in German, English and other languages with the involvement of interpreters.

The offer enables the participants to develop themselves into innovative and progressive specialists. After the completion of our seminars, the participants are able to give competent advice, exact installation, conscientious commissioning and sustainable customer service in their respective technical fields. To pass on their acquired competencies, they also have pedagogical know-how, which we impart in a practice-oriented way. Depending on the client's request, the technical or pedagogical part can be individually adapted.

As part of the 2030 Agenda, we contribute to the achievement of globally recognized goals. It has been proven that the further education of training staff is a significant factor for higher quality education in the home country of the participants. This can in turn lead to jobs, economic growth, innovation and better infrastructure thus reducing poverty. Furthermore, our offers in the field of renewable energies contribute to a better climate protection.



Goals of the 2030 Agenda

Our Mission

On behalf of the Hessian Ministry of Education and Culture, we offer further training within the framework of international cooperation of the state of Hessen. Our clients are state as well as private organizations for development cooperation and educational support. Since our institute is affiliated to the Vocational School Centre Groß-Gerau, there are many synergy effects. School tours are organised, visits in school classes are made possible, and contacts for exchanges with pupils are organised.

All our lecturers are experienced in the education of different nationalities with various educational levels and needs. As VET teachers, they usually have degrees in engineering or business or school management.

The course participants (teachers, leaders as well as training and education staff) get to know modern technologies and teaching methods at our institute in order to convey their knowledge as multipliers in their home country. Through contacts with teaching materials manufacturers, visits to education departments in industry and crafts and visits to trade fairs, they experience Germany as a business location and industrial site. At the weekend we offer supervised leisure excursions to regional attractions that complete the stay.



Guesthouse

Groß-Gerau (25.000 inhabitants) offers a very good infrastructure and diverse shopping facilities. Public transport opens up the cities Mainz, Wiesbaden, Darmstadt and Frankfurt in less than 30 minutes.

During the further education the participants stay in our guesthouse which has 27 modern single rooms with shower/WC. Our guests have access to a lounge, a small gym and a laundry room. They also have the opportunity to cook their own meals in a large, fully equipped kitchen. The premises of the training facility are within walking distance (10 minutes).

The social care is provided by an experienced guesthouse manager, who also takes care of the airport transfer on arrival and departure. He also organises leisure activities in the afternoon or on weekends.

Popular destinations in the region include:

- Heidelberg with its historic district and castle
- Boat Tours on the Rhine with a visit to Rüdesheim
- Technological Museums in Sinsheim or Speyer
- City Trips to Mainz, Wiesbaden, Frankfurt, Darmstadt and Mannheim



Vietnamese and South African guests having dinner together

Field: Automation Technology and Electrical Engineering

As a subdivision of electrical engineering, automation technology offers a variety of options for conveying practical contents on the one hand and for integrating participant-centred exercise phases under both technical and pedagogical aspects on the other hand.

Mechatronic systems are used, in which signals are detected by active or passive sensors. Programmes are developed to control or regulate typical tasks, simulated with graphical tools and finally tested on real equipment. The actuators used provide the participants with the opportunity to get to know, compare and select drive technologies. Depending on the focus of the further education, our spectrum ranges from simple microcontrollers to networked industrial programmable logic controllers. To ensure the transfer to the home country, we consider worldwide standards.

Contents:

- Measuring
- Controlling, Regulating
- Communicating
- Human-Machine-Interface
- Safety

Alternatively, in the field of embedded systems we offer the possibility of an electronics-related view of automation technology. Current microcontroller systems are connected to electronic components or assemblies and programmed with appropriate languages. In doing so, modern measuring devices such as oscilloscopes or corresponding apps are used.

Contents:

- Programmable Controllers
- Embedded Systems
- Electronic Assemblies
- Drive Technology
- Mechatronics



Automation Technology under the sign of Industry 4.0

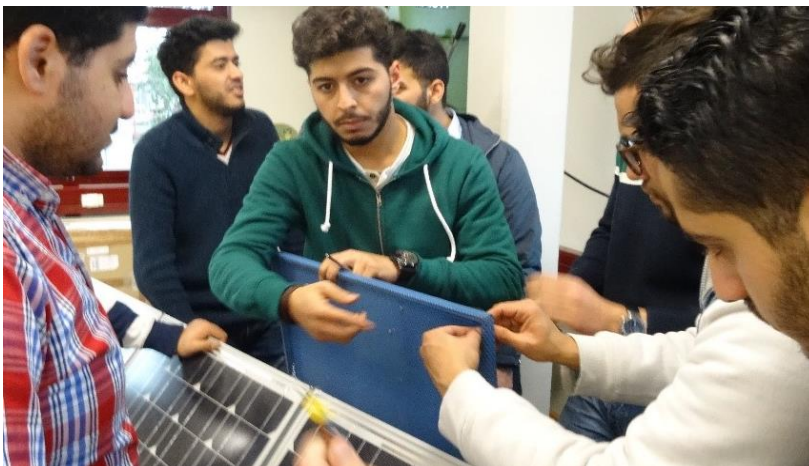
About a quarter of the world's population has no or insufficient access to commercial energy sources. Global warming, air pollution and energy efficiency are the topics of this century. Renewable energies are available, competitive and ideally suited for widespread use in developing countries. The promotion of renewable energies is making an important contribution to improve the living conditions in these countries and to expedite economic development.

After completing the practice-oriented advanced training, our participants will be able to assess regenerative energy forms for their qualitative and quantitative usability and to analyse geographic, economic, ecological and political influencing factors based on selected examples. The participants are familiarised with the basic idea of the Renewable Energy Sources Act and they then understand the widespread use of photovoltaics in Germany. In order to gain competence, physical and technical interactions in the production of solar cells are examined. With the help of professional software photovoltaic systems are planned, simulated, set up and finally put into operation. Electrical protection measures and lightning protection complete the topic.

The electrical energy either goes into immediate consumption or is fed into the grid. Alternatively, a self-sufficient stand-alone network can also be set up with the aid of batteries as a buffer memory, in order to supply previously non-electrified places in the home countries.

Contents:

- Regenerative Energy Forms
- Systems of Energy Conversion
- Electrical Engineering, Power Electronics and Protective Measures
- Systems of Photovoltaics
- Systems of Wind Power
- Systems of Hydro Power
- Technology of Separate Networks



Participants from Egypt assembling photovoltaic modules

Field: IT Systems and E-Learning

The key technology of the 21st century is information and communication technology. No technology has developed faster in recent decades and in the future it will be of paramount importance to the economic development of a country. It is a cross-sectional technology spanning all sectors of the economy and society.

Increasing digitalisation requires substantial investment in educational IT infrastructure as well as new teaching methods on the part of teaching staff.

Our qualifications aim to strengthen the skills of teachers and trainers in terms of digitization and media literacy. In addition to pedagogical aspects, this also means that the handling of operating systems, application software, programming languages, hardware and the Internet is intensively trained.

By combining our information technology and pedagogical modules, the client has the option to use the participants as IT specialists after training under administrative aspects or as teachers or trainers in the educational field. Since the administration of IT at schools is very often being carried out by teachers, our training is ideal for this target group.



Assembly and administration of a server

Vocational training is one of the main focuses of German development cooperation. Only well trained professionals contribute to the economic, social and environmental development of a country. Functioning education systems that meet the current challenges of an increasingly technical world are essential.

German vocational training has an excellent reputation worldwide. This applies to both training in the workplace and at school. Our seminars are therefore aimed at teachers, trainers or VET leaders. Depending on the target group, we address basic pedagogical elements, curricula and their development or change management processes. We also discuss the use of media or develop it together with our participants. The use of electronic media is a matter of course for us. Especially for teachers, we show different methods for educational design and analyse their use depending on the respective teaching phase. Together with our participants, we analyse the concept of competence and emphasise the achievement of a competence to act as a general objective of vocational training.

Ideally, we complete our seminars with excursions to training companies, educational material manufacturers, educational fairs or through visits to German school classes.

In the area of quality assurance, we highlight possibilities; question them critically with regard to their applicability as well as the aim and validity of evaluations.

Contents:

- Vocational Pedagogics
- Subject Didactics
- Media Didactics
- School Management
- Field Visits and Study Trips



Discussion about action-oriented lessons

Example Programme Renewable Energies

Project Green Vocational Training Initiative Hessen - Vietnam

This measure was implemented in cooperation with the Gesellschaft für Internationale Zusammenarbeit (GIZ) and funded by the Federal Ministry for Economic Cooperation and Development (BMZ) within the framework of the project "Reform of Vocational Training in Vietnam".

The participants were 13 vocational school teachers from two vocational schools in Vietnam who were trained in photovoltaics at our institute in 11 weeks.

Implementation of the measure by the HLfT

1. Programme creation/ programme booklet
2. Implementation of the programme:
 - Teaching by qualified teachers
 - Provision of classrooms and laboratory equipment
 - Entire organisation including the realisation of field visits
 - Airport transfer, transport within the project
 - Payment of daily allowance
 - Social support
 - Catering on day of arrival
 - Organisation of welcoming and valedictory dinner
3. Management of programme funds according to GIZ guidelines

Modules:

Fundamentals of Renewable Energy (20 hours)

The various renewable energy sources were examined regarding their usability in terms of quality and quantity. Based on selected examples influencing factors such as geography, ecology, economy and politics were recorded and assessed.

Photovoltaics (80 hours)

The participants got to know the physical and technical interactions in power generation with solar cells. They planned systems for grid feed-in, selected the type of energy measurement, assessed yield and cost efficiency with the help of simulation programmes and commissioned model systems for grid feed-in.

Autonomous Systems (40 hours)

In this module autonomous electricity supplies were planned with photovoltaics. In the process, suitable components were dimensioned and selected regarding cost efficiency and longevity. In addition, the integration of further energy producers into an autonomous network was discussed.

Example Programme Renewable Energies

Intelligent Energy Systems (100 hours)

The participants planned generating plants from renewable energies, preferably photovoltaics, and integrated them into existing installations of clients in accordance with national regulations. They selected the system concept and suitable components, installed and parameterized these for the desired functionality in compliance with safety regulations and set up remote monitoring.

Installation Project (40 hours)

In this project a photovoltaic system was planned and put into operation. For analysis, planning and calculation typical calculation models and software tools were used. The co-operation of the participants and the mutual exchange of ideas and information was required.



Configuration of a battery system for an increased internal consumption

Lesson Planning (56 hours)

The group learned under which aspects action-oriented teaching is planned and carried out based on competencies.

In addition the participants tested the previously planned lessons and reflected on them. In plenary the lessons were discussed and evaluated.

Instructional Methods (24 hours)

Action-oriented teaching methods were tried out and reflected in terms of competence promotion and learning conditions. In a further step, the participants went through the phases of the self-organised learning framework (SOL) and analysed the individual process steps.

Instructional Media (24 hours)

The use of media in technology lessons was reflected and decisions were taken to support addressee-friendly learning processes. Selected media were created, tested and assessed.

Example Programme Renewable Energies

Field Visits

Five excursions in the area of renewable energy were selected to complete the training modules:

- SMA Solar Technology PLC, Niestetal
- Trade Fair Intersolar, Munich
- Energy Landscape, Morbach
- Photovoltaic Construction Site, Stockstadt
- Biogas Plant, Wallerstädten



Visit to the Trade Fair Intersolar

Weekend Activities

The group undertook trips to Mannheim, Frankfurt und Mainz. Another highlight was the visit of Rüdesheim with a boat tour on the Rhine. As part of the field visit to the fair Intersolar in Munich tourist aspects were also taken into account.



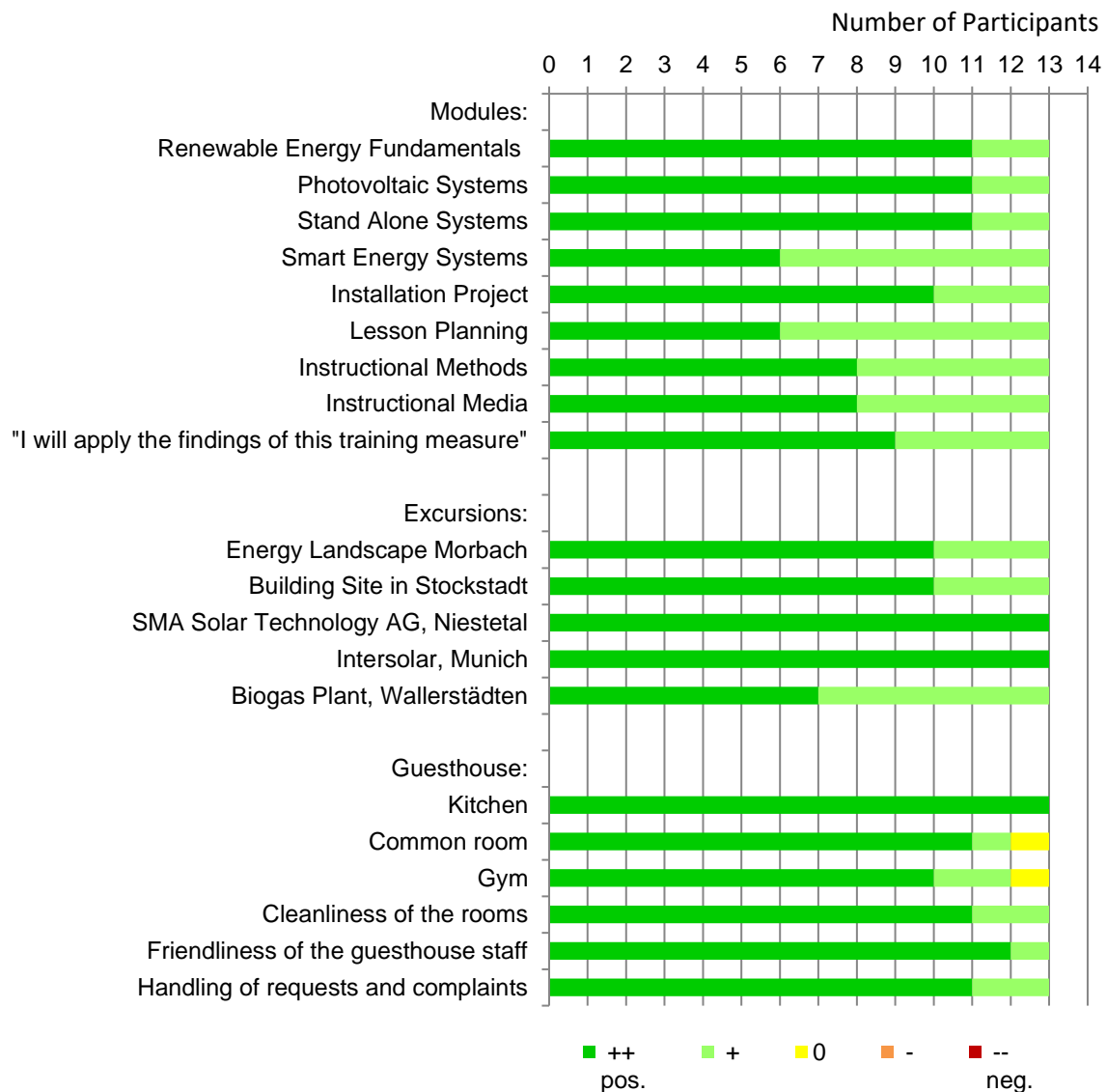
Boat tour on the Rhine

Quality Management

At the end of each training measure a written participant evaluation is conducted in order to assess the satisfaction with our modules, to expose any weaknesses and to take up ideas of the participants in the future.

Graphical Representation of the Results

The 13 participants of the training rated the teaching modules, technical excursions and the guesthouse on a five-point scale from positive (dark green) to negative (red).



Field visits are an integral part of our training programmes. They complete the theoretical part of the training and provide insights into German enterprises. We organise and accompany visits to Europe's leading trade fairs and top industrial companies throughout Germany.

Didacta



As Europe's largest trade fair for education and training didacta provides comprehensive insights into the entire education system from early childhood education through vocational education and lifelong learning. A high-quality training programme for teachers, educators, trainers and personnel developers complements the range of this versatile exhibition.

Intersolar



Intersolar Europe, the world's leading trade fair for the solar industry, takes place every year in Munich. Both the exhibition and the conference focus on the areas of photovoltaics, PV production technology, energy storage and regenerative heat.

Siemens Frankfurt (Vocational Training)



Every year Siemens offers over 2,000 training and dual degree programmes in attractive occupations in the fields of technology, IT and business. In addition to job-specific expertise and general knowledge at the vocational schools, trainees at the Siemens Training Centre attend professional seminars to improve their social, methodological and individual competences.

Energy Landscape Morbach



On a former military site near Morbach in Rhineland-Palatinate wind and solar energy as well as biomass are used for the production of electrical energy and heat energy. The Municipality of Morbach collaborates with partners from business and science on the possibilities of using renewable energy plants.

Mercedes-Benz Plant Rastatt



Mercedes-Benz

The Mercedes-Benz plant in Rastatt is the competence centre for compact vehicles. Three of five models of the current generation of compact cars can be produced as required. Since the start of the B-Class Electric Drive in 2014, models with an electric engine are also assembled here on the same production line.

Lucas-Nülle in Kerpen



Lucas-Nülle develops and distributes didactically tested teaching equipment and training systems for technical vocational training. In addition to providing a broad theoretical foundation, special emphasis is placed on project-oriented vocational training with methodologically sound didactics.

Our Partners



As part of the international co-operation of the state of Hesse, we co-operate with various partners in the field of development and education. Here are some of our clients.

German Society for International Cooperation (GIZ) GmbH



GIZ supports the Federal Government in achieving its goals in international cooperation. It offers demand-driven, tailor-made and effective services for sustainable development. It has more than 50 years of experience in a wide variety of fields, from economic and employment promotion to energy and environmental issues, to promoting peace and security. GIZ co-operates with companies, civil society partners and scientific institutions, thereby contributing to a successful co-operation between development policy and other policy and action areas. The main contractor is the Federal Ministry for Economic Cooperation and Development (BMZ).

Hanns-Seidel-Stiftung e.V. (HSS)



The HSS, a party-based foundation, is involved in international development cooperation with a focus on vocational training, administrative support, advising parties and governments, measures to improve infrastructure and environmental protection.

Network Hessen-China in Kassel



The network Hessen-China is an association of companies, institutions and universities. The aim is to promote and deepen the economic, cultural and scientific cooperation between Germany, Europe and China. The network does not work commercially; it sees its main task as mediating between cultures.

World University Service in Wiesbaden



The WUS is a politically and denominationally non-affiliated organization consisting of more than 50 countries around the world which sees itself as an international community of students, teachers and staff in the education sector. The WUS participates in national and international campaigns in the area of education and development, offers consultancy and conducts scholarship programmes and projects.

Don Bosco Mondo e. V. in Bonn



Don Bosco Mondo campaigns particularly for disadvantaged children and adolescents worldwide. The goal is to fight poverty with education and to promote development. The main focus lies on vocational training which ranges from the simplest non-formal short courses to state-recognised vocational training. At its more than 700 vocational training centres worldwide around 225,000 young people are currently undergoing vocational training.

Hessian Institute for Advanced Technology Training

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Guesthouse of the Hessian Institute for Advanced Technology Training

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