

Gerda Stetter Stiftung

Technik *macht* Spaß!



What we aim for:

- ✓ Learning with fun
- ✓ Earliest possible inspiration for technology
- ✓ Instilling independent thinking
- ✓ Understanding cause-effect relationships
- ✓ Supporting children from socially disadvantaged families
- ✓ Getting more girls and young women interested in technology
- ✓ Fostering children from all nationalities
- ✓ Joint learning of young and old
- ✓ Crosslinking of schools, universities & companies
- ✓ Introducing High-Tech
- ✓ Supporting professionals on a long-term basis

Our motto for the next few years:

*"Inspire lots of young people about
STEM and Technology, as fast as possible."*

"Everyone wants to be an Influencer, but no one wants to be an Engineer!"

The shortage of skilled workers is turning into a locational disadvantage for the whole of Germany. Companies and industry associations such as VDMA and BDI have been complaining for some time that there are not enough applicants for vacancies.

This situation is set to worsen in the future. Increasingly fewer young people are starting a technical degree – on average minus 30 %. In some cases, only 20 of 100 available first semester places are filled. If you extrapolate the significantly lower number of first-year students to the number of bachelors and masters graduating in three to five years and compare these figures with the much larger number of retiring boomers, it becomes clear that the shortage of skilled workers in the technical field will become even more acute in the coming years.

Rather than completing a technical apprenticeship, many young people believe that it is smarter to pursue a career as an influencer and earn a lot of money quickly. We, on the other hand, try to motivate students with our Technology Coaches and reach as many young people as fast as possible using the "Snowball Principle". In a pilot project (see p. 26), three of our engineers have so far shown around 80 students what great things they can do with technology kits such as LEGO Mindstorms. 12 of them have then received further training as coaches.

The coaches have been taking the LEGO boxes to primary and secondary schools for almost a year now, teaching robotics, automation and digitalization in a fun way. We have already trained more than 800 children and young people with technology in this way.

Over 90 % of these children were not familiar with the technology kits, and more than 85 % found them exciting and were interested in further courses. A particular success factor is the young age of the teachers. At 18 to 23 years old, they are closer to the pupils. This makes them better recognized as role models than some teachers, who are often overwhelmed by mo-

dern technologies (robotics, automation, programming). It was particularly motivating for the female participants that almost half of the coaches were women.

We presented our coaching concept to the German Minister of Education and Research Bettina Stark-Watzinger in a workshop. Together with universities and colleges, but also in coordination with the Federal Ministry of Education and Research, we will expand our coaching approaches across the board and contribute to the best possible networking of the individual initiatives. Another very well-known partner is the Deutsches Museum, with whom we offer motivational and in-depth workshops. We want to demonstrate technology in an interactive, fun way to the more than one thousand school classes that visit the museum every year.

If we manage to present technology in an attractive and forward-looking way and get young people excited about it, Germany will continue to thrive as a business location in the future. We need well-trained engineers, who are also willing to act as influencers to convey the fun of technology!



Rainer Stetter

Dr. Rainer Stetter
Founder & Board Member

The Foundation Members

The Managing Board:



"To be an entrepreneur also means assuming social responsibility. With our foundation, we want to push the technological education of children, students, and refugees with playful projects. After all, "childlike" curiosity and a freely lived play instinct form the basis for constant renewal and innovation."

Dr. Rainer Stetter, CEO and the Foundation Founder, ITQ



"With our comprehensive, modular training concept, we want to counteract the shortage of digital specialists at an early stage and thus sustainably promote and train young technical talent. And we want to do this in a fun, joyful and enthusiastic way at all levels, because that's the greatest motivation for sustainable learning."

Sandra Stetter, Head of Business Administration, ITQ

The Foundation Board:



"Contributing to the earliest possible practice-oriented training is my personal motivation. By teaching technology in a playful way, we can simultaneously contribute to improving the image of technical professions."

Andreas Baumüller, CEO, Baumüller



"The current rapid development in digitalization offers countless possibilities especially to children and young people. In order to make effective use of these, projects are needed that inspire enthusiasm for technology and are fun. I consider it my task as a member of the Foundation Board to support these young people in optimally shaping the prospects arising from technological progress."

Matthias Weidmann, Lawyer and Tax Consultant

The Foundation Board:



"Companies have to take responsibility for training the next generation of employees. Getting young people excited about technology is the basis for this. Industry-related projects with universities and colleges of all kinds are suitable for bringing industry and training closer together."

Paul Kho, Freelance Journalist



"Our motivation is to inspire enthusiasm for science and technology. For me, bringing children closer to this in a playful and natural way, using modern and tangible learning methods, means thinking and acting in an entrepreneurial, future-oriented way. Just do it!"

Martina Manich, Managing Director, team::mt



"Digital transformation has a huge impact on engineering education. Only with new innovative teaching concepts can we keep up with the rapid development of new technologies. By simultaneously teaching practice-oriented and character-building competences with attractive formats, we can inspire students to study and prepare them well for the demands of the working world."

Prof. Dr. Peter Eichinger, University of Applied Sciences Aalen

Impressions of our Network

Voices:

"With the Vishay Demonstrator, we were able to present ourselves as an innovation driver to trade fair visitors at electronica 2022. We at Vishay were so impressed by the education approach that we took part in this year's SMART GREEN ISLAND MAKEATHON on Gran Canaria for the first time. After this great event, we were completely enthusiastic and would like to continue our commitment to the education of our young people with a variety of projects – gladly with the "Technik macht Spaß!" Foundation. We will be taking part in the MAKEATHON on Gran Canaria again next year. Especially in today's times, with an ever-increasing shortage of skilled workers, this format is indispensable as a recruiting measure."



The DNA of tech.

Norbert Pieper
Senior Vice President
Business Development
Vishay Electronic GmbH



"For our association, which represents the interests of the Robotics & Automation Industry, the topic of recruiting young talent is right at the top of the agenda. The SMART GREEN ISLAND MAKEATHON is a great source of inspiration for us, as it uniquely combines the creativity of young people with the concrete challenges faced by companies. The energy we experience at this event every year is unbeatable. We are wholehearted partners of the MAKEATHON."



Patrick Schwarzkopf
Managing Director
VDMA Robotics + Automation



"Germany has a chronic shortage of engineers. Compared to 2010 and 2021, we have 45 % fewer first-year STEM students and a massive shortage of skilled workers. We therefore have to bring the diversity, attractiveness and creativity of STEM subjects back to young people with new concepts for teaching and training. The activities of the Gerda Stetter Foundation are tackling exactly the right issue by addressing all age groups, starting with kindergarten. The SMART GREEN ISLAND MAKEATHON 2023 was an outstanding element of modern education for my students and me."



Prof. Dr. Benjamin Kormann
Vice Dean
Electrical Engineering & Technology
Munich University of Applied Sciences



"At the Festival of the Future, visitors were able to spend four days learning more about technology for a brighter future and were having a lot of fun trying things out for themselves, getting hands-on and taking part in discussions. I would like to thank the foundation and Dr. Rainer Stetter's team very much! Their LEGO, Robot and Programming Workshops were brilliant and were mentioned to me several times as a particular highlight! The fact that they were the only ones to add another hour because some of the robots were not yet finished shows their great commitment to the cause. Thank you for advancing the technical education of our children!"



Simon Glöcklhofer
Advisor to the Director General /
Strategy and Special Projects
Head of Deutsches Museum



Voices:

"The "MAKEATHON" format, which I got to know and appreciate in Packaging Valley, has fully convinced me in several dimensions. In addition to the creative atmosphere and the improvisational approach to solving technical problems, which is good for the company culture, it is also the exchange with students and prospective technicians that benefits both sides: the company by getting to know new tools and methods. But of course, a MAKEATHON is also a perfect setting for recruiting students for thesis projects and getting to know future employees. I have made extensive use of this every time and constantly have students in my team whom I know from the MAKEATHON."

SYNTEGON
PROCESSING & PACKAGING

Dr. Johannes Rauschnabel
Director Advanced
Technology Development
Syntegon Technology GmbH



"For many years, the Volkshochschule im Norden des Landkreises München e.V. has been offering the LEGO Mindstorms and do-it-yourself cleaning robot workshops for children as part of its program in cooperation with ITQ GmbH. The courses are regularly fully booked. In addition to adult education, the promotion of children and young people is very important to us. The early introduction to technology, programming and mechanics not only awakens and supports an interest in technology, but is also a lot of fun for the young participants."

vhs
Volkshochschule
im Norden des Landkreises München e.V.

Katrin-Jasmin Becker
Head of Department
vhs im Norden des
Landkreises München e.V.



"Key trends are irreversibly transforming the economy and professions. It is becoming increasingly difficult for our children and the next generation of skilled workers to find orientation and the right entry point. As a provider of vocational training and studies, MAB supports SMEs in particular in overcoming the skills dilemma by offering our pupils and students orientation and skills in the digital transformation. We were delighted to be able to teach middle school students about robotics, 3D printing, XR, and coding at the SMART GREEN ISLAND MAKEATHON. We will be happy to participate again next time!"



Robert Horvat
Founder & Managing Director
Mittelstandsakademie Bayern



"At an event at the Deutsches Museum, there was a stand from the Gerda Stetter Foundation with small hydrogen cars and LEGO Mindstorms. I liked that straight away. I was allowed to go to ITQ in Garching twice during the vacations. That was very interesting. I was shown lots of projects. The most exciting was the master's thesis of one of the team members, with a solar cell and Arduino programming, because I also do a lot with Arduino. I was also able to try out gesture control and experiment with LEGO Mindstorms and explain to another child how it works. That was a lot of fun."

ITQ

Felix Schnitzler
7 years old



Our Education Concept

Modular Education Concept

Getting young people excited about technology is the basis for ensuring a qualified future workforce in German companies. Technical knowledge should be taught in a way that makes it fun for young people to discover technology.

The Gerda Stetter Foundation has set the goal for a modular training concept. We want to get children and young people excited about technical projects and thus help shape the technology of tomorrow in a smart and green way.

The focus of our activities is the handling of technical knowledge as well as the practice on technical projects. With this we already start at kindergarten age with our Technology

Workshops in a very playful way. Our LEGO Mindstorms projects, which teach initial programming skills, are designed to get as many young people as possible excited about science and technology at an early age.

Furthermore, they serve to reduce the fear of complex technology. The pupils are coached by university students and build autonomous robots consisting of sensors, motors, and lots of colourful LEGO bricks as part of the project. The foundation operates according to the top-down principle, i.e., students supervise projects in which they pass on their knowledge to pupils. Consequently, elementary school children are guided by the pupils who have been trained in a LEGO Team.

Management



- Basics and importance of systems engineering
- Understanding of mechanical projects and processes

Engineers



- Improve knowledge about interdisciplinary work
- Enhance the use of software

Students



- Soft skills and experience in project management
- Increased understanding of software

Another important point is better dovetailing, as the networking of disciplines and know-how will play an increasingly important role in the future.

Since the company was founded, we have maintained a comprehensive and cross-industry as well as international network consisting of leading industrial companies, partners, schools, and universities.

We are very involved in research and education and are pleased to have many successful collaborations and research projects with German and international companies as well as universities. By combining cross-departmental lecture concepts with practical team semester work in the industry, students learn to work independently, gain efficient project manage-

ment skills as well as interdisciplinary knowledge and how to acquire important soft skills. In addition, we place great emphasis on promoting innovative capability and creativity and have therefore been organizing our MAKEATHONS at national and international level since 2016.

The name "MAKEATHON" forms a pun from "MAKE" and "MARATHON" and is an innovative & creative educational event, where several teams consisting of young talents develop innovative prototypes as well as technological concepts in an agile and interdisciplinary way in a very short time.

Thus, we bring together companies, universities and students who enjoy the fun of designing, constructing, and programming as a common denominator.

Trainees	Pupils	Children
		
<ul style="list-style-type: none"> ■ Foster fascination for technology ■ Practical professional training 	<ul style="list-style-type: none"> ■ Understand cause-effect relationships ■ Promote team work and independent thinking 	<ul style="list-style-type: none"> ■ Learning with fun and fascination for technology ■ First experience with mechatronics

Digital Education – Technology Workshops

Technology Workshops – Getting tomorrow's Youth excited about Technology

How do you get young people excited about technology?

That's a question, many companies have to deal with these days. To get our young people excited about science and future technologies in a playful way as early as possible, we have been offering numerous innovative Technology Workshops for children and young people for many years.

We are particularly committed to promoting the technical education of girls. With our workshops, we want to help children and young people overcome their fear of complex technology. Whether it's a smartphone or a game console,

le, technology is now part of many everyday objects that children and young people are confronted with at a very early age.

In addition, the speed of technological change continues to increase. This makes it even more urgent to have experts who research, develop and are informed about future technologies. Our Technology Workshops help children and students of all ages learn basic technical skills that will be required in their future careers, using do-it-yourself mini robots, LEGO Education, woodturning and soldering stations.

BENEFITS

How to benefit from our workshops

- Early promotion of young talents
- Learn technology interactively, and playfully
- Use of various technologies
- Networking with schools, universities, institutions, and companies
- Practice-oriented and innovative learning concepts
- Teaching technology to children and young people
- Know-how and knowledge transfer
- First introduction to high-tech
- Coaching and support



TECHNOLOGY WORKSHOPS OVERVIEW

We teach technology with a lot of fun!

Getting young people, and girls in particular, enthusiastic about technology is the basis for securing qualified young people in German companies. Technical knowledge should be prepared in such a way that young people have fun discovering technology for themselves.

- 150 Workshops
- With over 4500 Participants
- In 3 Countries
- With 50 Schools, Institutions
- 10 Trade Shows
- With 15 Companies

Securing the next generation of the future with the right Technology Workshops!



Playfully learning Technology

We focus on creativity and fun in dealing with technology. Children and students are presented with technical challenges in a playful manner and learn to develop solutions independently. This process contributes to lifelong learning, as this enthusiasm for technology is stimulated from an early age and maintained into adulthood.

Since 2011, we have been awakening the interest for technical projects of children and young people of all ages in kindergartens, schools, or educational institutions worldwide with our Technology Workshops. With our Cleaning Robot, we succeed in motivating even the very young ones. In this

kit, a robot is assembled by the children, from the wiring to the mechanics, and then moves across the floor driven by an unbalance. With the help of our specially trained technology coaches, we can reach a wide range of young people with simple technical means and encourage them to tinker, develop and program.

Our training concept is based on cooperation with various German universities. In recent years, we have trained more than 500 students as technology coaches. These in turn have been able to teach more than 4500 children about technology in a playful way in workshops, at trade fairs or in schools.

TECHNOLOGY WORKSHOP HIGHLIGHTS



Digital Education – LEGO Workshops

LEGO Workshops – Playfully learning Technology

When it comes to promoting key skills for the 21st century, we offer versatile Technology Workshops with our LEGO Education training concepts. Whether for schools, educational institutions, training centers, universities or for introducing adults and companies to technologies – with LEGO Mindstorms EV3 or LEGO WeDo Education, programming as well as future technologies can be taught in a playful way.

Almost everyone knows the colourful LEGO building blocks as toys, but the small bricks also have great potential for education. With our Technology Workshops, we can use the action-oriented learning concepts of LEGO Education to

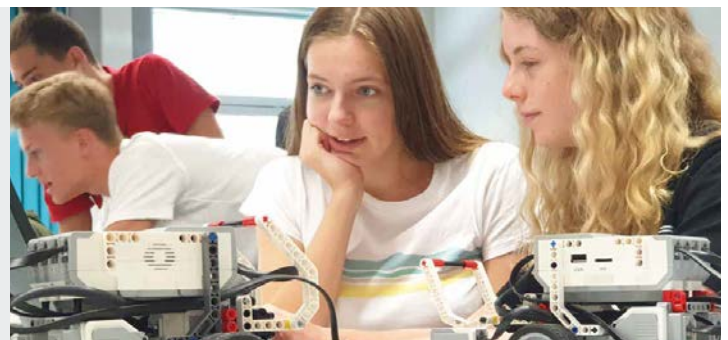
teach schoolchildren and students of all ages basic technical contexts that will be required in their future careers. With practical teaching concepts, learners are encouraged to think for themselves and work creatively on innovative solutions.

By experimenting and trying things out for themselves, children and young people learn to grasp complex topics, to question them critically and to develop their own creative ideas and approaches to solutions. In education and training, the learning system is also suitable for modeling, analyzing and programming industrial processes.

BENEFITS

How you benefit from our cooperation

- Training of qualified future employees
- Learning programming skills
- Use of future technologies
- Networking with schools, universities, institutions, and companies
- Practice-oriented and innovative learning concepts
- Teaching technology to children and young people
- Know-how and knowledge transfer
- First introduction to high-tech
- Coaching and support



LEGO WORKSHOPS OVERVIEW

We teach technology with a lot of fun!

Getting young people, and girls in particular, enthusiastic about technology is the basis for securing qualified young people in German companies. The transfer of technical knowledge should be prepared in such a way that young people have fun discovering technology for themselves.

- 300 Workshops
- With over 900 Participants
- In 5 Countries
- With 150 Schools, Universities
- 35 Competitions
- With 40 Companies

With our innovative education concepts, we secure the young talents of the future!

Innovation through Education 4.0

With our LEGO Education learning concept, we inspire not only children and young people, but also specifically girls for technical projects worldwide. Our education concept is based on the well-proven top-down principle, in which young students are guided and trained by our ITQ LEGO Coaches. In addition to technical content, the program includes soft skills for dealing with children and young pupils.

The pupils, who are coached by students, assemble robots with sensors, motors and many colourful LEGO bricks in our LEGO Mindstorms Workshops. To help us spread our approaches even further, we developed the concept of

student LEGO Coaches for pupils initially at the Technical University of Munich and since then we have established it at several other universities. In the context of soft skills events, we offer students the opportunity to learn and apply necessary soft skills using a real interdisciplinary development task as an example. To further deepen these skills, students coach pupils towards a robotics competition.

This approach, which we want to introduce to as many other colleges and universities as possible, brings us closer to our goal of providing schools with a broad supply of motivated coaches.

LEGO WORKSHOP HIGHLIGHTS



Digital Education – MAKEATHONS

MAKEATHONS – Securing our Future with Innovation Festivals

Innovative minds secure the future of companies – but how do you find them? In particular, skilled workers who bring knowledge from the fields of IoT, Robotics, Artificial Intelligence, Smart Automation, Smart Mobility or Smart Green Energy are in demand.

That's why we organize Innovation festivals (MAKEATHONS) with the aim of training Young Talents to become innovative and creative professionals and bringing them into direct contact with companies to develop creative, technical projects together. The name "MAKEATHON" forms a pun from "MAKE" and "MARATHON" and is an innovative & creative educational event, where Young Talents (students, trainees, and

apprentices), consisting of several teams, create and develop innovative prototypes as well as technological concepts in an agile and interdisciplinary way in a very short time.

The practical requirements (Industry Challenges) often come from companies that want to develop a suitable software or hardware solution for their own problem.

We bring together companies, universities and students who have as a common denominator the fun of designing, constructing, and programming. The results are remarkable, and it always amazes us how quickly the Young Talents turn their creative ideas into reality.

BENEFITS

How you benefit from our cooperation

- Development of new innovative ideas and concepts
- Recruiting of qualified Young Talents
- Establishment of technology cooperations
- Elaboration of your Industry Challenge
- Initiation of new business models
- Knowledge and know-how transfer
- Networking with companies, universities, and students
- Part of a national and international innovation community



MAKEATHONS OVERVIEW

We "MAKE" on a national and international level

We have already shown it many times, what new ideas for a digital future can look like or how recruiting talented developers in the competition for talented professionals can work.

 **30 MAKEATHONS**  **With over 3000 Participants**

 **In 6 Countries**  **With 350 Universities**

 **Over 1000 Ideas**  **1100 developed Prototypes**

Be part of our innovative MAKEATHON Community!



Innovation through Education 4.0

There is a lot of talk these days about Education 4.0 and innovation. However, there is usually more talk than action, which is why we have been working for years on developing new concepts and formats to promote Young Talents and bring them into contact with companies.

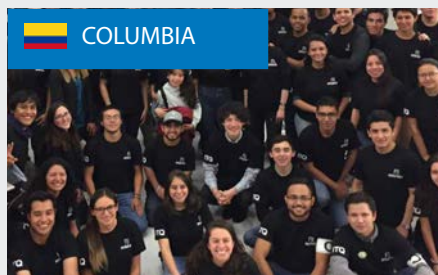
Our idea to organize a MAKEATHON was born in 2016 in Munich, where it immediately proved to be an excellent educational concept. Since then, we have been constantly developing the event and it has already taken place in many other countries. By now, we connect companies, industry associations, universities, institutions, and schools not only in Germany, but worldwide.

Due to Corona, we had to initiate new ways and flexibly adapt our concepts in spring 2020. As a result, we were able to host our first Hybrid MAKEATHON at the end of June 2020, just a few weeks after the first easing of the lockdown.

This new format digitally connects small, locally operating teams via the "network" and thus makes it possible to react quickly and flexibly to external conditions.

This can be seen in the organization of an event with completely new partners from industry, associations, and universities and a total of almost 100 people in less than five weeks.

MAKEATHON HIGHLIGHTS



Smart & Green – Our Vision

An Island as Demonstrator

The world is undergoing a massive upheaval. Technological, social, and climatic conditions are changing at a steadily increasing rate. A virus has made it very clear how fragile our system is. Entire industrial sectors, such as the pharmaceutical industry, but also the automotive industry, are changing with incredible speed. Climate change seems to be accelerating more and more, with hot weather periods, with temperatures above 40 degrees celsius and alternating with severe storms.

Although there are many discussions, talks and protests, responsibilities are usually only shifted back and forth. Determined and joint activities, however, do not emerge. To counter this perceived self-paralysis, we launched the "Smart Green Island" project at the end of 2016.

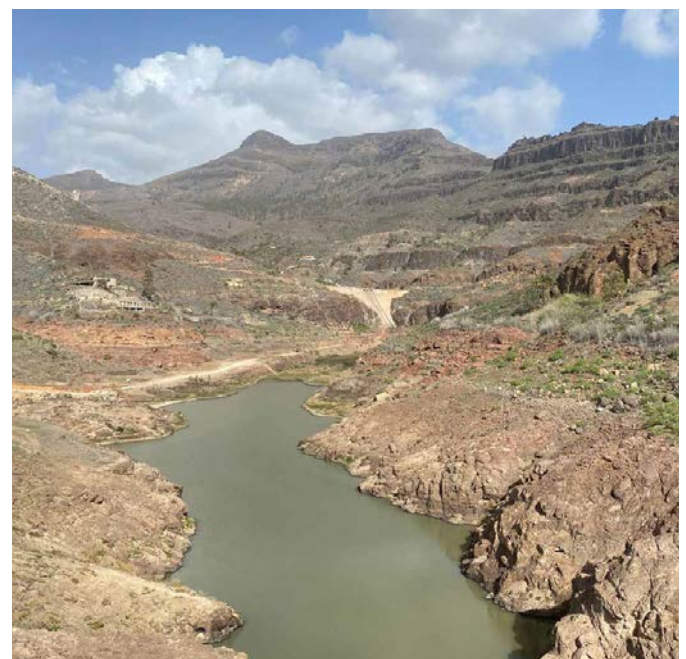


Within this project, we want to work together with motivated minds from different disciplines, generations, and nations to develop technically smart concepts and solutions to demonstrate how a (green) life in harmony with nature is possible. Our vision is to demonstrate, using the island of Gran Canaria as

an example, how a closed loop between energy production and usage can be created in a smart way while at the same time preserving the existing natural resources.

However, with this project, we do not only want to show how energy can be used in an intelligent way. In fact, almost all areas of daily life need to be addressed to provide a comprehensive picture of how life and work can take place in harmony with people and nature.

The needs of the world's countries in terms of environmentally compatible living are very different due to different economic and climatic constraints. In order to be able to run through as many different scenarios as possible in a geographically compact and thus resource-efficient manner, Gran Canaria was chosen. This almost round island with a radius of about 45 km is practically a continent in miniature due to its unique geographical location with a total of 14 climate zones. On this island, both sub-tropical and desert-like conditions as well as scenarios in an urban or rural environment can be played out simultaneously.



Digitalization and Sustainability

The proximity of Gran Canaria to Africa and its location in the Atlantic means that solar and wind energy is available in almost unlimited quantities. This energy could be used to desalinate water, which is needed for daily life and agriculture. At the same time, sustainable living and emission-free mobility could be realized. Furthermore, the intelligent and digital connection of the different areas can open up further ecological and economic opportunities.

To put these objectives into action, we have been organizing our SMART GREEN ISLAND MAKEATHONS on Gran Canaria since 2016. Through these events, we can build a global network of motivated individuals. At these innovation festivals, several hundred students from different universities around the world, as well as numerous national and international sponsoring partners from industry, come together on Gran Canaria. For four days, students work together with companies on climate-friendly technologies and develop first innovative prototypes. Five of these innovation festivals have been held in the period from 2016 to today, with a total of more than 1000 participants from over 30 countries and 100 universities.

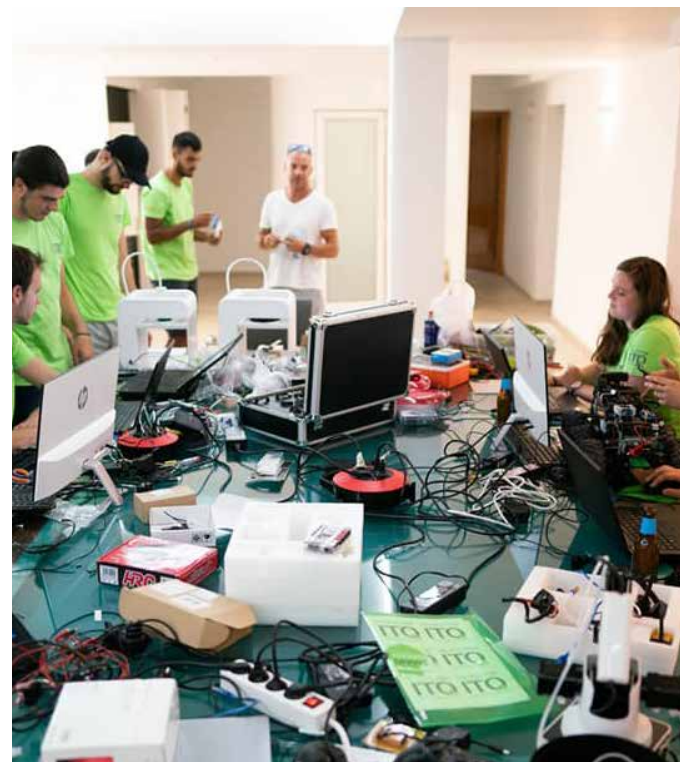
Complementing the MAKEATHONS, other "Smart & Green" projects have been carried out on the island to deepen and expand the knowledge gained from the events. For example, in previous years students were able to develop climate-friendly projects, such as the PlastiX project, during the Smart Green Summer Camps. In addition, students can make optimizations as well as further developments to the existing prototype during long-standing projects, such as the Bamboo Solar Car – a solar-powered vehicle with a frame made of bamboo.

The Corona pandemic did not stop at live activities either and therefore, numerous events had to be cancelled or adapted and held with a changed concept. However, the ITQ Group used the months of the lockdown to develop new and inno-

vative concepts. Together with the Rhine-Waal University of Applied Sciences and ITQ GmbH, Dr. Stetter ITQ S.L.U. is planning to set up a "Green Lab" on the island.

Young Talents will have their own location on the island to work on their green projects. This already started this summer with the interdisciplinary student project "Future Technologies for Smart Green Islands" of the Rhine-Waal University of Applied Sciences. During the seminar, students develop their first innovative and sustainable projects, which are then to be continued on Gran Canaria.

In order to advance our vision of the Smart Green Island, we want to offer our students a professional working environment on Gran Canaria. Therefore, we are looking for a suitable location on the island to get closer to our goal of developing Gran Canaria into a European demonstrator for a smart and green way of life.



Smart & Green – MAKEATHONS

SMART GREEN ISLAND MAKEATHONS – History

In September 2016, we held the first SMART GREEN ISLAND MAKEATHON with more than 40 participants, advancing future "digital" and "climate-friendly" innovations. Just 30 months later, we were able to increase this number tenfold and already attract 400 participants to our event.

Four years later, in 2023, there were even more than 600 registrations. Accordingly, the SMART GREEN ISLAND MAKEATHON has established itself as a successful, innovative, and international success model. With each additional MAKEATHON, the vision of a SMART GREEN ISLAND is realized a bit more and Gran Canaria becomes an exemplary climate-neutral island.



KEY FACTS

During our MAKEATHONS, new ideas and solutions are constantly being developed by Young Talents regarding topics such as Smart Home, Smart City, Smart Production, Robotics, AI, IoT, Smart Mobility, Smart Farming, Smart Health and Smart Green Energy.

 **6 MAKEATHONS**

 **Over 1500 Participants**

 **With 40 Nations**

 **With 150 Universities**

 **Over 230 Ideas**

 **275 Prototypes**





SMART GREEN ISLAND MAKEATHON IMPRESSIONS

2023



2020



2019



2018



2017



2016



Smart & Green – First Projects

Bamboo Solar Car: Sustainable and Innovative Mobility

During the SMART GREEN ISLAND MAKEATHON in February 2019, the idea for a new Smart & Green Innovation Project in the Smart Mobility sector was born – the Bamboo Solar Car – a solar-powered car made of bamboo.

This low-cost vehicle made from standard components and renewable and recycled parts is intended to make sustainable electromobility available to everyone. The focus here lies on countries and regions with a weaker infrastructure and many hours of sunshine, as the Bamboo Solar Car uses a solar cell on the roof to generate energy for movement. The car's frame is made entirely of bamboo tubes, which are cut and glued together using precise instructions. The flexibly sized solar panels achieve an energy output of up to four kilowatt hours. After just one day of sunshine, the car battery is half charged, and after two days it is fully charged. In this case, the car has a range of about 30km, which can cover at a maximum speed of 40km/h.

A first prototype was already created in May 2019 during the ITQ summer event. Within only 24 hours, the ITQ team succeeded in developing this first prototype.

1. Prototype Bamboo Solar Car, ITQ Event May 2019



Through the globally established network of Dr. Stetter ITQ S.L.U. with international universities and colleges, exciting follow-up projects could be realized. Consequently, 4 project teams were formed at different locations, which were digitally connected with each other.

The student teams from Germany, Gran Canaria, Tunisia, and Botswana incorporated their know how and worked energetically on the optimization. Between March and October 2019, a total of three prototypes of the Bamboo Solar Car were built.

2. Prototype, Laserworld of Photonics, June 2019



3. Prototype Bamboo Solar Car, Gran Canaria



Solar Car Botswana: Recycling Car in Safari Design

The fourth prototype was created at the end of 2019 – during a makeathon in Botswana. Here, the team was faced with its own unique challenges. The German students imported suitcases full of materials such as electronics and car parts to Botswana; only the raw material bamboo was ordered locally in advance. However, at the beginning of the MAKEATHON it turned out that the bamboo – which was initially considered to be essential – could not be procured. As a result, the team had to redesign the entire car body under great time pressure. In discussions with local MAKEATHON participants and companies, local, low-cost resources were found. The team obtained old, rusted steel tubes for the frame from a nearby recycling yard.

Within one night shift, the students welded and soldered together a sturdy car body. Through exchanges with locals, it became clear that another feature was indispensable for the African conditions: a protective tarpaulin to protect against sand and dust. Thanks to good networking and a high team spirit, a company was found that quickly made a tarpaulin overnight to protect the solar car from dust and dirt. Thus, the Bamboo Solar Car became a recycled solar car in safari design.

The organization of projects like the Bamboo Solar Car in connection with Makeathons offers young people an ideal platform to network with each other and gives them the opportunity to generate innovative ideas and develop prototypes in a short time. In addition, such projects and events draw the attention of companies to the young talents and their skills.

Our vision behind the Solar Car Botswana project is very diverse and easily applicable for global educational purposes. We are particularly keen to promote young talents within the framework of innovative educational events, to provide creative training, and to generate enthusiasm for technology and future topics in the fields of digitalization and sustainability.

With Education 4.0, we manage to develop innovative solutions for the problems of our time. The focus is on promoting education beyond national borders and thus supporting the young generation worldwide and getting them excited about future topics such as Smart & Green Technologies. In doing so young people are given the opportunity to shape their own future and that of their country.

International student team Solar Car Botswana



Solar Car Botswana



Smart & Green – First Projects

Solar Golf Car: Smart Golf Mobility

The idea for this project was born in cooperation with a local golf course, which is neighbouring to the Dr. Stetter ITQ Smart Villa on Gran Canaria. The operators of the course became aware of our activities like the SMART GREEN ISLAND MAKEATHON and the Bamboo Solar Car, after doing test drives near their golf course. Thereupon, the operators approached us and the idea to equip their golf cars with solar panels was quickly developed.

The goal of the Solar Golf Car is to develop a concept to make golf more sustainable in terms of Smart & Green Mobility. With the installation of solar panels and the use of solar energy, the CO2 footprint of golf can be reduced.



With the Solar Golf Car Project, we want to advance solutions in the sector of Smart & Green Mobility. The project is a good example to show that even with small means and innovations an effective and sustainable contribution can be made to our environment, as well as achieving great things in total. It combines ecological and technological innovation. In addition, the Solar Golf Car is perfect for a student project to give young people the opportunity to help shaping their own future. Moreover, in this process their skills in terms of international and interdisciplinary cooperation as well as practical

project management could be expanded. These aspects are also essential and indispensable in the context of Education 4.0. After the first prototype, two optimized versions of the Solar Golf Car followed in 2020. These included improvements such as a cloud-based data storage space with dashboard visualization, an improved sensor technology and a simplified hardware architecture.



Furthermore, the students worked on a new connector design (fiberglass connecting parts) between the solar panel and the golf car to make it safer and more aerodynamic. To ensure an efficient and cost-effective manufacturing of this connector, the team developed a reusable wooden form to easily build these connectors. This also leads to faster, more resource-efficient and more accurate reproducibility of the connector. In this effort the ease of assembly and repeatability of their construction was very important to the students to ensure that this solar innovation can be more easily adopted for other Solar Golf Cars, respectively future versions of the Solar Golf Car. Further steps in the project are to continuously improve the Solar Golf Car mobile app and to develop a new Solar Golf Car design.

Besides that, we want to make a further contribution to the transformation of Gran Canaria into an innovative Smart Green Island. Due to the climatic conditions with a lot of sun and a lot of wind it is perfect as a showcase for innovative Smart & Green Mobility solutions.

Sandwich-Robot: Learning with Industrial Robots

The Sandwich Robot Demonstrator was developed during a two-month Summer Internship Program. Involved in the development process was an international and interdisciplinary team of 5 students from the University of Cambridge and the University of Las Palmas de Gran Canaria.

The special feature of the Sandwich Robot project is that the demonstrator consists of several devices and hardware from different companies. The materials were sponsored as part of this educational project. Thus, the Sandwich Robot is composed of a Robot Arm and Delta Robot from the company igus, an XTS Rail from the company Beckhoff, a Delta Robot from the company B&R and Phoenix Contact that acts as one unit.



With the help of the existing industrial hardware, which was provided by the participating companies, innovative solutions can be realized by the students. They can directly program the PLC's of different manufacturers and thus bring the plant to life. By using the latest technologies like the OPC UA protocol, the hardware of different manufacturers can be used, and the plant can communicate beyond its interfaces.

For the user of the Sandwich Demonstrator to receive a finished product, they must customize the sandwich before the manufacturing process. Using an app made specifically for the Sandwich Robot, the operator can first select their own preferred type of bread. Then they can choose their individually desired toppings, as well as the sauce(s). As soon as the user has assembled the sandwich via the app, the Sandwich Robot starts preparing it. In the first step, the igus Robot Arm brings the bread to a rail fixture of the XTS rail, which forwards the bread to two Delta Robots. The Delta Robots then prepare the sandwich with the selected ingredients. Now the sandwich can be removed and eaten by the operator.

With our Sandwich Robot Project we created an opportunity to better prepare young talents for future technologies and to get them excited about technology. In addition, the project is meant to encourage young people to show initiative in solving problems and to develop innovative solutions and ideas in the field of Smart & Green Technologies. Furthermore, such real projects or demonstration plants can be used to make topics such as automation, batch size 1 manufacturing, IoT and robotics more tangible and learnable within a very short time. This way, young people will be able to make their own contributions in the future and develop real smart machines and systems, which in turn will benefit the participating companies.



Smart & Green – First Projects

PlastiX: Artificial Intelligence against Plastic Pollution

Besides the climate change, removal of plastic waste from the environment is one of the key ecological challenges and problems of the 21st century. Therefore, we decided to start a project whose main goal is to find suitable and innovative solutions against plastic pollution. During our SMART GREEN ISLAND Summer Camp in September 2019, we developed concepts to solve this problem in an automated and efficient way. This laid the foundation for a smart, innovative, and sustainable project – the so-called PlastiX Project.

The PlastiX mission is dedicated to AI-based detection and automated professional disposal of plastic waste from the environment. The project was developed by an interdisciplinary and international team of 10 young talents. As part of the project a concept of a database for training neuronal networks was created. In addition, the project team developed the first robot prototypes. A total of 7 robots were developed that could be used for various purposes.



With the further developed robot “roBottle”, a new mobile robot has been developed to autonomously collect already existing and improperly disposed waste e.g., at the beach or in the forest etc. In addition, the mobile robot will use modern infrastructure and IoT technologies to act autonomously and efficiently with the help of Artificial Intelligence (AI). AI algorithms ensure that the robot can perceive the environment like a human. For this purpose, a camera at the front

end of the gripper serves as an eye, with the help of which it can recognize and collect plastic bottles and other environmentally harmful objects. What sounds easy for a human is hard work for a robot. The robot must be able to recognize bottles as such and navigate to them. The collected waste should then be transported to a station that can recycle all or a part of the waste. The robot's chassis was made of plywood and the components of its robotic arm were made of environmentally friendly and compostable PLA. In addition, the robot was equipped with Swedish wheels. After the kinematics were solved, the robot was able to move without mechanical constraints.

Our vision within the PlastiX Project is to unite the topics of digitalization and sustainability and to find efficient solutions regarding the problem of plastic pollution. In order to achieve this goal and to realize our vision, the prototypes of the young talents, which were developed with the help of artificially intelligent systems, should and must be turned into reality in the future. Furthermore, above all our intention is to sensitize young people worldwide to the topics of digitalization and sustainability and to encourage them to actively deal with the problems of today, as well as to find and implement effective innovative solutions for the future in such projects.



Gardenbot: Precision Agriculture of the Future

Our Gardenbot Project is based on a Columbian Smart Farming Project called "FarmBot". It was developed during our first SMART FARMING MAKEATHON 2017 in Bogota, Columbia. This project was realized with the help of an international student team in collaboration with the Columbian University of Los Andes.

The aim of the Gardenbot Project is to investigate various cultivation and management strategies. In addition, we want to better protect plantations from external influences, bad weather conditions and pests in the future, as well as control growth. So with this, a new solution was created that can not only be useful for agriculture, but also for private households. Farmers and consumers can automatically and intelligently manage, monitor, and control their fruits and vegetable beds.

To make this possible, a small test bed was created for the project and the Gardenbot robot was attached to the bed. The attached controller can move autonomously within the bed and carry out processes such as sowing, watering and moisture measurement. Thus, the planting and treatment of the bed can be automated without human labour, so that the consumer only harvests his own crops.



Via an open-source web app, it is possible to keep better track of the harvest. The web app can be downloaded to any computer, tablet, or smartphone with a modern web browser, allowing the user to customize, adjust and control his own plantation at any time and from anywhere. In addition, the user can use the manual control elements to move the Gardenbot and operate its tools and peripherals in real time.



Thus, as an innovative Smart & Green Technology, our Gardenbot has the potential to advance Agriculture 4.0. This technology will increase the yield of fruits and vegetables while conserving resources. For this reason, Agriculture 4.0 is also named as the new precision agriculture of the future. With the help of digitalization and artificial intelligence, technological advances can be made possible in agriculture and innovative concepts can be developed.

In addition to developing effective problem-solving approaches, projects such as the Gardenbot help students to link their theoretical knowledge with practice and thus expand their technological know-how with real projects. The practical implementation enhances an intensive examination of the subject matter and, above all, raises the awareness of young people for global themes such as digitalization and sustainability.

Education 4.0 – Smart Green Island

Snowball Principle: Technology Workshops "In the same Code"

In a European Erasmus+ pilot project with the Fundación Sergio Alonso on Gran Canaria, we outlined the cascading snowball system. Initially, 3 technology coaches (1 engineer, 1 male student, 1 female student) were trained.

Within 9 months, they coached 73 STEM students in the construction and programming of small robots based on Scratch.

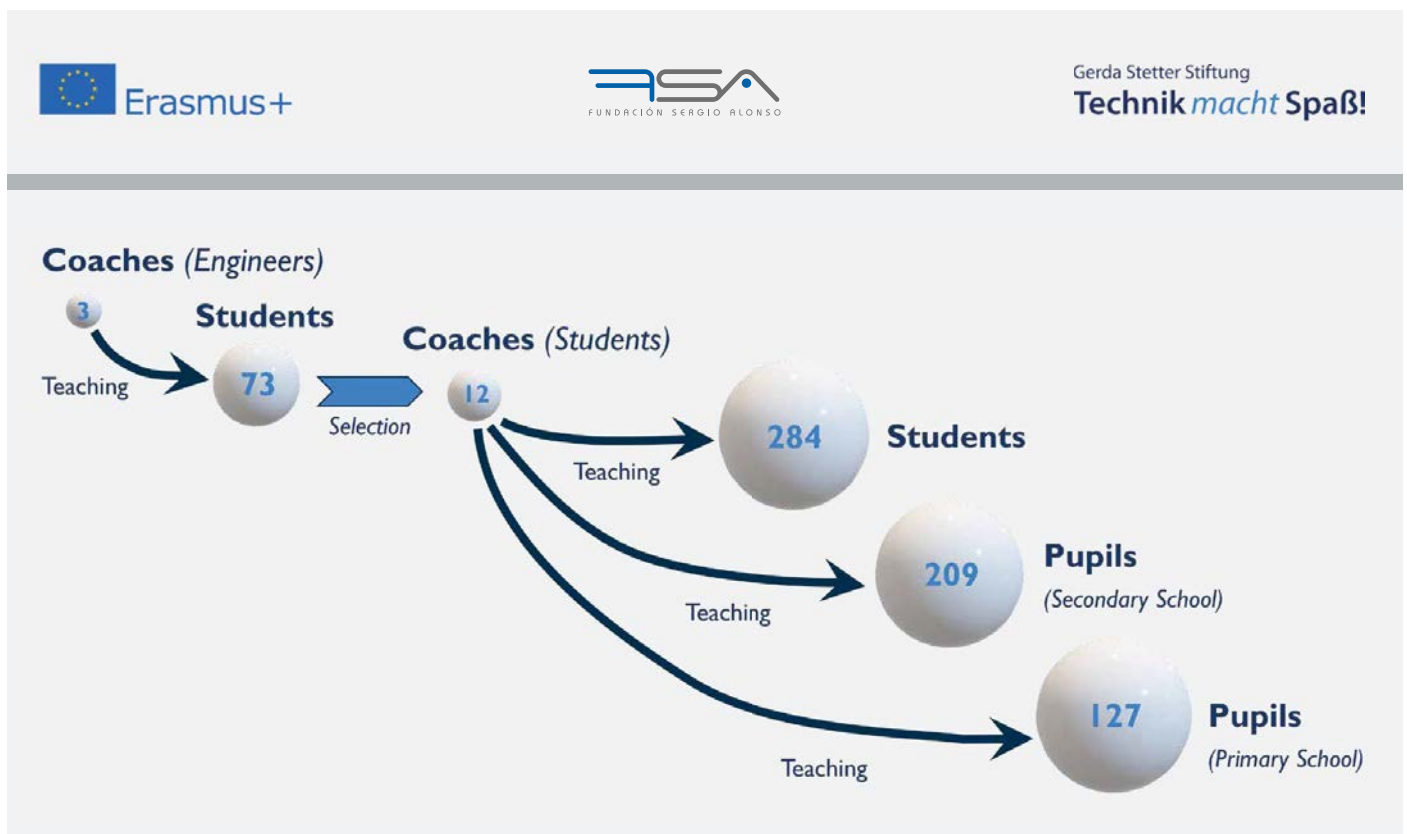
Of these 73 students, 12 people volunteered as coaches. The proportion of women is interesting: of the original 14 young women, a disproportionately high number volunteered for coaching, so that five of the 12 coaches are now female.

From September 2022 to June 2023, the coaches held over 40 workshops at vocational schools, secondary schools and elementary school and excited more than 700 young people and children about STEM in a fun way.

Manager of the Fundación and project leader Nayra Morales: "With the coaching approach "In the same Code", we reach many young talents very quickly, who are then further supported in special in-depth courses."

This mixture of learning and teaching, being encouraged and challenged, and then shortly afterwards encouraging and challenging others of a similar age, is extremely effective.

Fundación Sergio Alonso implements Erasmus+ pilot project with the Snowball Principle



Experience Report: Technology Workshops with the Colegio Alemán

During the SMART GREEN ISLAND MAKEATHON 2023, the COMPUTATIONAL THINKING Workshop was offered to pupils alongside many other interesting activities.

How does a computer think? – Under this title, 21 students from the 7th to 10th grade of the German School Las Palmas learned about 3D printing, the programming of a robot arm and an AGV car (AGV = Automated Guided Vehicle), as well as the creation of exact directions with an AR Program (AR = Augmented Reality) from March 2nd to 4th.

The Mittelstandsakademie Bayern (MAB) flew from Munich to Las Palmas especially for this workshop with a team of four experts and a considerable amount of equipment, including a computer-controlled robotic arm worth around 30,000 €. In the various phases of the workshop, the students first learned how to use the new technologies.

They were able to playfully try things out, tinker around and gain experience in using the devices. Later on, the pupils were divided into small groups to explore one technology in more depth according to their interests. On the last day, these expert teams were split into two groups and had to demonstrate their skills and teamwork in a challenge.

They were given the task of hiding a token, which at the start of the challenge an external visitor had to place in the immediate vicinity with the help of an AR program. The token was



then transported by an AGV car. This car was programmed by the students so that it was able to move independently along a path using sensors and thus reach its destination, the robot arm.

The pre-programmed robot arm then had to build a precision tower in a matter of seconds and only when this was completed was the car allowed to continue towards the finish line.



The students, teachers and all the guests in attendance experienced an extremely exciting and thrilling challenge, which ended with the winning group cheering enthusiastically.

Robert Horvat, Head of School at MAB, explains: "The workshop offers the pupils a fascinating insight into the use of new technologies and provides valuable impetus on issues relating to their educational and professional future."

The school students were enthusiastic, as Valentin reports: "We were able to operate a fascinating robot, which we don't have the opportunity to do at school."

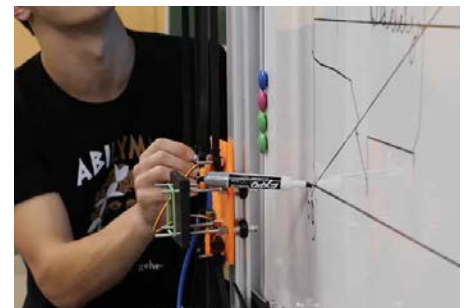
The students learned that everyone has different strengths and that working in a group is particularly important.

Author: Urs Röhrig, Teacher at the Colegio Alemán

Review of the Year 2022

November 2022: 1. Pupils Makeathon Washington

First MAKEATHON with the German International School Washington D.C., November 02-07



November 2022: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students on Gran Canaria, November 03



November 2022: Fwip Ice Demonstrator

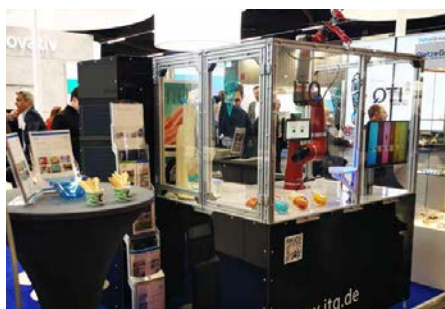
ITQ at SPS Trade Fair Nuremberg, November 08-10



sps
smart production solutions



Video Fwip Ice Demonstrator
www.youtube.com/ITQGmbH



Review of the Year 2022

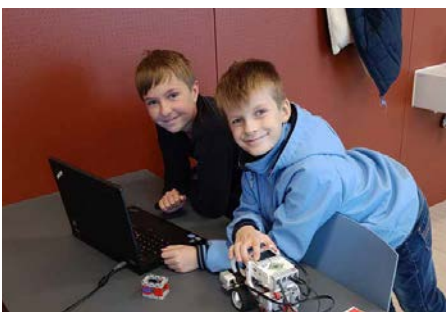
November 2022: TCW LEGO Mindstorms Workshop

LEGO Mindstorms Workshop with Pupils at TCW in Nördlingen, November 09



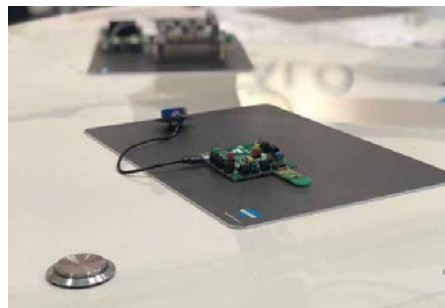
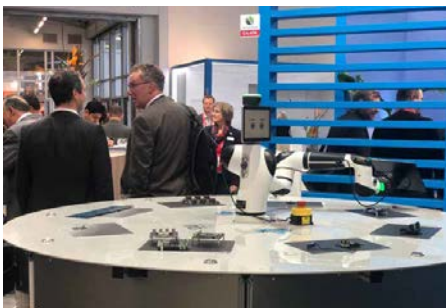
November 2022: VHS LEGO Mindstorms Workshop

Course with Children at the Adult Education Center (VHS) Unterföhring, November 12



November 2022: Vishay Demonstrator

Vishay Demonstrator at electronica Trade Fair, November 15-18



It is important for exhibitors at trade fairs to engage visitors with an attractive exhibit. We have years of experience in designing and building trade fair demonstrators and utilize such projects as part of our Education 4.0. approach.

Under the guidance of our experienced engineers, three working students were able to develop a Trade Fair Demonstrator for Vishay Electronic GmbH.

The project provided the young talents with the opportunity to put their theoretical knowledge into practice and develop their engineering skills.

The Vishay demonstrator consists of a round table with eight stations, each with a Vishay component attached to it. In the

center is a collaborative robot (cobot) with a tablet attached to the end of its arm. Visitors can view a circuit board and other functional modules at the stations.

If the station is requested by pressing a button, the cobot moves to that station and shows the component on the tablet in 3D.

If no station is requested, the cobot is programmed to move to all positions automatically. The Vishay Demonstrator was exhibited for the first time at electronica 2022 in Munich at the Vishay stand and attracted numerous visitors.

The complete structure of the demonstrator is easily expandable and can be adapted for future fields of application.

Review of the Year 2022

November 2022: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students on Gran Canaria, November 28



November 2022: Visit of Munich University of Applied Sciences

Visit of Munich University of Applied Sciences at ITQ in Garching, November 04



The Year 2023 in Pictures

February 2023: Robolympics Duisburg

Robotics Competition with the Abtei-Gymnasium at the University of Duisburg-Essen, February 08



Our educational activities are distributed all over Germany. Among other activities, projects with the local Rhine-Waal University of Applied Sciences and the University of Duisburg-Essen have been taking place in Duisburg for many years.

Since 2016, we have been offering seminars in cooperation with the Chair of Mechatronics at the University of Duisburg on topics such as "Excursion and Seminar on Product Development". Between 30 and 40 students are trained as Technology Coaches at the start of each winter semester.

The students were then required to develop their own teaching concept, which they put into practice at Duisburg schools. The seminar concludes with participation in the

Robolympics, in which the schools compete against each other in various robot courses. MAKEATHONS also take place here regularly. In April 2023, for example, 24 students took part in a MAKEATHON in Kamp-Lintfort. The topic of intelligent sun shading systems generated creative ideas and innovative prototypes.

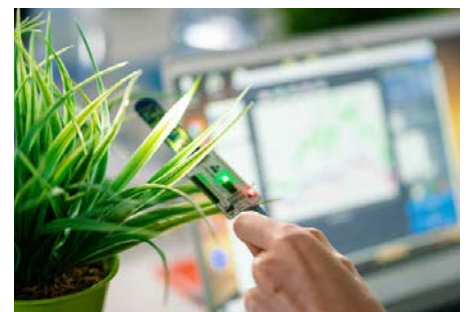
We initiated a mini MAKEATHON for teachers as part of the "Make IT Digital 3.0" symposium together with Rhine-Waal University of Applied Sciences in September. The assignment was to develop a system based on Arduino and sensors for a digital classroom.

In addition to these activities, a special Scratch Club was set up for children. Children can learn their first programming skills in the Scratch Club.

The Year 2023 in Pictures

March 2023: 6. SMART GREEN ISLAND MAKEATHON

International MAKEATHON on Gran Canaria, March 01-04



Video Smart Green Island
Makeathon Short Impression
www.youtube.com/ITQGmbH



March 2023: 6. SMART GREEN ISLAND MAKEATHON

International MAKEATHON on Gran Canaria, March 01-04



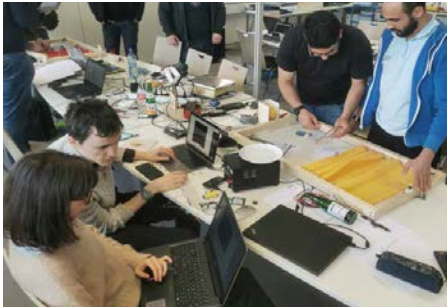
Video Smart Green
Island Makeathon Imagefilm
www.youtube.com/ITQGmbH



The Year 2023 in Pictures

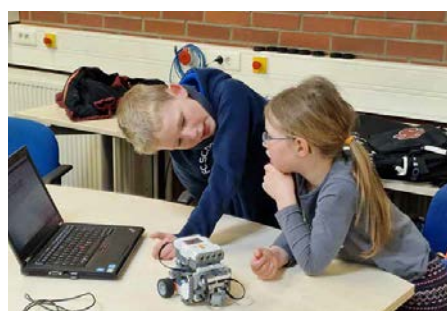
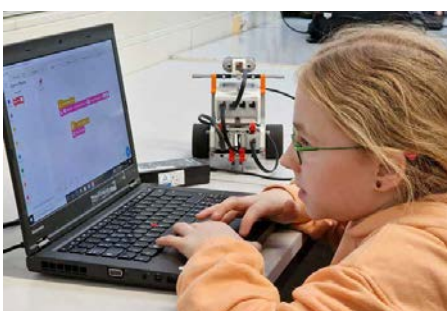
March 2023: MAKEATHON Rhine-Waal

MAKEATHON with Rhine-Waal University of Applied Sciences in Duisburg, March 24



April 2023: LEGO Mindstorms Workshop

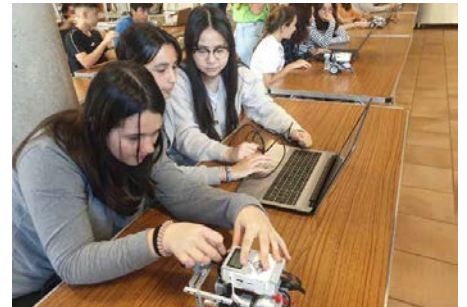
LEGO Mindstorms Workshop with Children at the University of Paderborn, April 13





April 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Pupils at the British School on Gran Canaria, April 22



April 2023: VHS Cleaning Robot Workshop

Course with Children at the Adult Education Center (VHS) Garching, April 22



The Year 2023 in Pictures

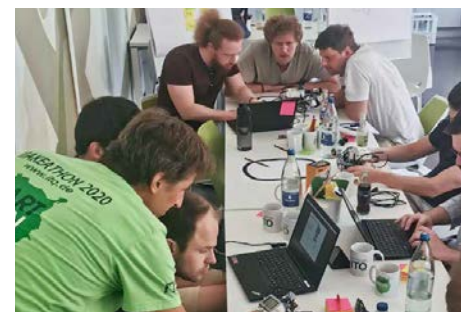
April 2023: Girls' Day

LEGO Mindstorms Workshop with Children at ITQ in Garching, April 27



May 2023: Innovation Workshop Gran Canaria

Innovation Workshop with the University of Paderborn on Gran Canaria, May 02-05



May 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students at IES El Rincón, May 02



May 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students at IES Arucas Domingo Rivero, May 09



The Year 2023 in Pictures

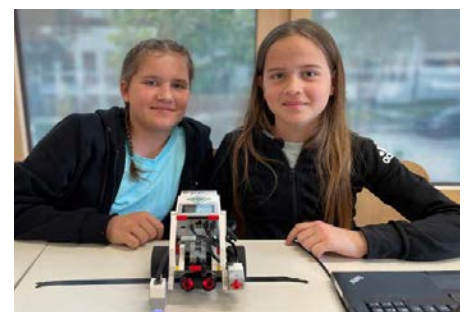
May 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students at IES Lomo la Herradura, May 10



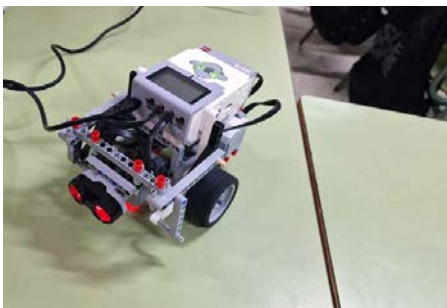
May 2023: VHS LEGO Mindstorms Workshop

Course with Children at the Adult Education Center (VHS) Garching, May 20



May 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Pupils at IES Mesa y López, May 23



May 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Vocational Students at IES Ana Luisa Benítez, May 24



The Year 2023 in Pictures

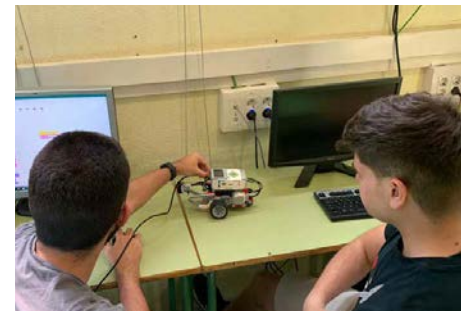
June 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Pupils at IES La Minilla, June 02



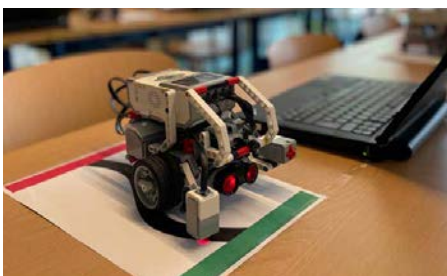
June 2023: LEGO Mindstorms Workshop Gran Canaria

LEGO Mindstorms Workshop with Pupils at IES Siete Palmas, June 12



June 2023: LEGO Mindstorms Workshop

LEGO Mindstorms Workshop with Pupils at Gerolsbach Elementary School, June 20-21



The Year 2023 in Pictures

June 2023: Festival of the Future **Deutsches Museum**

Technology Workshops at Deutsches Museum in Munich, July 08-09



Video Festival of the Future
www.youtube.com/ITQGmbH



June 2023: Festival of the Future **Deutsches Museum**

Technology Workshops at Deutsches Museum in Munich, July 08-09



The Deutsches Museum in Munich celebrated its 120th anniversary this summer with the "Festival of the Future". From the 8th to the 9th of July, the Museum Island offered many activities for children and families with workshops and a stage program.

Of course, the foundation was represented by a team and was able to convince many children and adults that technology is exciting. A total of 15,300 visitors took part in the Festival of the Future.

Our team consisted of Technology Coaches, Engineers from ITQ, Students from Hochschule München and Trainees from Murrelektronik GmbH. The team inspired young and old guests with LEGO WeDo, and LEGO Mindstorms EV3 robots

to program and play with on their own. The Digital Petting Zoo 4.0 with a scorpion, cow, crocodile and llama in a playpen fascinated even the youngest visitors. The mechanical kit for a cleaning brush was also very popular.

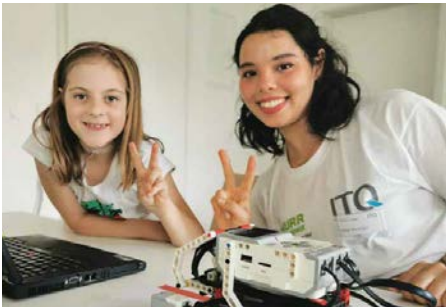
The festival was something very special for the Murrelektronik trainees. They were trained in our technology play equipment just one day before the event and were able to pass on their knowledge directly using the Snowball Principle.

Just two weeks later, the trainees were deployed as technology coaches at the open day for their own company. Once again, various technology workshops were offered for young and old.

The Year 2023 in Pictures

July 2023: Murrelektronik Open Day

Technology Workshops at Murrelektronik in Oppenweiler, July 21-22



Video Technology
Workshops Murrelektronik
www.youtube.com/ITQGmbH



October 2023: Lorenz Open Day

Open Day at Lorenz in Schelklingen, October 05



October 2023: ITQ Student Day

Students gain insight into all aspects of Training at ITQ in Garching, October 19



The Year 2023 in Pictures

October 2023: 2. SMART GREEN BOTSWANA MAKEATHON

Technology and Skills Transfer MAKEATHON in Gaborone, October 24-26



TECHNOLOGY AND SKILLS TRANSFER
MAKEATHON BOTSWANA
Advancing Smart Technologies



Video Smart Green Botswana Makeathon
www.youtube.com/ITQGmbH



October 2023: 2. SMART GREEN BOTSWANA MAKEATHON

Technology and Skills Transfer MAKEATHON in Gaborone, October 24-26



At the beginning of the year, a Botswana delegation took part in the SMART GREEN ISLAND MAKEATHON 2023 on Gran Canaria and experienced the successful innovation festival firsthand. As a result, a MAKEATHON was held for the second time in Gaborone, Africa, in the fall of 2023.

In collaboration with local partners such as the Human Resource Development Council, the Ministry of Communications, Knowledge and Technology, the University of Botswana and the German VDMA.

We supported the Botswana team with two experienced coaches in the preparations and implementation of the Innovation Festival on site. During the three-day MAKEATHON from October 24th to the 26th, 2023, 50

young talents worked in 10 interdisciplinary teams on a wide variety of technical projects in the fields of Green Technologies, Smart Agriculture and Machine Vision.

The MAKEATHON and the resulting project ideas are intended to advance the topic of digitalization and pave the way for a new culture of innovation in their own country.

SMART GREEN MAKEATHONS have been taking place in Africa since 2019. The first African MAKEATHON took place in Tunisia with 80 young talents from 45 universities.

In the same year, the MAKEATHON traveled to Botswana for the first time. This allowed us to generate enthusiasm not only in North Africa but also in South Africa.

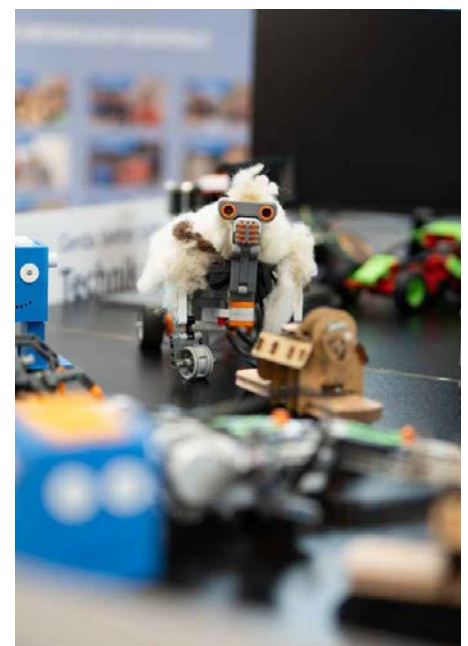
The Year 2023 in Pictures

November 2023: Digital Education 4.0

ITQ at SPS Trade Fair Nuremberg, November 14-16

sps

smart production solutions



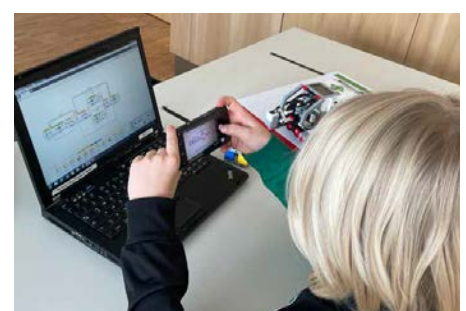
November 2023: VHS Cleaning Robot Workshop

Course with Children at the Adult Education Center (VHS) Garching, November 18



November: VHS LEGO Mindstorms Workshop

Course with Children at the Adult Education Center (VHS) Garching, November 20



The Year 2023 in Pictures

November 2023: 4. Packaging Valley Makeathon

MAKEATHON with Packaging Valley e.V., November 21-22

PACKAGING VALLEY



Video Packaging Valley Makeathon
www.youtube.com/ITQGmbH



November 2023: 4. Packaging Valley Makeathon

MAKEATHON with Packaging Valley e.V., November 21-22

PACKAGING VALLEY



The Year 2023 in Pictures

December 2023: Robot Workshop

Robot Workshop at Deutsches Museum in Munich, December 16

Deutsches Museum



MURR
ELEKTRONIK
stay connected

HM Hochschule
München
University of
Applied Sciences

ohm Technische
Hochschule
Nürnberg



Video Robot Workshop
Deutsches Museum
www.youtube.com/ITQGmbH



December 2023: Robot Workshop

Robot Workshop at Deutsches Museum in Munich, December 16

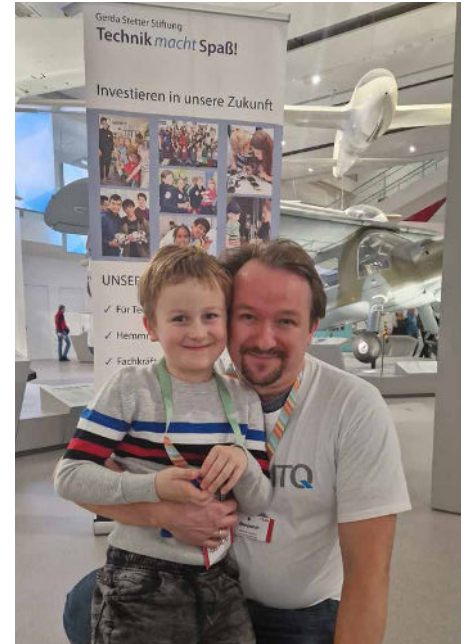
Deutsches Museum



MURR ELEKTRONIK
stay connected

HM Hochschule München University of Applied Sciences

ohm Technische Hochschule Nürnberg



Press Review

EASY ENGINEERING EU
ENGINEERING THE FUTURE

NEWSFEED SEARCH INTERVIEWS INDUSTRY TECH NEWS VIDEO ADVERTISE WITH US CONTACT

INTERVIEW WITH PACKAGING VALLEY ASSOCIATION

Aug 5, 2022 | NOVEMBER 15th

Germany's Packaging Valley Association is one of the most innovative alliances of the packaging industry world-wide. It networks more than 100 companies with a total of more than 100,000 employees. These include manufacturers of packaging systems and packaging machines, as well as suppliers of software and automation solutions. It also includes manufacturers of components and providers of services relating to the packaging industry. The companies in Packaging Valley are always one step ahead of the market and offer the most advanced technologies in the field of packaging machines. With an export share of over 80%, Packaging Valley's technological diversity is represented all over the world. International market leaders from the food, beverage, confectionery, pharmaceutical and cosmetics industries are among its customers.

Germany's Packaging Valley Association is headquartered in Waiblingen, with a further office in Schwäbisch Hall. Most of their members are located in the whole area between Frankfurt, Nürnberg and the Stuttgart metropolitan region.

Interview with Martin Buchwitz, Managing Director of Packaging Valley Germany e.V.

Easy Engineering: What are the main areas of activity of the cluster?

Martin Buchwitz: Packaging Valley Germany provides its members with a wide range of information, networks companies with each other and offers the possibility of joint projects, usually with universities. There are four working groups: Human Resources (HR), Marketing, Sustainability and Technology Trends. As a cluster, we are present at the Interpack and Fachpack trade fairs (both Germany with a joint booth, and at Fachpack with 800 sqm). With the annual Makulation event, we offer our member companies a platform to come into direct contact with students. Every year we offer many events, online and in person, on various topics related to packaging machinery manufacturing, as well as networking meetings. Packaging Valley works very closely with other clusters and organizations, also in Europe.

E.E. What's the news about new products?

M.B.: The products and services come from our member companies, which are active in the fields of packaging machinery, automation technology, interior and packaging materials.

Reference: Easy Engineering, August 05, 2022

MM MASCHINENMARKT

Google-Cloud-Fabrik in Fischertechnik aufgebaut

08.08.2022 | Von Johann Wiesböck

ITQ hat einen Demonstrator auf Basis von Fischertechnik entwickelt, der die Google Cloud für industrieller Fertigung veranschaulicht. Die Minifabrik wurde erstmal auf der Hannover Messe gezeigt.

Die intelligente Fertigung stellt eine große Bereicherung dar, wenn Ingenieure sämtliche Daten effizient nutzen können. Die neueste Google Cloud Lösung **Manufacturing Data Engine and Connect** macht genau dies möglich. Um das Prinzip der Google Cloud für ein breites Publikum zu veranschaulichen, hat die ITQ GmbH, als Experte für Software und Systems Engineering, gemeinsam mit **SOTEC**, Lösungsanbieter zur Digitalen Transformation, einen Google-Cloud-Demonstrator gebaut. Der Demonstrator zeigt am Beispiel einer Miniaturfabrik zur individualisierten Chipherstellung, wie sich Prozesse und die Produktivität mit Hilfe der KI-basierten Lösung optimieren lassen.

Den ersten erfolgreichen Einsatz absolvierte der mobile Google-Cloud-Demonstrator auf der diesjährigen Hannover Messe. Insgesamt haben sechs Junior Engineers der **ITQ GmbH** gemeinsam mit Kollegen von **SOTEC** innerhalb von fünf Monaten den Demonstrator gebaut. „Das Projekt ist ein weiterer Meilenstein unseres Education 4.0-Ansatzes. Wir ermöglichen jungen Menschen, an hochanspruchsvollen Projekten eigenverantwortlich zu arbeiten. So wollen wir dem Nachwuchs ermöglichen, eine nachhaltige Zukunft eigenständig zu gestalten“, erklärt Dr. Rainer Stetter, Geschäftsführer der ITQ GmbH.

Der Demonstrator veranschaulicht auf spielerische Weise, wie Fertigungsingenieure mit den Cloud-Technologien von Google sämtliche Daten einer Smart Factory erhalten und effizient weiterverarbeiten können. Die Ingenieure bauten den Demonstrator basierend auf der Lernfabrik 4.0 von Fischertechnik sowie einem Sawyer-Cobot von **Rethink Robotics** auf. Dabei erfahren die Anwender die Funktionsweisen von Analytics & Insights, Visual Inspection, **Predictive Maintenance**, Anomaly Detection sowie Traceability einer intelligenten Fertigung.

Reference: Maschinen Markt, August 08, 2022

CLOUD COMPUTING INSIDER

Education 4.0 für Industrie 4.0

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Reference: Cloudcomputing Insider, August 11, 2022

INDUSTRY 4.0 THINGS
MISSION MANUFACTURING

Education 4.0

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20.08.2022 | Von Johann Wiesböck

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Reference: Internet of Things, August 20, 2022

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Roboter bedient Eismaschine

ARTIKEL VOM 14. JULI 2022
ANLAGENZUBEHÖR



Im Zeitalter von Industrie 4.0 sind neue Ausbildungskonzepte wie dieser Eismaschinenroboter unabdingbar (Bild: ITQ).

Die ITQ GmbH möchte die Qualifikation Studierender mit technischen Projekten bereichern. Mit den »Education 4.0«-Projekten sollen junge Menschen auf den heutigen Arbeitsmarkt vorbereitet werden. Das Projekt »Ice Demonstrator« setzt z. B. den Fokus auf die intelligente Kollaboration von Robotern. Der gebaute

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Reference: Kuhn Fachmedien Magazine, November 14, 2022

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6. Smart Green Island Makeathon auf Gran Canaria / Young Talents bearbeiten gemeinsam an vier Tagen digitale und nachhaltige Zukunftsideen zu innovativen Prototypen



Gran Canaria hat mit seinen unterschiedlichen Klimazonen ideale Voraussetzungen, um die Insel nachhaltig mit erneuerbaren Energien zu versorgen. Bereits heute wird der Strombedarf zu einem Viertel durch erneuerbare Energien erzeugt, unter anderem mit dem neueröffneten und weltweit größten Windpark auf einer Insel. Die ITQ GmbH sieht seit Jahren dieses Potenzial und adressiert mit vielfältigen Projekten auf der Insel den digitalen Wandel und die notwendige globale Vernetzung zur Entschärfung des Fachkräftemangels.

Reference: Grünspär Portal, January 27, 2023

Schüler Makeathon in Washington
(Mülltrennsystem Better Bin, Smart Board Bot, Rucksack Evoscan)

MINTec




Abbildungen C.18, C.19 Gruppenfoto bei der STEM-Night (oben) und beim Besuch des Smithsonian Museum (unten)

Reference: MINT EC Publication, December 20, 2022


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PR > Presseportal > 6. Smart Green Island Makeathon auf Gran Canaria / Young Talents bearbeiten gemeinsam >

ANZEIGE ITQ GmbH

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Reference: Volksfreund Newspaper, January 27, 2023

Press Review

 Cabildo de Gran Canaria

Buscar  MENÜ 

Morales: "El 'Makeathon' nos permite trasladar al mundo que en Gran Canaria podemos avanzar en los próximos años, para ser autosuficientes"

Desarrollo Económico, Energía e I+D+i
03 mar. 2023

Morales: "El 'Makeathon' nos permite trasladar al mundo que en Gran Canaria podemos avanzar en los próximos años, para ser autosuficientes"



El presidente del Cabildo de Gran Canaria, Antonio Morales, resaltó la trascendencia que tiene para la Isla el evento educativo internacional 'Smart Green Island Makeathon' que se está celebrando en la capital grancanaria, "cuyos planteamientos de sostenibilidad y digitalización coinciden con el modelo de ecoisla que defendemos para Gran Canaria", sostuvo, "y nos permite trasladar al mundo que en esta Isla podemos avanzar en los próximos años, para ser cien por cien autosuficientes, porque tenemos todas las condiciones para hacerlo", aseveró.

El presidente insular hizo estas declaraciones en la visita que giró hoy a la Institución Ferial de Canarias (Infecar), donde, desde este miércoles hasta el próximo sábado, se celebra la sexta edición de este evento, y en la que estuvo acompañado por Luis Serra, rector de la Universidad de Las Palmas de Gran Canaria; Nayra Moreno, directora de la Fundación Sergio Alonso, y Rainer Stetter, director general de ITQ GmbH.

Reference: Cabildo de Gran Canaria, March 03, 2023

 BREMERHAVEN GREEN ECONOMY



GREEN CLIMATE, Nachhaltigkeit, Naturschutz, Neues aus Forschung, Bildung, Wissenschaft
SMART GREEN ISLAND MAKEATHON – WOHIN MIT DEM PLASTIKMÜLL?

Studierende der [Hochschule Bremerhaven](#) nehmen an internationalem ITQ-Makeathon auf Gran Canaria teil.

Unachtsam weggeworfene PET-Flaschen, angespülte Einkaufstüten und zurückgelassene Einwegverpackungen: Plastikmüll ist ein großes Problem für die Umwelt. Besonders Inseln leiden unter der Plastikflut, die täglich an die Strände gespült wird. Dabei ließe sich ein Großteil der Verpackungen recyceln. Nur wie schafft man dies, ohne dass es zu Qualitätsverlusten kommt? Beim diesjährigen „Smart Green Island Makeathon 2023“ auf Gran Canaria möchten sich zwei Studierende des Studiengangs Embedded Systems Design an der Hochschule Bremerhaven mit dieser Frage beschäftigen. Gemeinsam mit Dipl.-Ing. (FH) Claas Schott und Dipl.-Ing. Andreas Menslage, die als wissenschaftlich-technische Angestellte an der Hochschule tätig sind, sowie Studierenden der Hochschule Kempten und der Technischen Hochschule Würzburg-Schweinfurth arbeiten sie vom 1. bis zum 4. März als Projektteam an einer technischen Lösung für dieses Problem. Das Ziel: Aussortiertem Plastik soll neues Leben eingehaucht werden. Unterstützt wird die Teilnahme durch die österreichische B&R Industrial Automation GmbH.

„Smart Green Island“

Auch wenn die Kanarischen Inseln ein beliebtes Reiseziel sind, ist von Urlaubsentspannung während der viertägigen Veranstaltung keine Spur. Statt Sonne, Strand und Meer warten 72 Stunden intensiver Projektarbeit auf die Studierenden und ihre Betreuer:innen. Im besten Fall haben sie am Ende eine technische Lösung gefunden, die sie vor einer Expert:innen-Jury präsentieren können. „Bei „Smart Green Island“ liegt der Fokus auf Umweltproblemen, die auf Gran Canaria sehr akut sind, beispielsweise Plastikmüll oder Waldbrände. Das Interesse an innovativen Ideen ist daher groß. Viele Unternehmen und Politikerinnen und Politiker nehmen

Reference: Bremerhaven Green Economy Magazine, March 11, 2023

konstruktions praxis

Makeathon

Auf Gran Canaria entstehen grüne Ideen

05.04.2023 | Von Sandro Kipar | Lesedauer: 2 min | 

Studierende entwickeln gemeinsam mit Unternehmen nachhaltige Projekte für die Zukunft. Profitieren sollen von dem Green Island Makeathon möglichst beide Seiten.



Im Vordergrund des Makeathons standen die Themen Smart Home, IoT, Automation, Robotics, Smart Farming, Smart Production, Smart Health, Smart and Green Energy, Smart Mobility sowie Connected Systems.
(Bild: ITQ)

Bereits zum sechsten Mal hat das Unternehmen ITQ Anfang März seinen Green Island Makeathon auf Gran Canaria veranstaltet. Zuletzt legte das Innovationsfestival aufgrund der Corona-Pandemie eine zweijährige Pause ein. Ziel des Makeathons ist es, angehende Ingenieure auszubilden und in den direkten Kontakt mit Unternehmen zu bringen. Insgesamt vier Tage lang konnten etwa 360 Studierende, Vertreter von Universitäten sowie internationalen Unternehmen aus unterschiedlichen Branchen gemeinsam an Projektideen arbeiten. Im Vordergrund standen dabei vor allem nachhaltige Ideen.

Reference: Konstruktionspraxis Magazine, April 04, 2023

elektro technik
AUTOMATISIERUNG

Makeathon

Auf Gran Canaria entstehen grüne Ideen

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Reference: Elektrotechnik Automatisierung Magazine, April 04, 2023

neue verpackung

Jährliche Veranstaltung des Packaging Valley

Der Countdown läuft: Anmeldung für den Makeathon 2023 eröffnet

Am 21. und 22. November geht der Makeathon, veranstaltet vom Packaging Valley und unterstützt von ITQ, in seine bereits vierte Runde. Für eine kostenlose Teilnahme können sich Interessierte ab sofort anmelden.



Der Makeathon findet auch in diesem Jahr dezentral an verschiedenen Standorten statt. (Bild: Packaging Valley)

Reference: Neue Verpackung Magazine, September 11, 2023



04.11.2023 / News / Unternehmen & Branchen

ITQ auf der SPS 2023: „Alle wollen Influencer werden, aber keiner Ingenieur“

Um die Digitalisierung in der Automatisierungsbranche weiter voranzubringen, braucht Deutschland dringend Nachwuchs im MINT-Bereich. Auf der diesjährigen SPS präsentiert die ITQ GmbH, als kompetenter Partner für Software und Systems Engineering, neben Lösungsansätzen für Entwicklungsprozesse in der Automation auch innovative Ausbildungsansätze, die Unternehmen bei der Gewinnung von MINT-Fachkräften unterstützen. Besucher können sich auf dem Gemeinschaftsstand der Bayern Innovativ in Halle 6 am Stand 240 bei der ITQ GmbH über innovative Ausbildungsprojekte und deren flächendeckende Vernetzung informieren.



Reference: elektrotechnik & automation Magazine, November 04, 2023



„Alle wollen influencer werden, aber keiner Ingenieur“



Deutschland muss die MINT-Bildung ausbauen und stärker vernetzen
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Das deutsche Bildungssystem gilt seit Jahren als antiquiert und durch das föderalistische System als zerklüftet. Selbst Informatik und MINT-Unterricht ist nicht ausreichend. So ist der Nachwuchs für Studien- und Ausbildungsfächer für die Automatisierungsbranche der Zukunft nicht sensibilisiert und es fehlt an der benötigten Motivation und dem Interesse. Die ITQ GmbH bringt als unabhängiges Engineering- und Beratungsunternehmen die Digitalisierung in der

Education-Ansätze

Auf der SPS stellt das Unternehmen seine eigenen Education-Ansätze vor und zeigt, wie mit kleinen technischen „Spielzeugen“ erstes Programmieren für jedes Alter mit Spaß erlernt werden kann. Auf dem Gemeinschaftsstand zeigt die ITQ, wie ein mechanischer Bausatz eines Putzroboters oder einfaches technisches Spielzeug mit Raspberry Pi Pico Microcontrollern und erster Programmierung in Python große und kleine Besucher begeistert. Zudem dürfen sich interessierte Besucher über einen digitalen Streichelzoo 4.0 auf Basis von LEGO Mindstorms, Wasserstoffautos zum Experimentieren sowie Virtual Reality Anwendungen freuen.

„Coach the Coach“

Bei der außerschulischen Ausbildung hat sich die Methode des „Coach the Coach“ als hocheffizient erwiesen. Dabei werden Jung-Ingenieure und Studierende sowie Auszubildende zu Technik Coaches qualifiziert, welche ihr Wissen dann in Workshops an junge Schülerinnen und Schüler weitergeben. „Diese Mischung aus Lernen und Lehren, selbst gefördert und gefordert werden, ist außerordentlich effektiv“, so Geschäftsführer der ITQ GmbH, Dr. Rainer Stetter.

Innovationsfestivals

Eine weitere innovative Möglichkeit Nachwuchskräfte zu finden, sind die Innovationsfestivals MAKEATHON. Beim SMART GREEN ISLAND MAKEATHON 2023 kamen auf Gran Canaria über 600 internationale Studierende und Unternehmensvertreter für 4 Tage zusammen, um gemeinsam an technischen Prototypen zu arbeiten. Für beide Seiten ist der MAKEATHON neben dem Ausbildungsansatz eine innovative Recruiting-Plattform. Die Automatisierungsbranche braucht intelligente Lösungen, vom einfachen Sensor bis hin zu aufwendigen Smart Production Solutions. Der MINT-Nachwuchs muss gefördert und für die Branche sensibilisiert werden, damit Deutschland den Schritt zur digitalisierten Industrielwelt schafft.

Reference: PC & Industrie Magazine, October 04, 2023



Kreativ-Workshops zum Mitmachen

Stadtbibliothek Bergheim

testet Service-Roboter

22. November 2023, 16:21 Uhr



Marko Nagl und Anja Hunsche von der Firma ITQ, Bibliotheksmitarbeiterin Christina Pantelidu, Michael Macher von Humanizing Technologies und Werner Wiczorek starten das neue Robotic-Projekt. • Foto: Andrea Floß •

Noch steht der Neue von der Stadtbibliothek Bergheim etwas schüchtern in der Ecke herum. Serviceroboter Temi wartet darauf, von Mitarbeiterin Christina Pantelidu zum Leben erweckt zu werden. Beim Robotik-Symposium in der MEDIO-Lounge hat er seinen ersten großen Auftritt. Im Rahmen eines vom Land NRW geförderten Projekts sollen insgesamt vier mobile Serviceassistenten – für jede Etage einer – das Bibliotheksteam künftig unterstützen, Besucherinnen und Besucher in Empfang nehmen, als Orientierungshilfe dienen und allgemeine Fragen beantworten. Einmal programmiert, sauste das Tablet auf Rädern gezielt zu den Getränken, gebremst.

Reference: Rheinische Anzeigenblätter, November 22, 2023

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Become a Technology Sponsor

When the foundation was established in 2011, we had the ambitious vision that every school and kindergarten in Germany would have a technology club by 2021. Much has changed in the meantime in the age of digitalization, but there is still a long way to go before we reach our goal. We already offer our "LEGO Mindstorms" project in many institutions and teach the students technical contexts with a lot of fun to get them excited about science and technology at an early age.

Our concept is to introduce teams of pupils to technical problems in a playful way using the high-tech LEGO Mindstorms construction kit. The organizational and technical leadership of these teams is taken over by students selected and trained by us. Fun and play are never neglected. To ensure that the teams are not just "playing" but are actually working in a focused and concentrated manner, the foundation repeatedly supports se-

lected teams in their participation in competitions such as the First LEGO League or the international robotics competition World Robot Olympiad. This year, we supported pupil teams in five national and international competitions and were even able to send two teams from the Bavarian Ottobrunn High School to the World Finals in Detroit and Montevideo.

To push this concept further, we are always looking for companies that, together with us or on their own initiative, build up and support further school teams and enable them to participate in specially organized competitions.

If you as a sponsor, company or private person, would like to support the activities of the Gerda Stetter Foundation with financial means, donations of materials and its influential network, please feel free to contact us.

On behalf of a new technophile generation, we are happy about every commitment!

If you want to donate money, we will give you a donation receipt.

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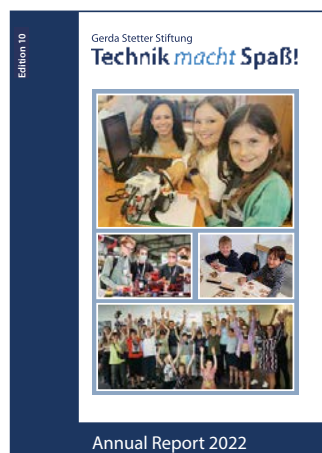
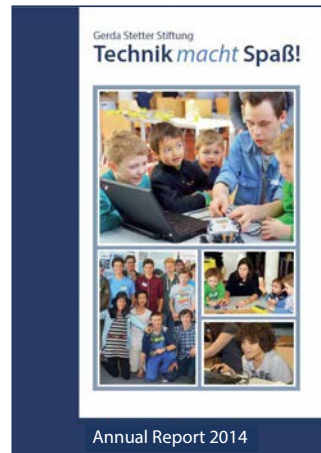
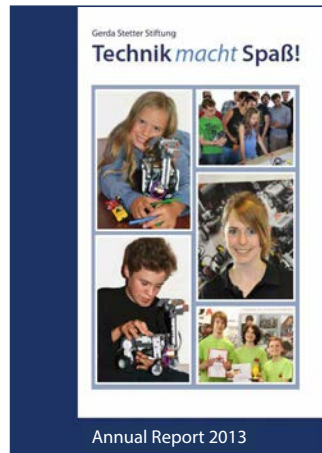
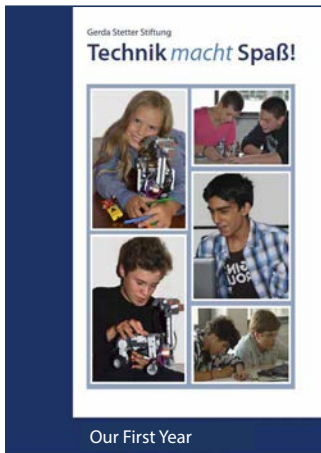


Cabildo de Gran Canaria

Edition Review – What we did so far

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Front Cover – Event Highlights 2012 – 2022



... and we have achieved a lot so far

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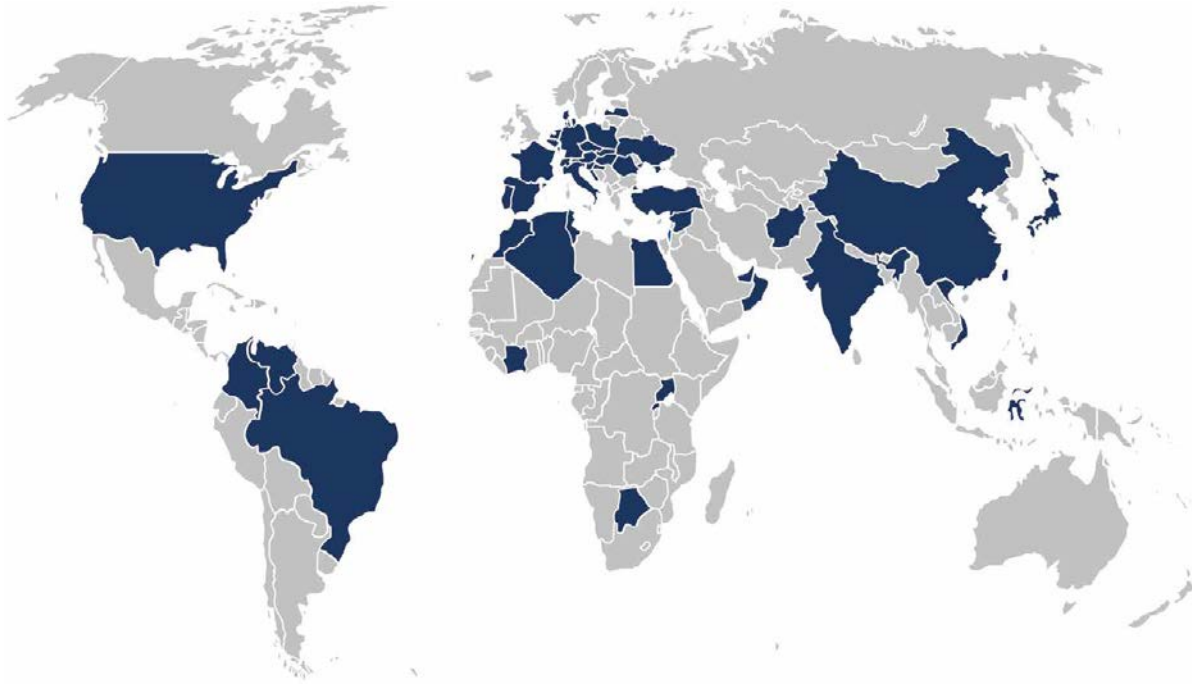
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