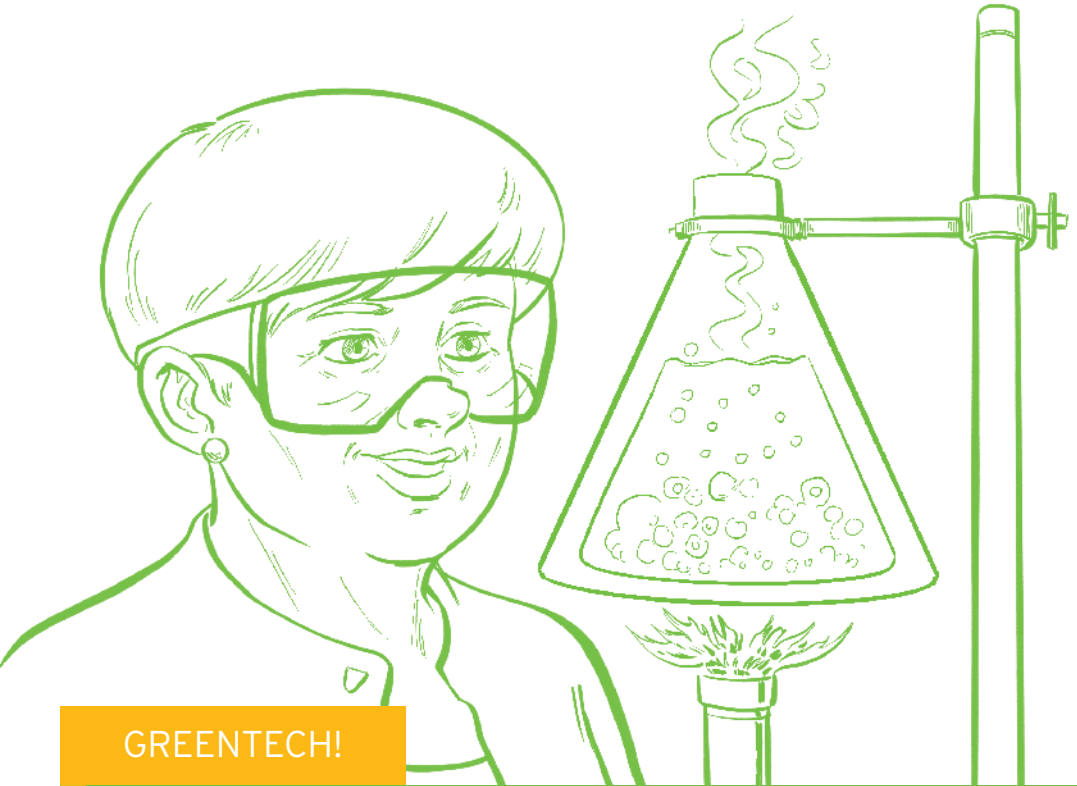


SAXONY!



WIRTSCHAFTSFÖRDERUNG
SACHSEN



GREENTECH!

Visiting Saxony's Environmental Experts

How Emilia discovered that Saxony's
inventive spirit is full of energy.

Emilia surveys the unmistakable steep red pitched roofs which fly past the train window. It was here, where she had once lived, studied, and found friends more than 30 years ago. Later when she was back home in Chile, Emilia had often recalled her studies in Saxony with great fondness. Including what her professors at the Bergakademie Freiberg – the Freiberg University of Mining and Technology – had once told her of the impact of mining, reclamation, and the circular economy. And she watched from afar, how the theory was applied, how Saxony removed one contaminated site after another, and focused more and more on renewable energy sources.

Finally,
Freiberg is rapidly
approaching!



WELCOME TO AN ECO-FRIENDLY SAXONY

Saxony is one of the most dynamic and innovative locations for environmental and energy technology in Europe. This is the place where a vibrant research environment unites profound expertise and a deeply rooted engineering spirit that have accumulated here over many centuries. Today's focal points are new hydrogen technologies, efficient fuel cells, high-temperature electrolyzers, and organic solar technology along with the rehabilitation of contaminated mining sites, the recovery of key strategic raw materials, the closure of gaps in economic cycles, and interconnected energy systems in the internet of things. Such internationally renowned research institutions as the TU Bergakademie Freiberg – the Freiberg University of Mining and Technology – and the Helmholtz Institute Freiberg for Resource Technology (HIF) are active in Saxony.

The branch stakeholders can build on many centuries of experience in sustainable resource management, environmental protection, and energy-related solutions found in Saxony: More than 800 years ago, the discovery of silver in the Erzgebirge Mountains triggered the first mining “rush.” Ore prospectors dug shafts and tunnels everywhere into the mountains and “incidentally” created impressive engineering feats and masterpieces of science in mining technology, raw material recovery, and mechanics. Already in 1713, the Saxon chief mining administrator Hans Carl von Carlowitz published the first book on sustainability.

And already early on, the Saxon Electors tried to find a solution for the time “after the silver.” They supported and promoted the precision manufacture of luxury timepieces in Glashütte which are so renowned today – one of many excellent examples of a successful structural transformation in a former mining region. The Saxons have always overcome and mastered similar challenges in the subsequent centuries: After silver came lignite and uranium – the achievements attained in rehabilitation measures at the Wismut mine and with the artificial land of lakes created around Leipzig all represent success stories in transforming old open-pit mines and radioactive dumpsites.

And today, entrepreneurs and researchers from Saxony continue to pioneer and develop new paths in environmental protection and energy technology. Their expertise is highly coveted around the globe.

Here you will find environmentally friendly ideas:
www.business-saxony.com/greentech
Or just scan the QR code.



‘That’s something we could really use back home as well,’ she’d thought every time she went past the old, dilapidated copper mine, the grimy power plant, and the abandoned waste dump at the edge of town. These mementos of the past have ruined her home town, polluted the water, and destroyed the surrounding nature. These were also the reasons why Emilia decided to give up her career as a geoengineer and run for the office of mayor. “Our city needs to start all over again,” she had told her voters. “We need to heal and repair the environmental disasters of the past and need to switch to regenerative energy sources, to move on to a sustainable economy.”

‘And now the time has come to fulfill those promises,’ muses Emilia as she walks through Freiberg to meet with her former fellow student. He’s now a professor at the Bergakademie and surely must know what needs to be done. Later that evening, she’s well equipped with a map, an industrial branch guide, and several scheduled appointments. After having perused the literature, the mayor is hopeful that she’ll meet noteworthy partners in Saxony.



MUST SEE!



PLEASE FIND
the Competence Atlas
"Energy Innovations
from Saxony"



SEARCH ONLINE

for energy and environmental
technology companies in Saxony.





Come on,
we'll go and have
a café cortado.

From the hotel it's just a short walk to the HIF - and soon, Emilia's ears are buzzing with all the information that the Helmholtz resource technician Paula tells her: Flotation, biomining, hyperspectral imaging. But the engineer inside her is wide awake, and Emilia quickly realizes: The Helmholtz people probably have a solution for that ugly waste dump back home. That's when Paula suddenly bursts out laughing and takes her by the arm: "Come on, we'll go and have a café cortado, and I'll explain everything to you, one step at a time. Afterwards, I'll take you to the carbon team."

SCOUTING FOR RARE EARTHS

At the Helmholtz Institute Freiberg for Resource Technology (HIF), scientists are looking for new and sustainable sources for strategically important raw materials in an interdisciplinary approach. The focus is on gallium, cobalt, lithium, neodymium, scandium, and other materials which are of particular significance – for the energy turnaround, electromobility, and digitalization. Strategically, the teams consider the entire economic cycles to be a system: From exploration to extraction and reduced, efficient use all the way to recycling. They are developing, for example, innovative procedures for biomining during which micro-organisms release metal particles from waste.

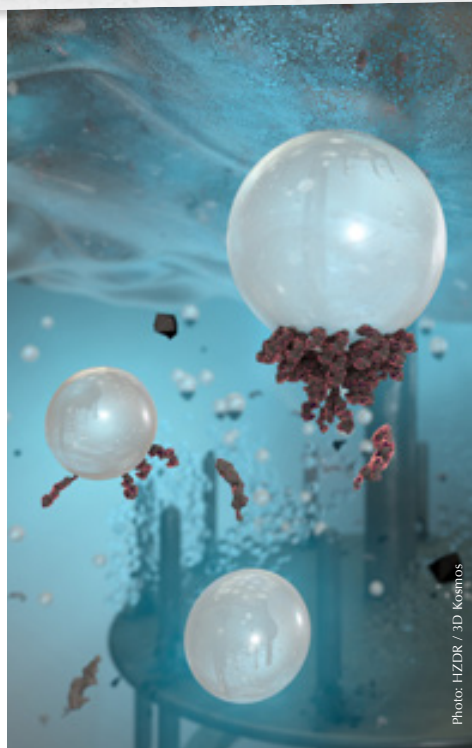


Photo: HZDR / 3D Kosmos

EVERYTHING DEPENDS ON CARBON

Until now, Europe's economy has been dependent on imported petroleum and natural gas as energy carriers and as a source for carbon. Materially utilized lignite, biomass, waste, or carbon dioxide from exhaust gases may possibly assume this role in the future. How this works and how this influences energy and resource management is investigated by the junior research group "STEEP-Carbon-Trans" at the TU Bergakademie Freiberg's Institute of Energy Process Engineering and Chemical Engineering. The focus is on technologies which help reduce carbon consumption and establish a circular economy. The interdisciplinary team is developing an online tool which makes it easier for politicians and entrepreneurs to consider the use of alternative carbon sources.



CONSTRUCTION MADE EASY

A new building method with carbon concrete is being developed in the network "C³ - Carbon Concrete Composite."

When she meets the members of the junior research group, right next door at the Bergakademie, Emilia is immediately taken back to the time when she had been a student. "You've come to the right place," says Stephen, who introduces her to the STEEP-CarbonTrans team. "We want to demonstrate that you can do a lot more with coal than just burn it - and that even waste dumps are actually good for something. With our platform, we'd like to help politicians like you to better assess the consequences of their decisions." Before they said their farewells, they exchanged the signatures of their smartphones via NFC: "We really must stay in touch," says Emilia. "I want to learn a lot more."



OLD SOLAR MODULES ARE TRUE TREASURES

Waste from microelectronics factories, discarded solar modules, and many industrial chemicals contain precious raw materials which don't belong in the trash. The Freiberg-based LuxChemtech GmbH recovers silver, indium, gallium, and tellurium as well as other materials from photovoltaic modules, wafers, targets, devices, and production waste and refines them. For example, the company melts recovered silicon and turns it into multicrystalline material blocks for the microelectronics industry and into extremely heavy components. LuxChemtech also crushes and comminutes silicon residues from which it produces ultra-pure granulates as well as powders for the production of lithium-ion batteries.



NEW OPPORTUNITIES FOR OLD BATTERIES

When today's e-vehicles end up in tomorrow's junkyards, then hundreds of thousands, if not millions of lithium-ion batteries need to be disposed of or recycled around the world. Recycling these batteries is the special competence of the Nickelhütte Aue GmbH. The company recovers such valuable substances as nickel, copper, and cobalt from car batteries and mass storage batteries. New batteries can be produced from these materials. Nickelhütte also closes many other material cycles. In smelting and roasting operations, the company extracts concentrated nickel, cobalt, and copper from non-ferrous scrap metal, galvanic sludge, and residues left behind in metal processing as well as natural gas and petroleum refining. The company also reprocesses chemicals from the electrical industry, used catalytic converters, filter dusts, and transformers.



Photo: DAS Environmental Expert GmbH

A CLEAN RECORD FOR HIGH-TECH FACTORIES

Harmful emissions accrue during many high-tech processes. The Dresden-based DAS Environmental Expert GmbH specializes in technologies and devices for the environmentally safe disposal of such process waste gases. The Dresden experts have developed, for example, electrostatic dust collectors which help remove the otherwise difficult-to-filter fine dusts that occur in the semiconductor, solar, and display screen industries. Other DAS systems extract oil, fat, organic compounds, salts, heavy metals, or microorganisms from industrial wastewater. Together with the Fraunhofer Society, the company conducts research on how to remove pharmaceutical residues from sanitary sewage waters.

SO THAT THERE'S ENOUGH FOR EVERYONE...

As the global population and economy grow, the demand for water, food, and energy rises ceaselessly as well. The UNU-FLORES – United Nations University Institute for Integrated Management of Material Fluxes and of Resources conducts research on the complex interrelationships of these resources in Dresden. A team of international scientists investigates the safe utilization of wastewater in agriculture and forestry, the significance of droughts for agriculture in Africa as well as new urban wastewater and sewage systems. And they also work on interdisciplinary strategies for water and food supplies as well as waste disposal in developing and threshold countries. In so doing, UNU-FLORES pursues the Nexus Approach which takes the complex relationships of various environmental resources into account.



Photo: GICON®-Großmann Ingenieur Consult GmbH

THINK TANK FOR RENEWABLE ENERGIES

The GICON®-Großmann Ingenieur Consult GmbH is working on a bio-based future for humanity. A global innovation from the Dresden experts is a photobioreactor for the industrial production of microalgae. These tiny little unicellular organisms produce oxygen and biomass through photosynthesis which is actually five to ten times more efficient than conventional crops. Due to its low space requirement and low water consumption, this bioreactor is capable of producing renewable raw materials on the entire globe in a resource-friendly manner. The harvested algae can be used as nutritional supplements, feed additives, or basic materials for biotech products. Other innovations developed by GICON® include special biogas procedures, floating substructures for offshore wind turbines as well as a wind turbine with a telescope tower.

WHERE THERE'S A LOT OF HOT AIR

Energy recycling, so to speak, is the core business of the WätaS Wärmetauscher Sachsen GmbH corporation from Olbernhau. The company develops concepts and produces systems which permit energy to be used multiple times after it has been generated by recovering energy from waste heat. With this energy, it is possible to heat or cool rooms and to operate air conditioners and ventilation units more efficiently. Heat exchangers also help generate electricity from waste heat. WätaS heat exchangers are used, for example, in laundromats, paint shops, and the drying technology sector.



Photo: German Biomass Research Center (DBFZ) (2)



REAL BIO!

Whether it be rapeseed, wood, straw, slurry, or manure – energy can be harnessed from biomass. The German Biomass Research Center (DBFZ) Leipzig investigates how biomass can make a valuable contribution to a sustainable energy system today and tomorrow. The focus is on anaerobic processes in biogas plants, technologies for bio-based products and fuels, intelligent biomass heating technologies, and catalytic methods designed to reduce emissions in combustion and incineration processes. With partners from research and industry, the DBFZ is developing economically viable, efficient, ecologically safe, and socially acceptable concepts for the use of biomass. The researchers are also investigating potential fields of conflict and solutions when it comes to the production of energy from biomass.



'The town has really changed a lot,' Emilia thinks as her train pulls into Leipzig. 'There are so many young people from all over the world here.' She also notices this at the Biomass Research Center DBFZ: The teams are a colorful mix. "Everyone is able to contribute their own ideas on how energy and raw materials can be extracted with the help of biology, in harmony with nature," explains Adam to her as he leads her through the DBFZ. The light is subdued in one lab; an orange, glowing liquid bubbles in the middle of the room. Emilia's eyes widen: "Just like an alchemist's crucible!" The post-doc at the lab bench smiles: "It's quite riveting, isn't it? It's a new recipe for biodiesel."

THE ENERGY TURNAROUND

Emilia arrives with the commuter train in Borna this morning. Borna is a small town in Saxony with approximately 20,000 inhabitants, about 30 kilometers south of Leipzig, right in the heart of a region that has been dominated by lignite for more than 150 years. In a café, she's meeting Anja Köhler-Damm, the managing director of the municipal utility company, the Städtische Werke Borna GmbH.



Photo: Anja Köhler-Damm

Emilia: I've heard that 30 years ago, Borna had been completely dependent on electricity generated from lignite. Today, the town is considered to be a role model for the successful transition to clean energy sources. How did this happen?

Anja Köhler-Damm: Since the mid-1990s, we switched the heat production step-by-step to natural gas. We're meeting the district heating requirements of our customers with combined heat and power plants found at three locations, one of which is operated entirely with biogas. The electric power produced by the cogeneration of power and heat was initially just a "by-product."

Emilia: What has changed?

Anja Köhler-Damm: We're expanding primarily photovoltaics. Over the past few years, several solar systems were added to the grid, including a landlord-to-tenant electricity project which we implemented together with the housing association. The green electricity that is produced on the roof is fed into the house grid and consumed directly by the tenants. We're compensating surpluses and additional demand through the public power grid.

Emilia: Will the town be able to meet its own energy demands in the near future?

Anja Köhler-Damm: We want to be – at least mathematically speaking – energy self-sufficient. That's why we'll start operating a large-scale 7 megawatt solar power plant in 2021. We're also planning to add wind power which is generated regionally to our portfolio. We're above all interested in sustainability and value creation in the region because as a municipal corporation, we see ourselves as being responsible for the environment and the future generations.

Emilia: Do electric and natural gas mobility play a role in this as well?

Anja Köhler-Damm: With e-charging stations spread throughout the entire town and our natural gas fueling station, we're providing the necessary infrastructure. And we also have, of course, several electric and natural gas vehicles in our motor pool.

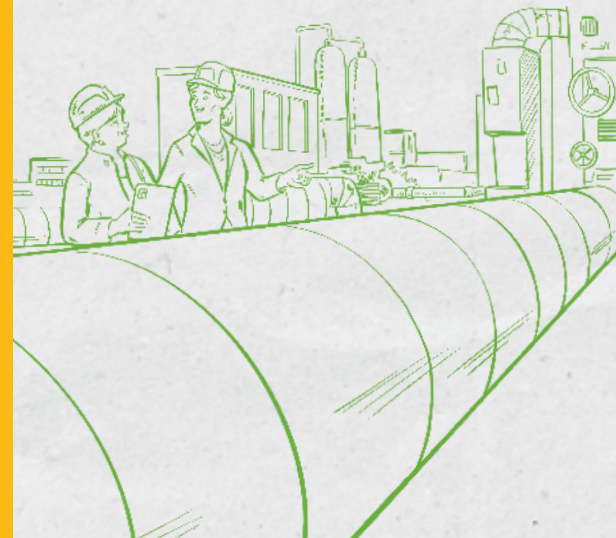
FROM GREEN ELECTRICITY TO HYDROGEN AND BACK AGAIN

Together with its subsidiaries DBI Gas- und Umwelttechnik GmbH in Leipzig and DBI - Gastheologisches Institut gGmbH Freiberg, the DBI Group covers the entire gas supply value creation chain, ranging from production to storage and grid transportation all the way to utilization, which also includes renewable energy sources. DBI optimizes, for example, natural gas powered fuel cells. It also develops solutions for the production of hydrogen with wind and solar power – and the reconversion of the, thus, stored energy (power-to-gas-to-power). Such hydrogen storage systems can be connected to the natural gas grid. The DBI experts and their partners are creating a "green hydrogen economy" in Central Germany, and they are participants of the HYPOS initiative. Their customers include energy suppliers, urban utility companies, municipalities, the chemical industry, and other businesses.

The Leipzig-based ONTRAS Gastransport GmbH operates Germany's second largest gas transmission network with a pipeline length of approximately 7,000 kilometers and about 450 interconnection points. Together with partners, the company is now also developing solutions which are designed to make today's gas pipelines, measurement technology, fittings, and valves fit for hydrogen technologies. For example, two industrial partners already produce hydrogen and synthetic methane from regenerative power and feed these energy carriers into the ONTRAS grid. A third facility is in the planning phase. ONTRAS also builds and operates gas stations for compressed natural gas (CNG) and hydrogen to supply fuel cell vehicles.



Photo: ONTRAS Gastransport GmbH



The excursion to Borna has really piqued Emilia's interest in how hydrogen can be fed through gas pipelines. "Just turn off the natural gas and feed in the hydrogen – unfortunately, it's not that simple," explains Amanda from the Leipzig grid operator ONTRAS. "Quite a lot actually has to be tested: Are the pipes sufficiently leakproof? Does the shell material react with hydrogen?" the engineer recites some of the examples. "We're now working on European standards for hydrogen tolerance in the gas grid," explains Lukas from the DBI. After all, those who are the technological pioneers, are also the ones who have the expert knowledge that is needed for the standardization of new energy concepts.



Photo: Department of Advanced Powertrains, TU Chemnitz / Chemnitz University of Technology / Roman Forke

HYDROGEN POOL

The innovation cluster “HZwo – Drive for Saxony” pools the Saxon expertise from industry and research in the sectors fuel cell technology, manufacturing and production, special machinery and plant construction, hydrogen technologies as well as drive and propulsion technologies from its headquarters in Chemnitz. The partners are working on the sector coupling of electricity and heat in the supply of energy, on a CO₂-neutral fuel production for aviation, on the use of biogas for the supply of energy in agricultural enterprises, and on infrastructures for fuel cell powered regional trains. In the medium to long run, the city of Chemnitz is to become a “hydrogen city” with hydrogen fueling stations, fuel cell buses, and a flourishing “hydrogen campus.”



“ENERGETIC” NETWORKERS

bring the energy / environmental expertise of stakeholders from business, science, and politics together in Saxony.



NANOTECHNOLOGIES FOR SMART FUEL CELLS

The Fraunhofer Institute for Electronic Nano Systems ENAS in Chemnitz develops micro and nano technologies for smart fuel cells and other smart systems. Within the scope of “HZwo – Drive for Saxony,” the Saxon innovation cluster for fuel cell and hydrogen technologies, and at the “Hydrogen Campus Chemnitz,” the ENAS experts optimize, for example, the turbo compressors of fuel cell drives and powertrains with the help of intelligent magnetic field sensors. This permits the construction of smaller compressors with very high rotational speeds. Another example: Instead of coating polymer electrolyte membranes (PEM) with the complex method that has been employed so far, ENAS engineers now print and structure the fuel cell membranes with carbon and platinum according to the efficient roll-to-roll procedure.

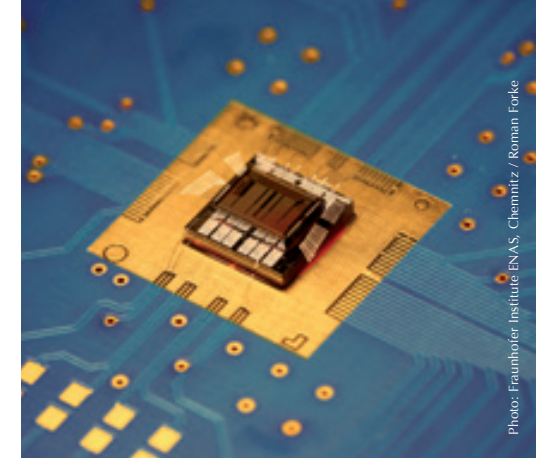


Photo: Fraunhofer Institute ENAS, Chemnitz / Roman Forke



SUSTAINABLE IDEAS

are created by numerous R&D facilities in Saxony.

MOBILE WITH FUEL CELL POWER

The Fuel Cell Powertrain GmbH (FCP) develops and produces applications for the utilization of hydrogen as an energy carrier. Towards this end, the company is establishing one of Europe’s most modern testing and production facilities for fuel cells and electric drive and propulsion technologies in Chemnitz. The joint venture of the German PTT GmbH and the Chinese financial investor HET combines fuel cells with intelligent electric drive systems which are to be used in buses, trains, and utility vehicles. Compared to those drives which are merely powered by batteries, fuel cell systems exhibit extended driving ranges and, at the same time, shorter refueling times as well as an improved overall environmental balance. In addition, the company also offers its technology in the form of stationary solutions. FCP is a part of the fruitful and productive ecosystems of industry and research on the “Hydrogen Campus Chemnitz.”

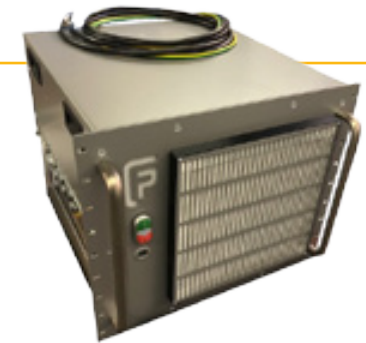


Photo: FCP Fuel Cell Powertrain GmbH



Photo: SIEMENS AG

TOGETHER. INTO THE FUTURE.

A production site in transition. The SIEMENS turbine manufacturing plant in Görlitz has been delivering products for the conventional generation of power and heat for many years now. In 2018, the plant with its 800 employees was on the brink of being closed. The region around Görlitz – Lusatia – is also confronted with the challenges of the energy turnaround as a lignite mining district. Together, it has been possible to find a way. On July 15, 2019, the SIEMENS AG, the State of Saxony, and the Fraunhofer Society signed the “Siemens Görlitz Pact of the Future.” The TU Dresden – Dresden University of Technology –, the Zittau Görlitz University of Applied Sciences as well as the start-up incubator, the Leipzig Graduate School of Management (HHL), joined the pact as partners soon thereafter. Additional technology firms, industrial companies, start-ups, and research institutes are to set up their business here as well. Focal points are decarbonization, digitalization, and new production technologies. The turbine plant is to be transformed into a CO₂-neutral factory by 2025. Products and solutions in hydrogen technology are to be developed together with partners in the new SIEMENS Innovation Campus in the future, and a start-up accelerator is to be integrated as well. In the Fraunhofer Hydrogen Laboratory Görlitz (HLG), researchers investigate the production, storage, and use of hydrogen. Over the long term, Görlitz and Lusatia are to evolve into a competence center for hydrogen technologies.

ENERGY SUPPLY WITHOUT EMISSIONS

Portable energy supply solutions are offered by the FAE Elektrotechnik GmbH & Co. KG from Heidenau. The company’s systems are based on hydrogen fuel cells and batteries and provide energy for all sectors with different performance requirements at any time and without any harmful emissions. Within the scope of “HZwo – Drive for Saxony,” the Saxon innovation cluster for fuel cell and hydrogen technologies, FAE has developed an emission-free, scalable hybrid system composed of fuel cells and batteries for the supply of energy. Thanks to its modular construction, this system can be used for diverse mobile and stationary applications without any additional development efforts.



Today, Emilia has an appointment with the electrolysis experts at Sunfire. When she arrives with the hybrid bus in Dresden-Reick, she’s immediately fascinated: In the background is the refurbished gasholder, right next to it the innovation campus of the public utility company with large-scale batteries, solar plants, and thermal storage units. In front of it all, a seemingly very technical tower soars into the sky: This technical marvel of Saxon engineering expertise is able to produce synthetic biofuel from air and solar energy with the help of highly efficient high-temperature plants. “In 2015, we put the first liters from our pilot plant into the fuel tank of the then Federal Research Minister’s Audi,” says Jan who had helped construct the tower.



Photo: Sunfire GmbH

ENERGY SOURCES OR THE DREAM OF INDEPENDENCE

The Dresden-based Sunfire GmbH develops highly efficient high-temperature fuel cells and electrolyzers which provide decentralized electricity, heat, fuels, and green hydrogen in an environmentally friendly manner. The systems achieve an efficiency rate of more than 90 percent and work without any problems even when

they’re exposed to heat, storm, and dust clouds. During high-temperature electrolysis, the Sunfire systems generate green hydrogen with the help of green electricity. The latter can be further refined with carbon dioxide into synthetic crude oil or biodiesel for the refueling of ships, airplanes, and cars. At TOTAL, Sunfire technology delivers the fuel for fuel cell vehicles; in Salzgitter, the company reduces the CO₂ emissions in steel production; additional partners include Boeing, Audi, and ThyssenKrupp Marine Systems.

A new day dawns. Emilia gazes through the hotel window across the Elbe River to Dresden's Old Town district. 'This view is spectacular. What a wonderful place to live,' she muses. But then she thinks again of her home and why she's here. Today, she wants to visit two companies which have some clever ideas to ensure that not too much energy is wasted anymore. "Heating your home with computers - incredible that someone actually came up with the idea," murmurs Emilia to herself as she closes her notebook so that she can catch the tram that's to take her into Dresden's high-tech Northside.



WHEN THE CLOUD HELPS HEAT THE HOUSE

A downside of digitalization is the growing consumption of energy in computer centers: Thousands of processors need lots of power and require lots of cooling. The Cloud&Heat Technologies GmbH has come up with a groundbreaking solution: Highly secure cloud centers that actually heat office facilities with their waste heat instead of "unloading" this energy into the surrounding environment. As an alternative, the sophisticated direct cooling of hot water can also feed the thermal energy into the district and local heating grids. That saves cooling and heating costs, improves the carbon dioxide balance of computer centers, and helps protect the environment. Cloud&Heat has also created the first water cooled mobile computer center in a shipping container. At the moment, more than 1,000 Cloud&Heat servers are in operation around the globe.

Photo: Cloud&Heat Technologies GmbH

ULTRALIGHT ORGANIC SOLAR FILMS

Thanks to organic photovoltaics, solar technology can now be used to a much broader extent than before – no longer just on the roof, but also on facades and fragile constructions. To make this possible, the technology leader Heliatek GmbH produces transparent, millimeter-thin, flexible, and ultralight solar films in its factory in Dresden. These innovative "HeliaFilm" energy collectors supply electricity even under low light conditions when classic silicon technology can no longer produce any more power. Organic solar films made in Saxony have been used in Germany, China, France, Belgium, and Egypt for many years now. Heliatek produces these films with the efficient roll-to-roll procedure for which it only needs one gram of organic starting material per square meter of solar film.



Photo: Heliatek GmbH

HEATING ENERGY THAT HITS THE SPOT

An innovative intelligent heating technology developed by the Freital-based watttron GmbH corporation has the potential of revolutionizing the plastic packaging industry. The patented watttron system heats the material with pinpoint precision – only there where it actually needs to be formed. With this method, manufacturers are able to optimize, for example, the wall thickness of a yogurt cup in such a way that they save almost a third of the material and energy while also avoiding waste.

PLATFORM FOR THE DECENTRALIZED WORLD OF ENERGY

The world of energy is changing: Decentralized producers feed electricity into the grid, e-vehicles need charging stations, excess energy must be stored. The Dresden-based Kiwigrid GmbH provides a platform which links new technologies and business models revolving around energy, heat, e-mobility, and the internet of things (IoT) with one another. For example, the platform segment "Independent Home" helps homeowners to supply themselves year-round with clean, self-generated energy. "Electrifying City" addresses the housing industry, reads the consumption data of digital gas, water, and heating meters, and coordinates the energy balance of multi-family homes and urban districts. The "Transactive Grid" helps grid operators to balance supply and demand and to prevent local bottlenecks.

ENERGY SELF-SUFFICIENT TREATMENT

The Stadtentwässerung Dresden GmbH is a technology pioneer of wastewater treatment. Just one example: Along with household chemicals, pharmaceuticals, pesticides, and textile fibers, many micropollutants get into the sewage system which previously had been difficult to filter out. Within the scope of the "MikroModell" project, the company conducted research together with the TU Dresden – Dresden University of Technology – on how to solve this problem. The Stadtentwässerung Dresden GmbH also uses such renewable energy sources as solar systems, water turbines, and wastewater heat for wastewater treatment. Since biogas extracted from sewage sludge and organic waste is converted into electricity, the Dresden-based sewage treatment plant is virtually energy self-sufficient. The company's extensive expertise is highly coveted around the globe, for example, for wastewater projects in Vietnam, Jordan, and the Ukraine.



The mayor slowly takes a deep breath: When you consider that the wastewater from hundreds of thousands of households from the metropolitan region Dresden are treated here, it's a remarkably fresh breeze that wafts across the large sewage treatment plant in Kaditz. "It wasn't always like this," acknowledges Yvette, who guides Emilia through the huge facility. "But over the past decades, we invested a lot of work, money, and expert knowledge into upgrading the sewage treatment plants with state-of-the-art technology. We often have international guests like you here who want to learn more about this type of transformation."

Photo: Stadtentwässerung Dresden GmbH



"Okaaaay..." Emilia's eyes widen as her gaze moves upward. "You don't always have to tear down everything that's old if you wish to head into the future," explains Thomas who helps Emilia on her fact-finding mission at the Chemnitz supplier eins energie in Sachsen. "30 years ago, this had been an ugly, weathered reinforced concrete tower at a thermal power plant. Then came a French artist with very extraordinary ideas for colors and lights. And now, this 302 meter smokestack is the world's tallest work of art." Thomas points with his hand: "Let's go over to the low-temperature laboratory where very different innovations are being created..."

Photo: eins energie in sachsen GmbH & Co. KG / Dirk Brzoska

A COOL METROPOLIS

One of the world's most modern district cooling networks is operated by the eins energie in sachsen GmbH & Co. KG in Chemnitz. The requisite cooling energy is provided by absorption chillers and thermal energy storage systems. From the central unit, cool water with a temperature of five degrees Celsius flows through the city via a well-insulated pipeline system. The system cools office buildings, shopping centers, the university, and other public facilities and reabsorbs the heat in these premises. The water, which is thus heated to about twelve degrees Celsius, flows back into the cooling system, and then the cycle starts all over again. All told, the company supplies about 400,000 household and commercial clients in South Saxony with natural gas, electricity, heat, cooling energy, and water.





Emilia's cloud storage is almost full with voice memos after two weeks of research in Saxony. The contact app in her smartphone is overflowing with new signatures. If she had her way, she'd change everything at once back home. When she sits with the city council members at the round table after her return and talks about all the inspirations she got on the trip, she's asked what she'd like to tackle first. Emilia pulls her thumb and index finger apart and taps on an entry in her memory app. "Hydrogen," she says. "We got lots of sunshine in Chile. If we clean up the waste dump at the edge of town like they do in Saxony, then we could install lots of solar plants so that we could produce green hydrogen with inexpensive green power. That would give our municipality an entirely new direction and create lots of new jobs. I really paid close attention to what the experts had told me in Saxony. And I'll get in touch with them again very soon."

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SAXONY!

The Pros Behind It

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WIRTSCHAFTSFÖRDERUNG
SACHSEN

Wirtschaftsförderung Sachsen GmbH
Bertolt-Brecht-Allee 22
01309 Dresden
Phone: +49.351.2138-0
Fax: +49.351.2138-399
info@wfs.saxony.de
www.wfs.saxony.de



ENERGY AND ENVIRONMENTAL TECHNOLOGY FROM SAXONY

The Innovative Topics of Saxon Stakeholders from the Energy / Environmental Technology Branch

Resource Efficiency



Recycling



Recycling Economy



Renewable Energies



Decarbonization



H₂ Technologies



Energy Storage



Smart Grid



About **17,200** employees



More than **730** companies

Annual turnover of

€ 3.7 billion



Where environmentally friendly ideas take off,
Saxon experts are often just a heartbeat away.
Just scan the QR code and be inspired!

