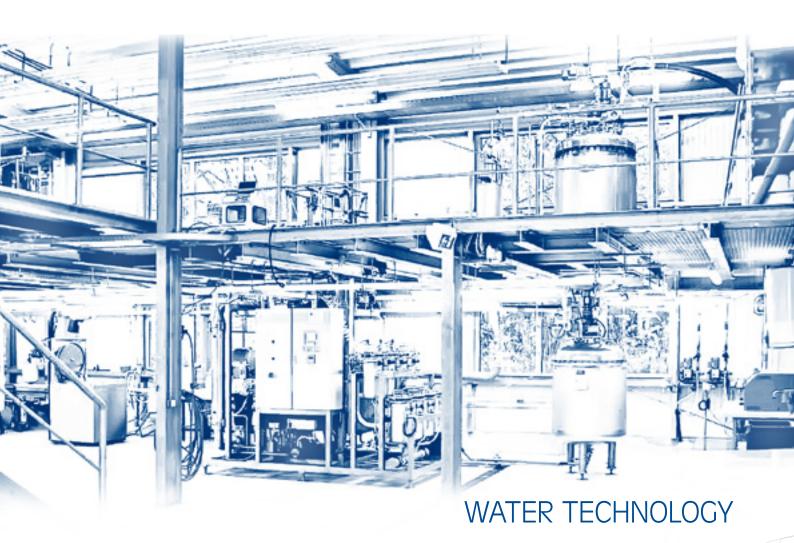


Engineering
 Plant Construction

TECHNOLOGIE PRO UMWELT

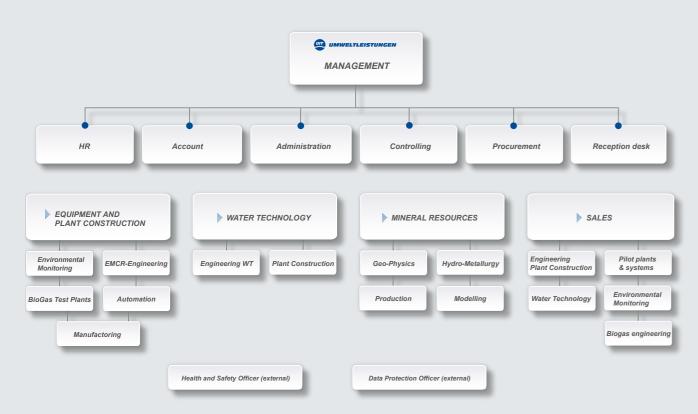




CONTENT	02	STRUCTURE
	03	VISION
	04	MAIN CONTAMINANTS
	06	PROCESS ENGINEERING
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Vision

Structure



tion for your plant starting from the determination of the basics, going through design and implementation planning stages, including construction supervision. Our main business activities cover industrial and mining water treatment plants ranging from complex process engineering pilot plants to full scale plants as well as process engineering of plants. To verify a process reliability, industrial plants. A large variety of successfully implemented projects add we use our technology center and a mobile water technology pilot plant. value to your project consolidating gained expertise. We trust your expertise in the engineering process, so that gained shared knowledge encourages for the best of your interests on holistic plant design.

> Our TEAM represents a consolidated expertise in the fields of process engineering, chemistry, mechanical & electrical engineering, software development and automation, extended skills and experience in plant engineering and construction. The interaction with carefully selected partners forms a solid foundation for the high performance of the activities of UIT GmbH Dresden. Our work is characterized by a strong solution orientation, pragmatism and analytical decision making experience. We are supported by the great team spirit of our colleagues and the strong cohesion in the project teams. The commitment to have reliable solution is dedicated to our customers success reflects our culture.

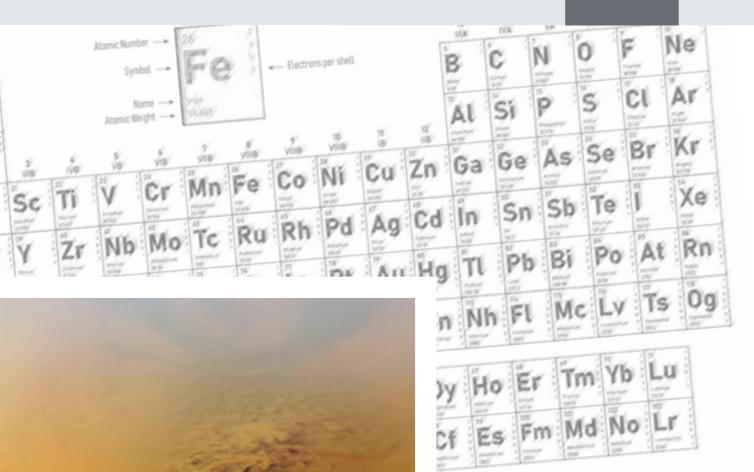
ENGINEERING · PLANT CONSTRUCTION · WATER TECHNOLOGY

"From your individual requirements via engineering to plant construction"

ENGINEERING We develop and engineer technological process solu- PLANT CONSTRUCTION As a general contractor, we manage the plant construction implementing an engineered technological process. Our focus represents our capabilities building industrial wastewater treatment

Main Contaminants





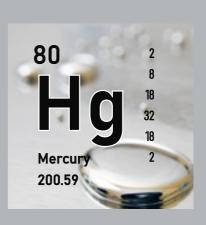


OXIDATION UND NEUTRALIZATION

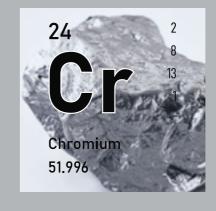
MAIN CONTAMINANTS

Metals or heavy metals and sulfate are common in industrial wastewater contain in significantly increased concentrations to be treated and removed.









SULPHATE

05

04

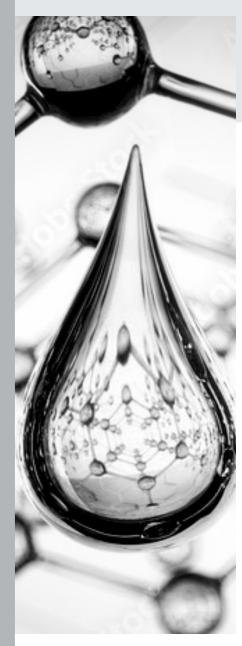
Sulfate is found in high concentrations in many industrial, mining and recycling process effluents. Due to increased environmental requirements associated with tightened limit values for discharge, complex treatment technologies are necessary.

MERCURY, COPPER, CHROME

Metals come from a wide variety of sources and are distributed over many areas, so that they are present in dissolved form as ions in the wastewater. In addition to removing the metals from the wastewater to comply with the official limit values, their recovery may also be relevant.

Ca





Send us your water analysis. Together we will find a solution!

The wastewater composition is never identical and therefore standard solutions are rarely successful.

e-mail: info@uit-gmbh.de phone: +49 351 886 4600



Process engineering

bioA Base

Peroxide Ferric com

process acids / base

Distant

tively synthetically produced wastewater.



Waste water (OUT)

metal reduced

Filter press

Metal containing studge recyclable

Technology center & Pilotcontainer

TECHNOLOGY PRO ENVIRONMENT

Technology Concept — Today's industrial wastewater treatment aims to discharge requirements against set compliance limits (limit values), water reuse, freshwater savings, minimizing landfill costs that may be required, all the way down to the recovery of raw materials. For the complex task of the process selection, we combine standard technologies with the latest developments and develop a technologically, economically and environmentally optimized concept for your plant. With our simulation software, the "virtual water laboratory" augaC, we can efficiently map the hydrochemical processes.

Feasibility — The technological concept of the wastewater treatment must be physico-chemically confirmed using real wastewater samples or alterna-

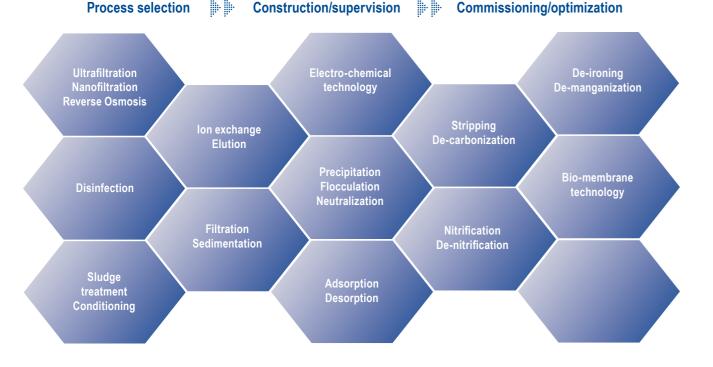
studge

Discontinuous and continuous tests in our technical technology center are often used to prove a technological feasibility.

TECHNOLOGY CENTER

In our Technology Center — an individual process steps, one after the other are investigated in order to optimize the parameters, determine the residence and reaction times to define the interaction interfaces.

The conductivity, the pH value and the redox potential of the initial, intermediate and end products are determined in our laboratories and the first analyzes are conducted using our XRF (X-ray Fluorescence Analyzer) or photometer. For special analysis requirements we use the expertise of certified analytical laboratories.



PILOT CONTAINER

For the assessment of technological reliability and the operating costs, we offer pilot plants for rent or as permanent installations.

During piloting phase, we would also support the operation of these systems for you with our staff.

07

06









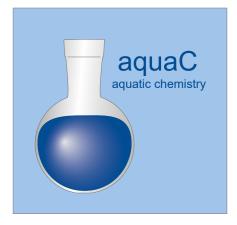




Engineering tools

CONCEPT - PLANNING - EXECUTION

We use modern planning software and are thus in a position to digitally map and visualize your plant, so that there is the greatest possible planning security and transparency about the plant to be built.



aquaC® - virtual laboratory (UIT) Process simulation software

- Water technological process simulation
- Ion balance control and adjustment
- Reaction, solution, precipitation, kinetics



AutoCAD® Plant 3D Toolset (AUTODESK)

- Creation of isometric drawings and pipeline documentation
- Integrated piping and instrumentation diagrams (P&ID)
- 3D virtual reality for plant design, control and assembly support



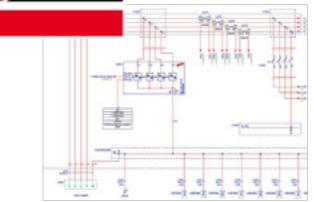
SolidWorks® (Dassault Systèmes) 3D software for mechanical design and production, 3D plant construction software

- Implementation of design and manufacturing
- Design of large, complex assemblies
- Designing mechatronic systems



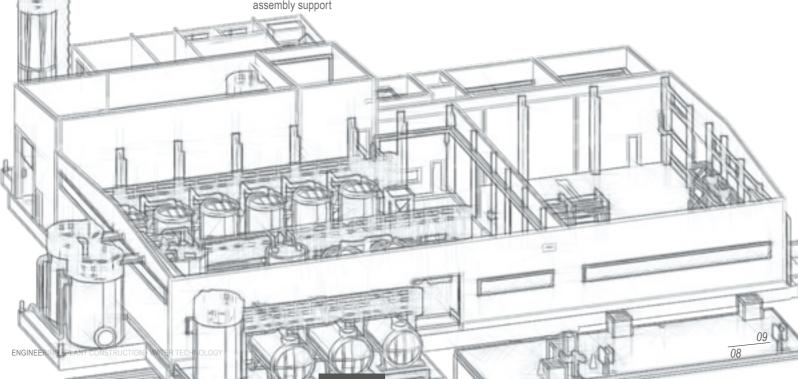
EPLAN® CAE und CAD Services (Friedhelm Loh Group)

Software for engineering in the fields of electrical engineering, automation and mechatronics, for plant and control cabinet construction as well as for CAE and CAD services for the optimization of product development processes



Supporting and advanced software products

- MS-Project® for schedules, workflow coordination and controlling (Microsoft)
- · LabVIEW® for validation and production test systems (National Instruments)
- BIM 360® construction management software for networking processes (Autodesk)
- TIA Portal/TwinCAT (Beckhoff), Safety PROFIsafe/TwinSAFE (SIEMENS)
- · C+ is an imperative and procedural programming language (AT&T)
- · ERP business software Navision Dynamics (Microsoft)
- AUTODESK Revit Software for architectural design, MEP, structural design and construction (AUTODESK)
- Various in-house used software for modeling developments for hydrogeological, geochemical, hydrometallurgical and reactive transport processes





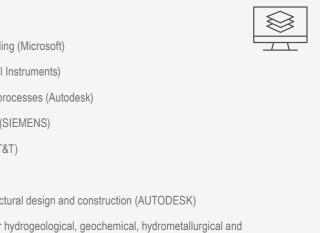




SIMATIC Controller with HMI (SIEMENS)

Programmable logic controller (PLC)

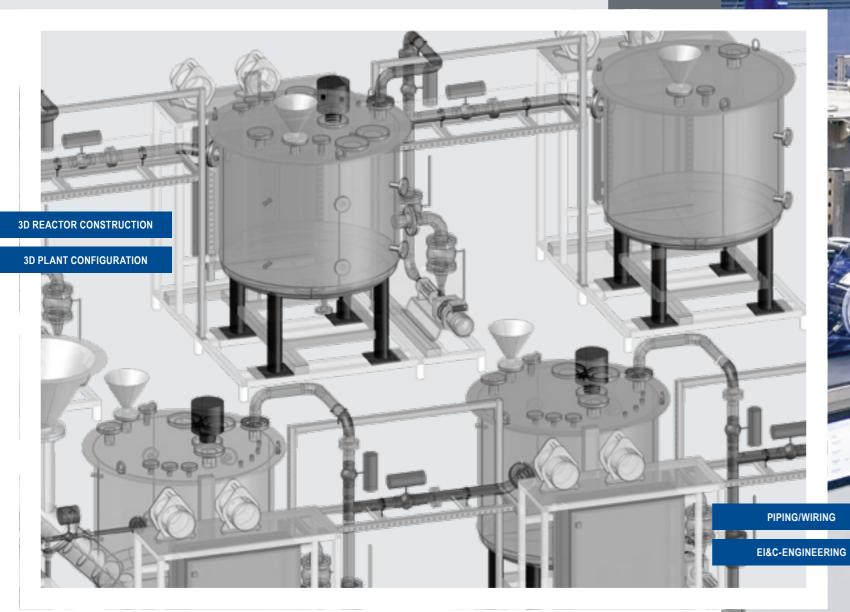
- Programming of SIEMENS PLC systems
- Use of various generations of SIMATIC controllers
- CAE and design of HMI systems with accommodating sophisticated panel design





3D becomes real





FROM 3D CONSTRUCTION TO REAL INSTALLATION

The use of 3D Engineering software tools defines the ability to present all the details, specifications of components, creating diagrams and lists through one system, thereby minimizing transfer errors of adjust-

We use these opportunities to visually control tion, our engineers use 3D drawings for work the interfaces and discuss the implementation of the system with our partners. System integration can be simulated on site and controlled using a

ments from different working documents. virtual reality approach. During on site installapreparation and execution control.



3D Application



3D PLANNING EXAMPLE

Industry sectors

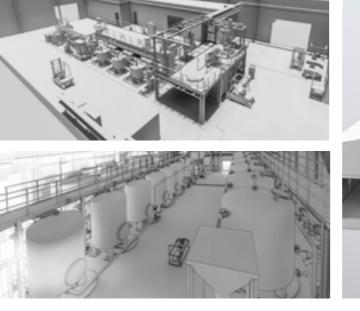
TECHNOLOGY PRO ENVIRONMENT

We are convinced that the optimal connection of the engineering tasks is only possible with the most modern tools, because the range of requirements is becoming ever broader today, in addition to economic challenges, it is also necessary to consider environmental, social and ethical aspects. Today, and in the future, it will be possible to successfully build and operate only those systems that are precisely adapted to the regional conditions of the market needs, production streams, availability of necessary qualifications and personnel. We accommodate these complex tasks with our partners right from the initial stage.





High temperature reactor plant plant (HTP reactor) for biomass treatment at temperatures up to 240°C using pressure up to 40 bar.



We design, engineer, and build complex technological systems con- Gypsum precipitation provided for sisting of tanks, pumps, pipelines, conveying elements, power electronics sulphate reduction using lime silos and automation.

installation on the outside of the plant.

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MINING REMEDIATION

INDUSTRY



UIT	UMWELT
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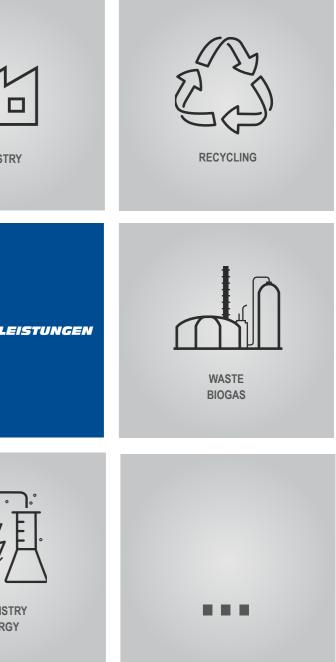
STEEL/NF-METALS AUTOMOTIVE



PILOT SYSTEMS



CHEMISTRY ENERGY





Plant construction Industry



Plant construction Pilot systems





WISMUT GmbH

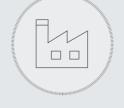
Mine water treatment plant for the decommissioned WISMUT plant consisting of flocculation/ precipitation, sedimentation tanks with thickeners and filter presses for solid-liquid separation.





WRC World Resources Company GmbH

Chemical-physical plant for the treatment of liquid, pasty, and solid residues from the processing industry for the extraction and concentration of valuable raw materials.





Metsä Group OY

The solution of Spinning bath cleaning and recycling implemented for the first time as technology in a cellulose fiber production plant consists of filtration stages, membrane systems and thermal concentration.











ATB

Leibniz-Institut für Agrartechnik und Bioökonomie e.V. (ATB)

Pilot plant for bio-based products to demonstrate the process chain from the raw material to the production of high purity lactic acid, consists of fermentation, membrane filtration and biochemical leaching, precipitation, filtration and format for the transport of cargo in passenger electrodialysis.

Delivery of a complete test and demonstration plant for extracting precious metal from electronic waste consists of process sequence such as drying.

















BRAIN Biotech AG

RYONEX PTY LTD

Supplied compact retardation systems used in continuous etching bath cleaning plant based on ion exchange technology and designed in cargo aircraft.





Mining

MINE WATER - PROCESS WATER

Mining operations are often located in difficult-to-access areas with extreme weather conditions. A constant and reliable source of clean water is required for both the valuable mineral extraction and cleaning process and for the needs of the personnel who operate the facility. Typical mining water treatment technologies are AcidMine Drainage (AMD) and Acid Rock Drainage (ARD).



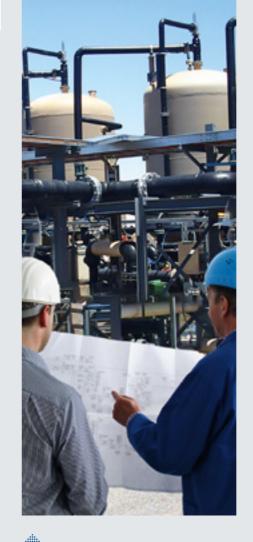


WISMUT mine water treatment plant GmbH at the Königstein site, designed by the UIT GmbH Dresden.

Proven and robust technologies for sulfate and heavy metal separation with a view to water recycling and residual material conditioning Conventional neutralization technologies often no longer meet the requirements! We apply innovative technologies to permanently solve common problems such as gypsification/ incrustation, excessive sulfate concentrations in the effluent or critical residual material properties.

Mining pilot plant a treatment lagoon for sulphate separation using open pit mining water, designed and built by UIT GmbH Dresden.





RAW MATERIAL EXTRACTION

ACTIVE WATER TREATMENT

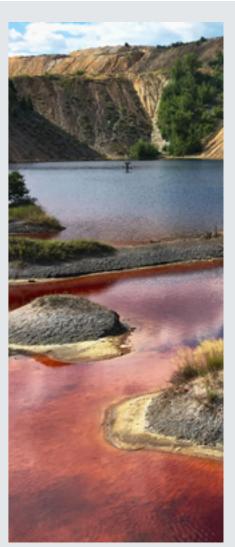
Neutralization with partial sludge recycling (HDS process) or highly efficient sulfate reduction (HeSR) by combining precipitation and membrane technology are technological examples of successful applications in numerous projects.

We are experienced in every type of mining, from coal to ore, to do our part in complying with increasingly stringent national and international guidelines.

In addition to examining and optimizing disposal routes for residual materials, we also consider the separation of metals with an **option of recycling** (processing into commercially available concentrates) from a technological and economic point of view.

We design your plant optimally according to local conditions, starting from small treatment plants for tailings leachate with 1 - 10 m3/h up to large plants with > 1,000 m3/h for typical waters from mining dewatering or for floodwater treatment.





MINE REMEDIATION



Industry





The industrial wastewater from the steel and non-ferrous industries varies greatly depending on the process. Steel production, shaping and surface finishing result in metal loads in the wastewater that have to be removed. UIT designs and builds Chemical/Physical systems for steelworks. Process water can contain components whose recovery is economically feasible and necessary. UIT designed and built a spinning bath cleaning plant with recovery for Metsä Group/FIN. The main challenge was the requirement to obtain a high recovery rate of the solvent.



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BASIC / DETAIL ENGINEERING

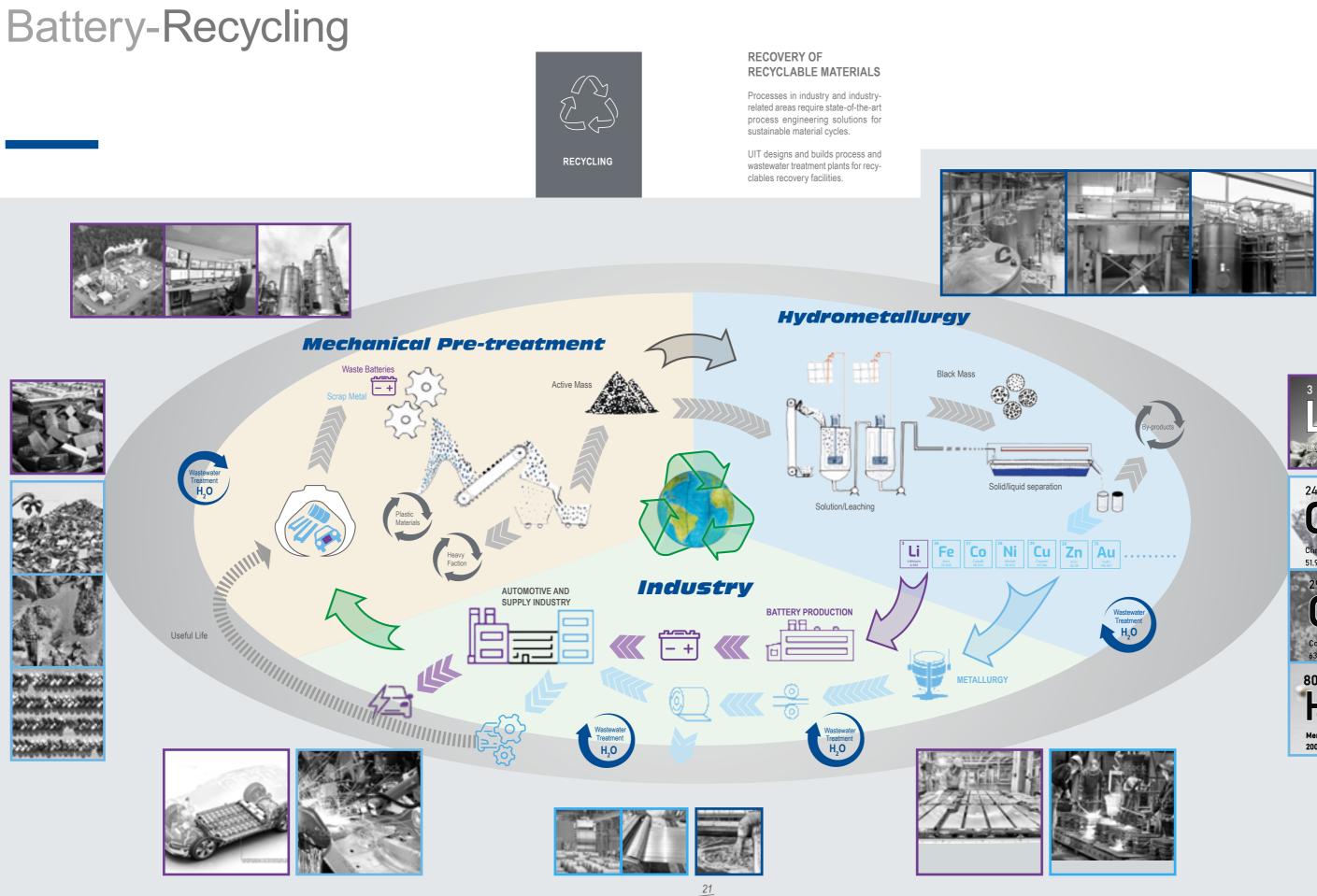
Pulp industry

DELIVERY / ASSEMBLY / PIPING

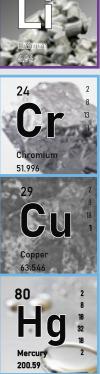
AUTOMATION / COMMISSIONING

Technology pro Environment





20



Umwelt- und Ingenieurtechnik GmbH Dresden



Why with UIT? ... and in addition, this ...



TECHNOLOGY PRO ENVIRONMENT

Our competences are dedicated to confront your challenges exploring complex tasks.

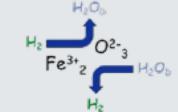
Fully equipped container systems and stationary pilot systems are often the first steps towards proving feasibility and reliability of the technological process operating under real conditions. Such technological solutions can be developed, engineered, designed, constructed and available in months

HYDROGEN STORAGE

In 2004, our company (UIT) has planned a pilot conditions for full scale industrial system. plant for the production of polylactic acid (PLA) for the Leibnitz Institute for Agricultural Engineering and Bioeconomy. All necessary process steps together were developed designing and building complete plant.

One of the project partners involved at the Due to time constraints, we had to combine Leibnitz Institute, Mr. Uwe Pahl, is now the managing partner of a new, innovative company. His activities promotes the development of investor initiatives towards practical approach implementing to realization steps starting from piloting container system for 6 months by storing hydrogen and creating acceptable

https://www.ambartec.de



The transition by converting a completely new technology into a practical solution in the shortest possible time, Mr. Pahl credentials highlight very good cooperation between companies.

the design and construction of the system confronting safety issues associated with hydrogen and oxygen. The containerized system for AM-BARTEC was completed within agreed 6 months. For us, this type of "development on demand" is great opportunity consolidating expertise encouraging a teamwork we can be proud off!











Umwelt- und Ingenieurtechnik GmbH Dresden



Rack-based plants

COMPACT / TESTED

Rack-based systems for standardized technological Processes, flexible design and modular construction.



Containerized plants



RETARDATION SYSTEMS

Ion exchange system with two columns designed

NANOFILTRATION SYSTEMS

System design consists of 6 pressure pipes, Clean-In-Place (CIP) station, including control, Factory acceptance tested (FAT) and commissioned by the UIT GmbH Dresden.





BIOLEACHING

metal from electronic waste, consisting of bio- nological process constructed in stainless steel chemical leaching, precipitation, filtration and or alternatively designed using high strength and drying.







FLEXIBILITY

Complete test solution for extracting precious Containerized solution customized using techhigh temperature resistance glass with associated process control system.

INSTALLATION / START-UP

Flexible Design Containerized stan-dalone pilot systems for remote applications, designed and constructed by UIT GmbH Dresden





BIOGAS EXPERIMENTAL CONTAINER

Biogas test containers equipped with customer specific bioreactors, gas volume and quality measurement technology.





BELONGS TO GENERAL ATOMICS EUROPE GRUPPE AND AS SUCH IS PART OF THE GLOBAL NETWORK OF GENERAL ATOMICS (GA)

GA and affiliated companies operate on five continents.

GA subsidiaries include General Atomics Europe GmbH based in Saxony and Brandenburg, Heathgate Resources Pty Ltd (South Australia), GA Uranium Resources Group, Diazyme Laboratories Inc. and GA Honeywell Uranium Conversion Partnership.

GLOBAL PROGRESS THROUGH TECHNOLOGY



UMWELTLEISTUNGE

Technology pro Environment



www.uit-gmbh.de

The company is part of the General Atomics Europe Group and is thus part of the worldwide network of General Atomics (GA)



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