



Glorinda Company Engineering Service



Environment, Oil & Gas, Power

www.glorinda.com



Glorinda Engineering Character

Our Engineering Services Include:

Glorinda's engineering approach is built on sustainability, efficiency, and above all, innovation.



Turnkey Projects (EP, EPC or EPCM)



Licensing & Technology Transfer



Process Packages



Improvement in Current Processes

With a strong focus on quality, adherence to international standards, and the capability to deliver customized EPCM solutions across multiple sectors, Glorinda is ready to be your reliable partner for successful and efficient project execution.

The Advantages of Our Engineering Service:

1.Focus on Niche Projects: Glorinda avoids conventional projects and routine solutions, instead focusing on unique challenges that have gone unnoticed or unsolved by traditional methods. To handle these special cases, we deliver bold and original ideas—sometimes used for the first time—to reach effective results.

2.Shaping Market Trends: We aim to introduce innovative methods that can reshape market trends. While technology plays a key role, we ensure our solutions are compatible with existing infrastructure, making them practical and effective for real-world use and the target market.

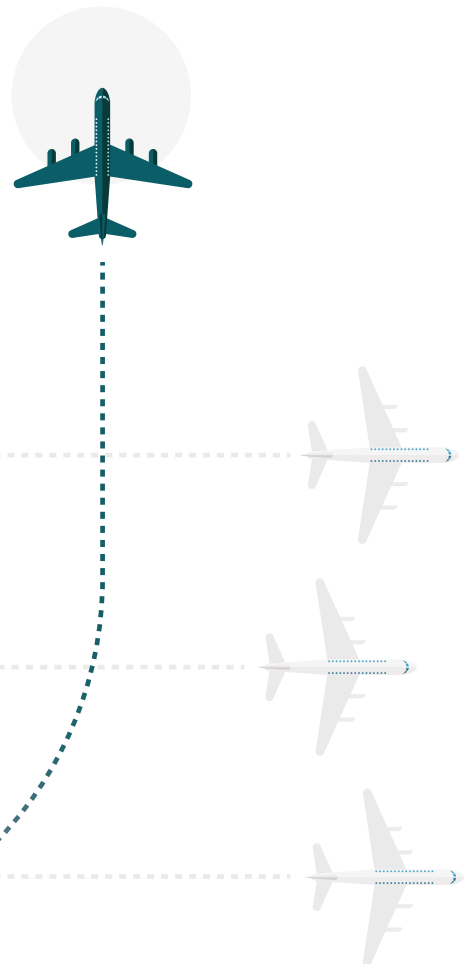
3.Global Expertise: With a strong presence in international markets and access to a global network of engineers, Glorinda leverages the world's engineering capacity and expertise to drive its projects toward success. This approach creates knowledge synergy and reduces engineering costs by eliminating the need for physical presence.

4. Embracing Cutting-Edge Technologies:

Glorinda integrates new technologies and systems into its processes, even if we are not the provider. We avoid repetitive designs and push the boundaries of progress in every engineering project.

5. Risk Management and Innovation:

We recognize the risks in adopting new systems and technologies. We invest in testing, building pilot plants, and making enhancements to develop reliable, scalable solutions.





Systems and Technologies

- Oil & Gas
- Environment
- Power
- Analyzer & Metering Systems
- Energy Storage Solutions



Oil & Gas

Glorinda delivers midstream and downstream solutions for the oil and gas industry. Our services include:

- Mini LNG
- Refrigeration Packages
- Rotary Machinery Skids
- Material Handling Solutions
- Storage Tanks
- High Purity Gas Production
- Dryers
- Analyzer & Metering Systems

Mini LNG

In the LNG sector, Glorinda offers small and medium-scale LNG liquefaction plants, LNG regasification terminals, and LNG storage tanks.

Key features of our Mini LNG plants:

- **Production capacity of around 200 TPD of LNG**
(equivalent to 13,500 m³/h of natural gas feed)
- **Modular and expandable design, allowing easy scalability**
- **No water consumption during operation**





Refrigeration Packages

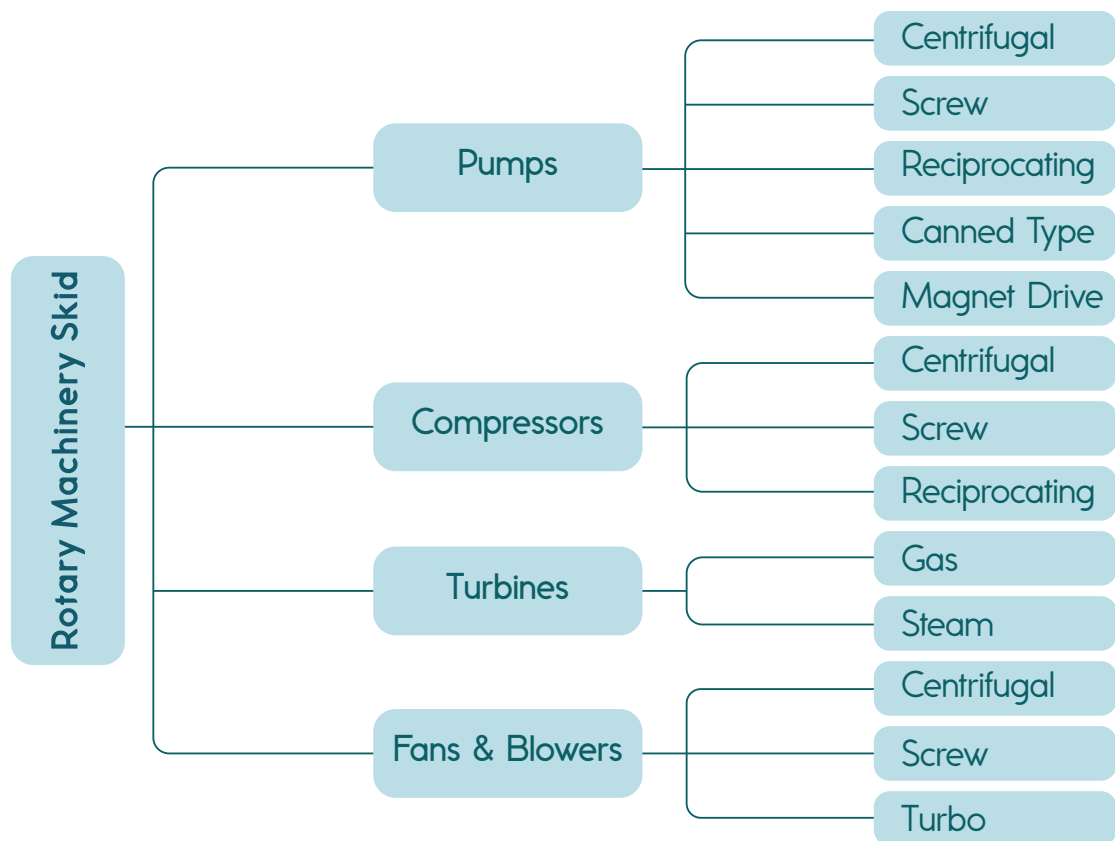
Glorinda designs and integrates refrigeration systems for various industrial applications. We work with different refrigerants, such as Propylene (R1270), Ammonia (R717), R507A, R410A, and R22. All systems are engineered in compliance with API 619 and API 682 standards.

Applications include:

- Gas separation through liquefaction
- Condensation of exhaust gases
- Low-temperature liquid storage
- Moisture control for hygroscopic materials
- Solidification from solution
- Heat removal during chemical transformations

Rotary Machinery Skids

Glorinda supplies complete rotary machinery skids, including pumps, compressors, turbines, fans, and blowers. Each unit is engineered for reliable performance and smooth integration into industrial systems.



Material Handling Solutions

Glorinda delivers complete material handling systems designed for efficiency and flexibility in industrial operations.

Our offerings include:

- **Pneumatic Conveying Systems**

We provide solutions for dilute phase, mixed phase, and dense phase conveying. Our systems also include advanced de-dusting technology for clean and safe operations.

- **Mechanical Conveying Systems**

Our mechanical systems are designed for high reliability, flexibility, and efficiency, making them suitable for a wide range of industries.

- **Storage Silos**

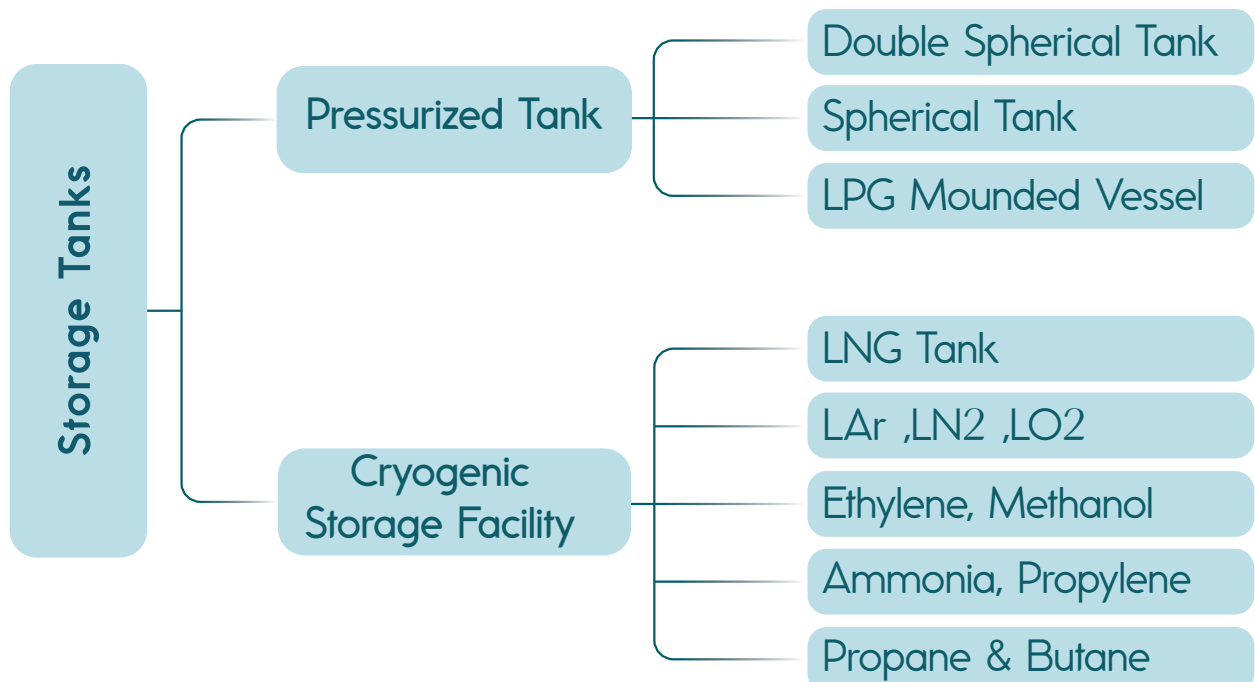
We offer custom-designed silos made of aluminum or stainless steel, tailored to meet specific client requirements. All designs comply with relevant standards, including ASME, DIN, EN, and are engineered to withstand wind and seismic loads. We supply various silo types such as bolted, welded, and blending models, with a focus on fast response and consistent quality.

Storage Tanks

Glorinda provides a wide range of storage tanks for industries such as refineries, petrochemicals, fertilizers, power plants, steel, and other infrastructure sectors. All tanks are designed according to international standards, including ASME, API 620, 650, 653, EN14620, EN14015, ANSI, JIS, KS, BS, ISO, AWWA, NACE, NFPA, UBC, IBC, AWS, ASCE, and more.

Our offerings include:

- **Pressurized Tanks**
- **Cryogenic Storage Facilities**



Dryers

Glorinda supplies a wide range of industrial dryers and drying systems, including large-scale units with sizes up to 480 m². Our solutions are suitable for various industrial applications and are designed for energy efficiency and long-term performance.

Dryer types include:

- Paddle Dryers
- Drum Dryers
- Flash Dryers
- Spray Dryers
- Fluid Bed Dryers
- Rotary Dryers
- Steam Tube Dryers

High Purity Gas Production

Glorinda provides advanced gas generation and purification units using PSA (Pressure Swing Adsorption) and membrane technologies. Our systems are designed to deliver high purity gases for various industrial applications.

Available solutions include:

- Nitrogen Generation
- Oxygen Generation
- Hydrogen Production and Purification
- CO₂ Separation
- Mixed-Gas Systems (e.g., helium recovery, ammonia synthesis, and more)



Environment

One of Glorinda's core activities is focused on environmental solutions. In this field, we provide complete services for industrial water and wastewater treatment, municipal wastewater treatment, and seawater desalination. We also offer advanced waste management technologies to reduce process waste and convert it into valuable energy, supporting both operational efficiency and environmental responsibility.

- Wastewater Pre-Treatment
- Zero Liquid Discharge (ZLD)
- Post Treatment
- Direct Lithium Extraction
- Sludge management
- Waste Management
- Whey Protein Extraction
- Analyzer & Metering Systems

We are a member of:



Member of
**German Water
Partnership**

Wastewater Pre-Treatment

Effective pre-treatment plays a key role in reducing operational costs and improving the performance of main treatment processes. Glorinda offers advanced and efficient pre-treatment technologies tailored to meet industrial needs.



Our main solutions include:

•Minimum Liquid Discharge (MLD):

Using RO, CCRO, and HERO technologies, this method achieves up to 85% wastewater recovery. It offers a cost-effective alternative to thermal evaporation.

•Membrane and Filtration Technologies:

A wide range of membranes, including UF, NF, ceramic, hollow fiber, tubular, flat sheet, and MBR options, for reliable treatment.

•Anaerobic MBR:

A combination of a low-rate, completely mixed anaerobic reactor with Glorinda's low-energy UF membrane. This solution is ideal for high-BOD and high-COD wastewater, allowing efficient conversion of organics into biogas.

•Adsorbent Technology:

High-performance adsorbent systems designed for the removal of COD, TSS, heavy metals, cyanide, pesticides, silica, ammoniacal nitrogen, and color.

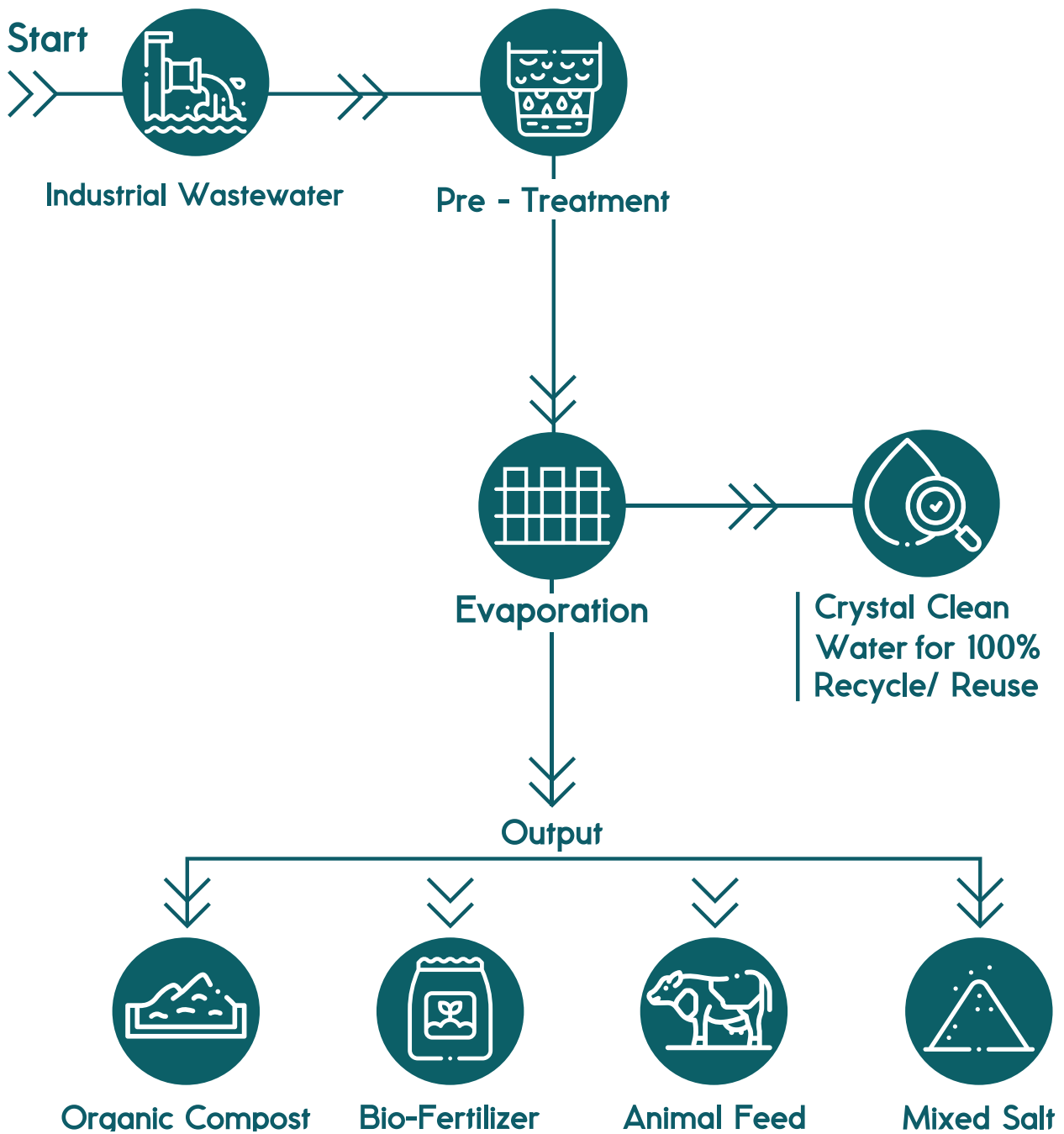
Zero Liquid Discharge (ZLD)

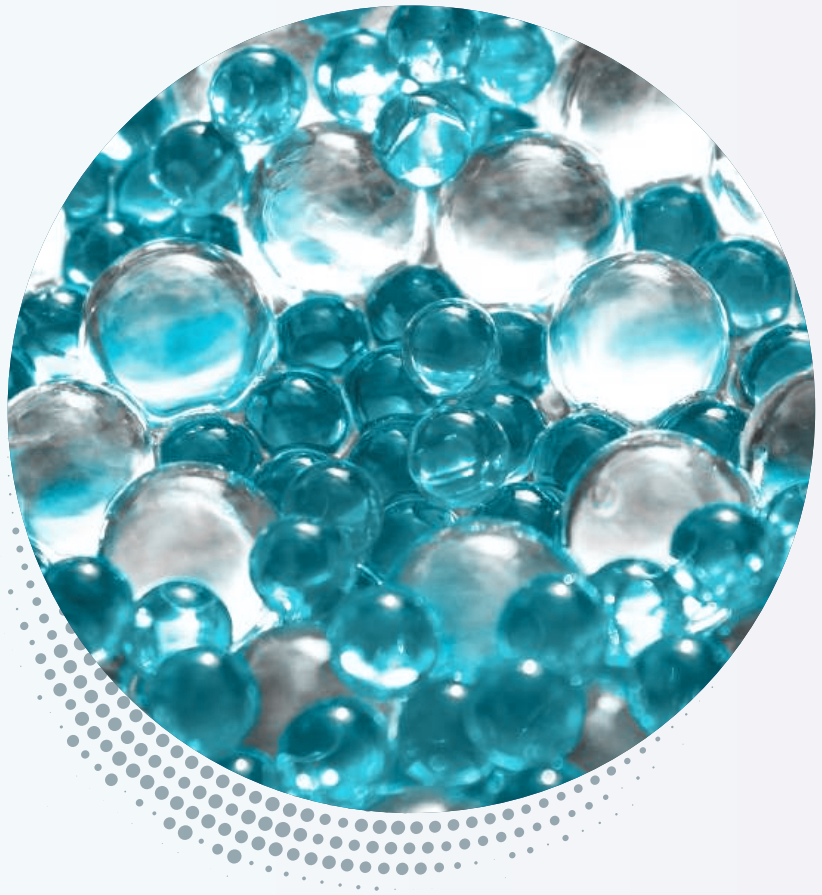
Glorinda's ZLD systems are designed to recover nearly 100% of wastewater, producing clean, high-quality water suitable for reuse.

Key features:

- Fully automated operation with 24/7 performance, eliminating the need for manual handling.
- Automatic cleaning system with CIP and rinsing functions, ensuring stable and reliable performance.
- Depending on the wastewater type, the solid output can be reused as organic compost, backup fuel, organic fertilizer, or animal feed.

Glorinda's ZLD solution supports sustainability by reducing discharge, recycling valuable resources, and minimizing environmental footprint.





Post-Treatment Solutions

Glorinda provides advanced post-treatment technologies to produce ultra-pure water tailored to the specific needs of various industries.

Our solutions include:

• **Ion Exchange & Mixed Bed Systems**

Offered through Glorinda Resins, a Glorinda subsidiary specializing in resin technologies. We supply over 200 resin types for applications in water purification and wastewater treatment.

• **Electrodeionization (EDI)**

A continuous and chemical-free process using Glorinda Resins' advanced ion exchange materials, ideal for generating high-purity water.

• **Advanced Oxidation Process (AOP)**

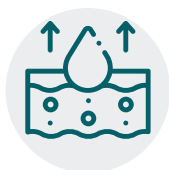
In collaboration with HPNow, we offer hydrogen peroxide-based treatment solutions for safe and effective removal of organic pollutants in municipal and industrial systems.

These post-treatment systems can be integrated into Glorinda's complete water treatment packages, delivering consistent quality, sustainable operation, and reliable performance.

Sludge Management Solutions

Glorinda offers efficient and reliable technologies for handling sludge generated in industrial and municipal processes.

Our solutions include:



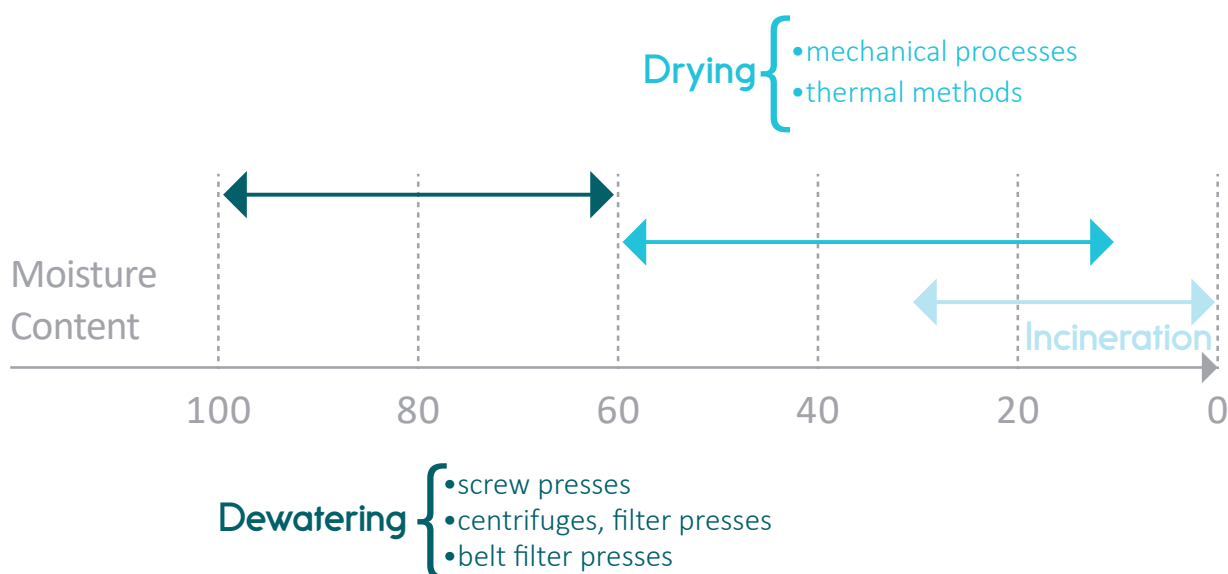
Sludge Dewatering



Sludge Drying



Sludge Drying



Waste Management Solutions

Glorinda provides advanced systems for hazardous waste treatment, covering liquid, gas, solid, and mixed waste from industrial and natural resource activities. Due to the complex composition and high pollution risks, proper analysis and safe disposal methods are essential.

Our incineration systems burn organic waste and convert it into:

- Incinerator bottom ash
- Treated flue gas and particles (cleaned before release)
- Heat energy for potential recovery

Glorinda's incinerator packages are designed for use in hazardous zones (Zone 1 and Zone 2) and are compatible with gas groups IIA, IIB, and IIC. These solutions ensure safety, efficiency, and compliance with environmental standards





Whey Protein Extraction

Cheese whey is a valuable source of high-quality protein. Glorinda offers advanced technology to extract protein from whey, helping industries improve efficiency, reduce waste, and create new business opportunities.

Our protein extraction systems provide many benefits:

- Create new income by producing high-demand protein products
- Lower costs by reducing the need for expensive disposal
- Support sustainability by turning waste into useful materials
- Improve product quality with better texture, taste, and nutrition

With Glorinda's solutions, you can achieve both economic and environmental goals while meeting growing consumer expectations.

Direct Lithium Extraction (DLE)

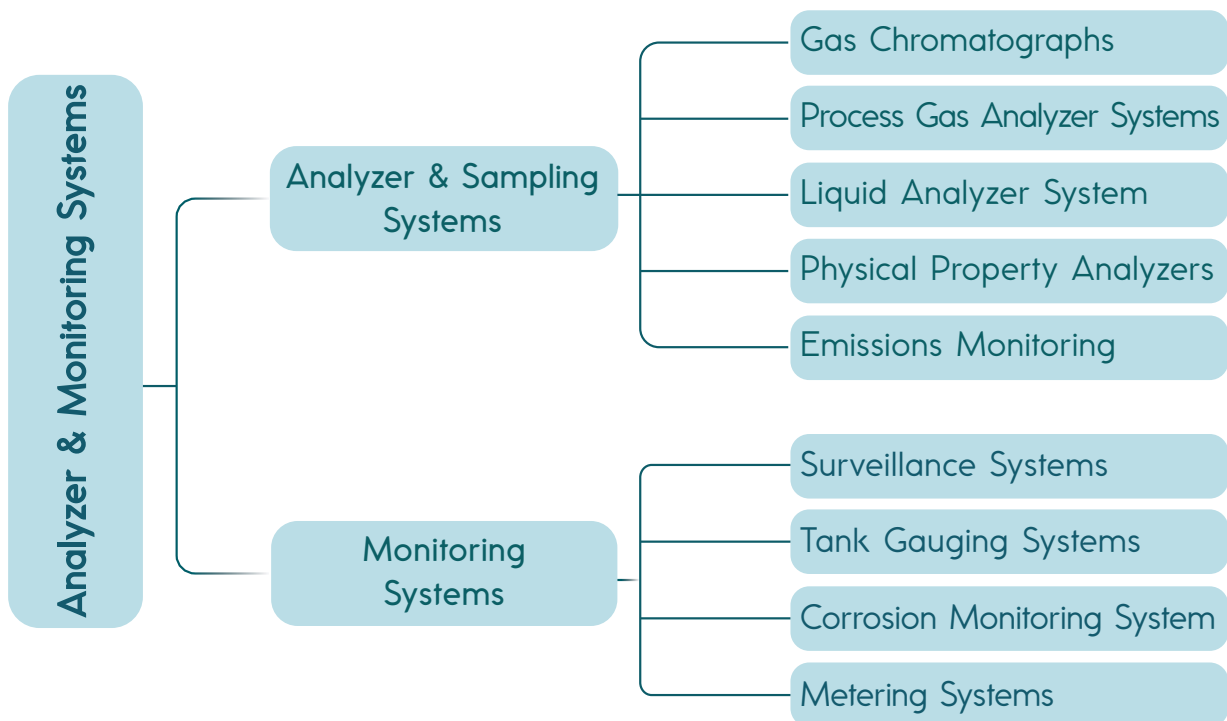
Glorinda provides an advanced and fully integrated solution for lithium extraction. Our DLE systems are designed for high efficiency, low losses, and minimal environmental impact.

Key features include:

- High-efficiency sorbents with very low lithium loss
- Eco-friendly and sustainable operations
- Large-scale sorbent production capability
- Advanced Simulated Moving Bed (SMB) systems for better performance
- Specialized technology for calcium and boron removal
- Exclusive resin units for effective Li/Na separation

Glorinda's DLE systems help meet growing lithium demand while reducing environmental footprint.

Analyzer and Metering





Power

Glorinda provides complete solutions for both renewable energy and improvements in non-renewable energy systems.

Our services include:

- **Fossil Fuel Power Plants:** Engineering and upgrading of systems based on turbines or engines.
- **Solar Power:** Development of concentrated solar-thermal plants (CSP) and solar photovoltaic systems with tracking technology.
- **Waste to Energy:** Advanced systems for waste sorting, high-efficiency incineration, biogas production, waste heat recovery, and gas flare recovery.
- **Hydropower:** Supply of turbines such as hydrodynamic screw, Francis, Kaplan, and Pelton models for efficient water energy use.
- **Geothermal Energy:** Reliable solutions using dry steam, flash steam, and binary cycle technologies for sustainable energy production.

Energy Storage Solutions

Glorinda delivers advanced energy storage systems to ensure stable and reliable power supply.

Our technologies include:

- Hydrogen Storage
- Thermal Storage
- Battery Energy Storage Systems (BESS)
- Mechanical Storage
- Pump-Turbine Storage



Our Certifications

Glorinda is committed to international standards and operates under an Integrated Management System (IMS). We are certified with ISO 9001, ISO 14001, and ISO 45001, reflecting our focus on quality, environmental responsibility, and workplace safety.



G-CERTI *certificate*

hereby certifies that

Glorinda GmbH

Klingholzstr. 7, D-65189 Wiesbaden, Germany

meets the Standard Requirements & Scope as following

ISO 9001:2015
Quality Management Systems

Providing engineering services, equipment and spare parts procurement, construction management, installation, commissioning, operating, troubleshooting, and maintenance for oil, gas, petrochemical, water and wastewater treatment, energy, and environmental projects.

Certificate No : GKGM-105B-OC Code : 18, 34
Initial Date : 2025. 03. 12 Issue Date : 2025. 03. 12
Expiry Date : 2028. 03. 11 Valid period : 2025. 03. 12 ~ 2026. 03. 11

Signed for and on behalf of GCERTI
President J.K.Chu




To verify the validity of this certificate please visit : www.gcerti.com
Korea, Saudi, Europe, Singapore, Europe, Singapore, 88, 10F, Surveillance
audit and be completed at least once a calendar year, except in
recertification years. This is to verify that the Management Systems
of this company are kept up to date to conform to the above. If the certified
party does not agree with the audit, recertification audit, certificate should
be returned to GCERTI. The certificate remains the property of GCERTI
and this certificate is managed by GCERTI.



G-CERTI *certificate*

hereby certifies that

Glorinda GmbH

Klingholzstr. 7, D-65189 Wiesbaden, Germany

meets the Standard Requirements & Scope as following

ISO 45001:2018
Occupational Health and Safety Management Systems

Providing engineering services, equipment and spare parts procurement, construction management, installation, commissioning, operating, troubleshooting, and maintenance for oil, gas, petrochemical, water and wastewater treatment, energy, and environmental projects.

Certificate No : GKGM-105B-OHC Code : 18, 34
Initial Date : 2025. 04. 25 Issue Date : 2025. 04. 25
Expiry Date : 2028. 04. 24 Valid period : 2025. 04. 25 ~ 2026. 04. 24

Signed for and on behalf of GCERTI
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