TREATMENT OF AMINES WITH CENTRIFUGAL TECHNOLOGY

Ensuring reliable CO_2 reduction with our centrifugal separators in amine gas scrubbing processes

GEA Engineering for a better world.

GEA.com

3,500+ applications

Centrifugal separation is part of our daily life

10,000+ of patents

Highest level of know-how

18,000+ employees

Full-time equivalents

50+ GEA sales and service offices

International network, always close to the customer

CARBON CAPTURE WITH AMINE TREATMENT

Keep your carbon capture process up and running

Carbon-intensive industries are under increasing pressure to drastically reduce their CO_2 emissions. The most important industries include the cement industry, the energy sector, especially oil and gas and shipping. These industries have climate initiatives and are implementing measures to meet their targets.

The good news for these industries is that CO_2 capture technology is not new. Amine-based CO_2 capture is the most mature and widely used of today's carbon capture methods and has been used in the oil and gas industry for decades. (Flue) gas systems for the separation of climate-damaging gases using amines (**MDEA / DEA / MEA**) remove CO_2 and H_2S from natural gas and flue gases.

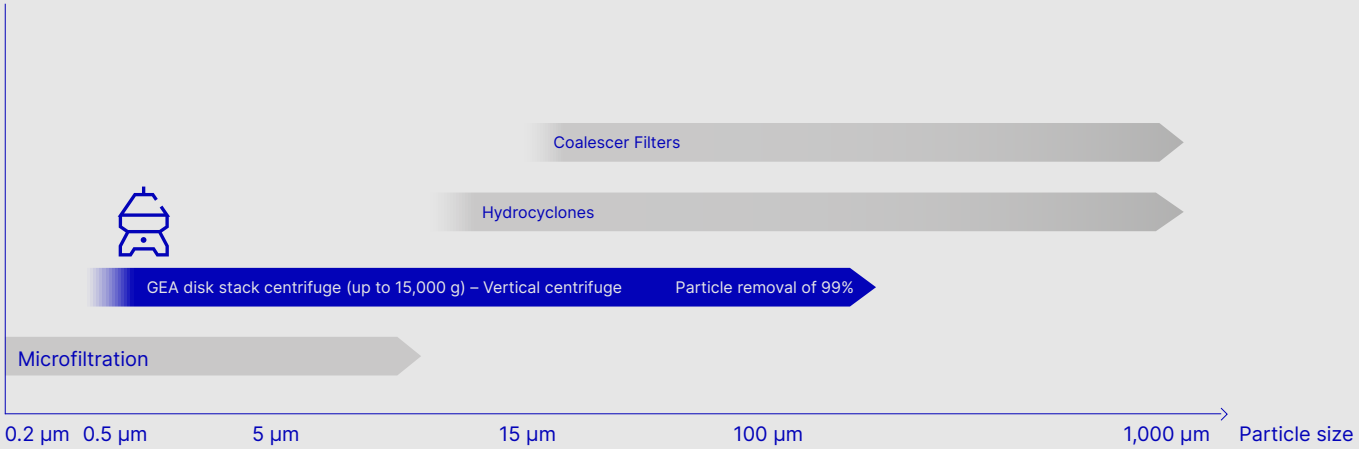
Amines have a natural affinity for CO_2 and H_2S, which enables an efficient separation process. Preventing contamination, corrosion, and deposits is crucial for system efficiency. Maintaining the rich and lean amine solution helps to control and mitigate these factors. GEA centrifuges can play a crucial role in maintaining amine solutions.

GEA supports this critical process with state-of-the-art, reliable, cost-effective, high-performance centrifuge technology for onshore facilities and offshore platforms.

DISK STACK CENTRIFUGES

GEA disk stack centrifuges

GEA disk stack centrifuges are designed for liquid-based applications, efficiently separating suspensions with two or more phases of varying densities. Whether it is liquid-liquid, liquid-liquid-solid, or liquid-solid separation, GEA disk stack centrifuges deliver unparalleled efficiency. They are equally as effective at separating liquid mixtures at the same time as removing solids.



130 years GEA Separation

130 years experience
Founded in 1893.
Still based in Germany.

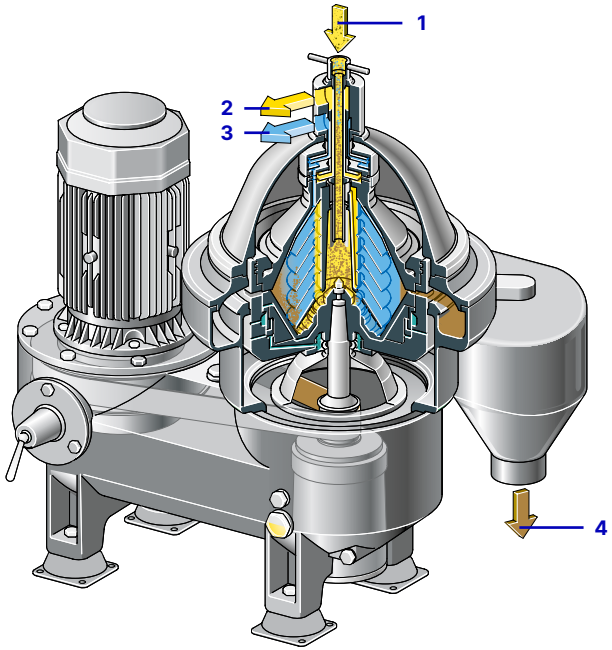
WORKING PRINCIPLE

Vertical centrifuge
2-phase disk stack centrifuge
3-phase disk stack centrifuge

The centrifuge can be configured with a self-cleaning disk bowl. In amine processing, it is primarily designed as a clarifier for liquid-solid separation. The separated solids are discharged in a time-controlled manner at full bowl speed during operation. Amine losses are reduced to an absolute minimum through precise bowl discharge using the GEA hydrostop system.

The centrifuge can also be designed as a 3-phase version (liquid-liquid-solid separation) for the amine purification process. This configuration is useful when the amines are contaminated with hydrocarbons that need to be separated along with the solids.

1 Product feed
2 Treated oil discharge
3 Separated water discharge
4 Solids discharge

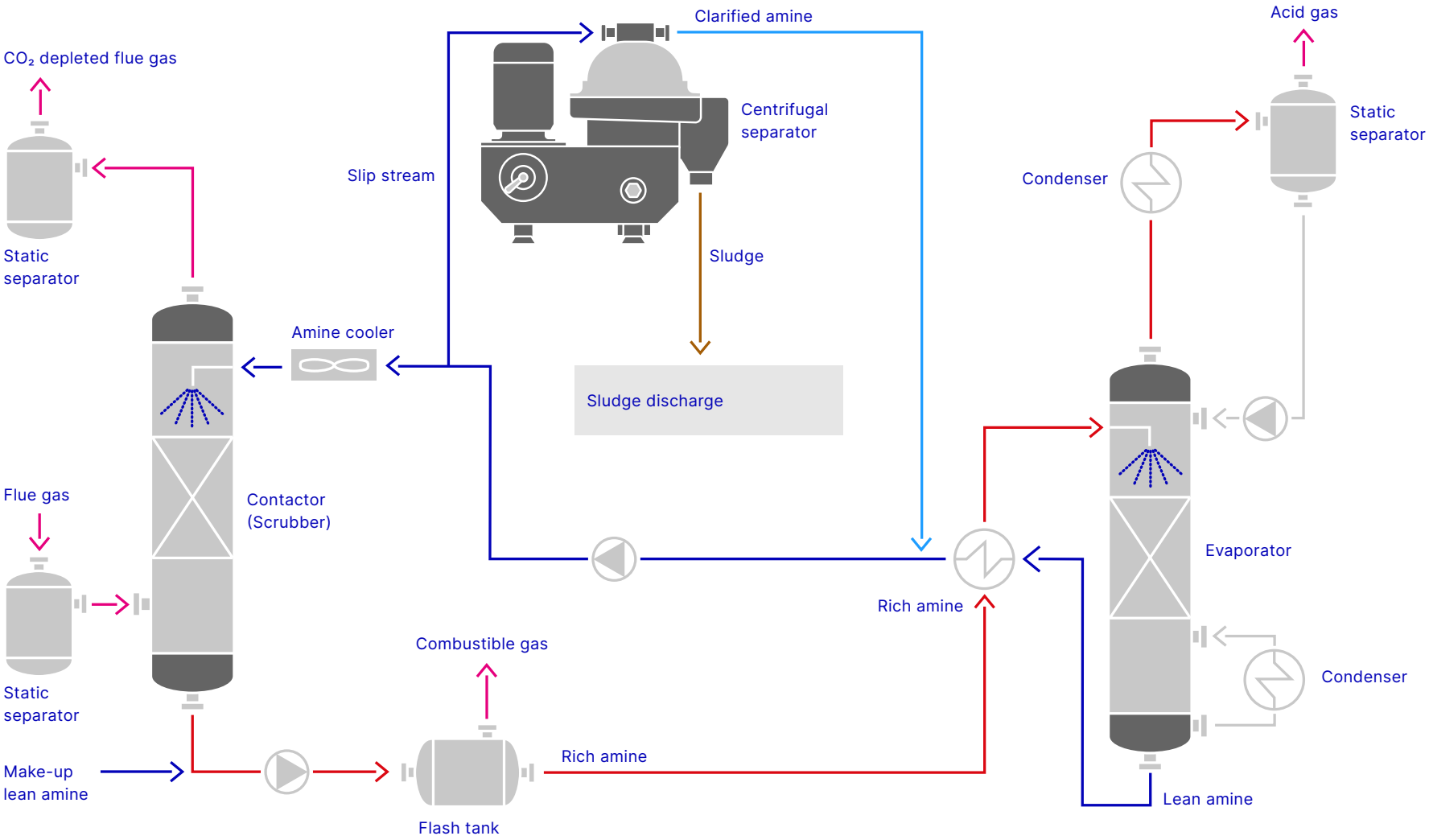


Liquid-oriented
- Wide range of sizes available to meet required flow rates in the amine purification process
- Particle size from 0.3 µm
- Hydraulic capacity: up to 330 gpm | 75 m³/h

A disk stack centrifuge is like a parallel plate interceptor in a centrifugal field.

PROCESS SIDE STREAM

Integration of disk stack centrifuges in the amine treatment system



ENGINEERING CAPABILITIES

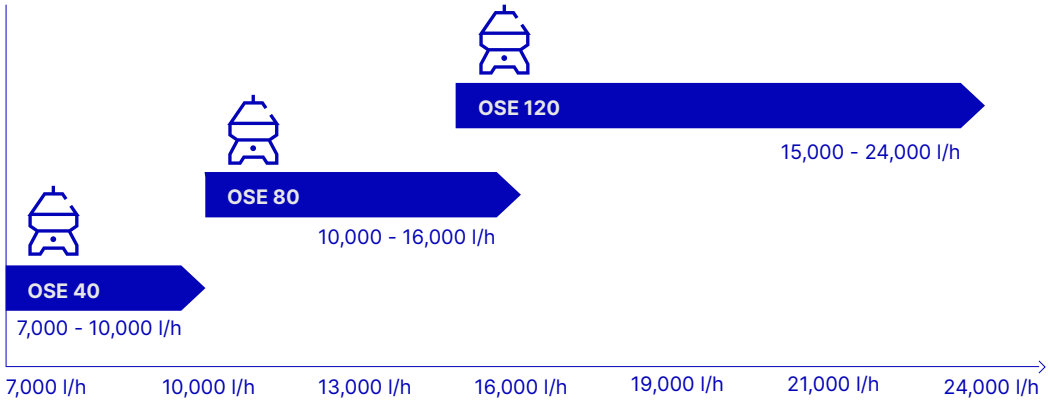
GEA – your expert in amine treatment

GEA's skid-mounted units are custom-engineered for the oil & gas and energy sectors, adhering to strict industry and client standards to ensure peak performance in demanding conditions. They can handle complex product requirements, including H_2S presence, showcasing GEA's dedication to robust, reliable solutions for critical applications.

The centrifuges can also be installed into containers if needed. The versitaile skids meet international safety standards like ATEX or IECEx as well as industry standards like DIN, NACE, API or ANSI/ASME.

Centrifuge processing capacity

Each centrifuge has a specific processing capacity depending on factors such as the model and design, the properties of the feed product, and the required level of purification. We offer a wide range of centrifuges with varying processing capacities to meet our customers' specific needs.



Solids concentration in the range of 0.05 - 0.23 vol% depending on the capacity of the machine.

Dimensions

OSE 40	OSE 80	OSE 120
1,900 × 1,300 × 1,600 mm (74" x 51" x 63")	2,100 × 1,400 × 1,745 mm (83" x 55" x 69")	2,300 × 1,700 × 2,133 mm (91" x 67" x 84")

Weight skid unit

OSE 40	OSE 80	OSE 120
1,850 kg (4,079 lb)	2,410 kg (5,313 lb)	3,290 kg (7,253 lb)

PROCESS TEST CENTER

Turn ideas into reality – optimize your process with us.

Customized separation solutions with PTC
Separators and decanters often require specific selection and adjustment for optimal performance. The Process Test Center (PTC) supports this by conducting product investigations to determine key material properties. Analysis methods include centrifuge tests, rheology, corrosion analysis, and stability characterization, helping estimate processing feasibility and investment costs.

Testing & trials
- Lab tests analyze viscosity, pH, chloride, stability, and other factors.
- Full-scale trials at GEA's PTC define machine specifications and costs.
- On-site trials with loan machines are supervised by GEA engineers.

Process development
Our PTC drives innovation by developing and validating new processes through rigorous lab, pilot, and prototype testing, ensuring market readiness.

Customer demand / inquiry > Lab-scale analysis > Product investigation / site test > Process definition / machine sizing > Investment estimation

Separation efficiency

Highest separation efficiency due to maximum rotation yield, particle size separated < 1µm

High corrosion resistances

Super Duplex and Hastelloy materials (NACE compliant)

Oxygen-free operation

Extremely low (<5 ppb) oxygen pickup during operation, thanks to GEA's patented hydrohermetic seal

Easy-to-operate

Fully automated, skid-based design for easy operation, suitable for remote locations and seamless integration into the customer's DCS

IECEx and ATEX

Suitable for installation in hazardous areas

High uptime >99%

No manual cleaning required, continuous operation

KEY BENEFITS OF GEA CENTRIFUGES

Amine solutions meet high performance centrifugal technology

Choosing GEA centrifuges for your amine solutions applications cement industry, the energy sector, especially oil and gas, and shipping sector is a commitment to operational excellence and technological leadership. Our centrifuges are specifically designed to optimize separation and ensure high-purity amine solutions.

Our equipment is known for its robust design, meeting the stringent requirements of these industries. The adaptability of GEA centrifuges allows for **seamless integration** into existing systems and provides a reliable solution for amine treatment.

Our worldwide service coverage offers comprehensive support and service even in remote locations. With the most modern monitoring/cloud system and sparring philosophy **continuous operation 24/7 365 days a year** is secured.

In summary, GEA centrifuges represent the leading forefront of separation technology, providing a reliable, efficient and high-performance solution for your amine treatment needs. Rely on GEA for a partnership that brings both immediate and **long-term benefits** to your operation.

Unlock your full potential with Performance Partnership

Empower your business with a partnership designed to optimize your performance. Together with you, we create services that matter: We focus on your specific goals and help you increase Availability, Productivity and Sustainability – enabled by digitalization.

AVAILABILITY PRODUCTIVITY SUSTAINABILITY

Enabled by digitalization.

Your partner from the start	Preventive support	Predictive support	Service level agreements	Digital solutions
Engineering expertise for installation, commissioning and training to achieve high performance right from the start.	Ensure that your equipment is always in a good condition and ready for production.	Established solutions and tools that ensure a reliable production environment and continuous uptime.	Optimize production processes in a long term partnership to enhance uptime and to minimize losses.	Be always one step ahead in line with the latest market inventions and regulations to stay competitive.
Mapping operating data for future pro-cess optimization	Worldwide repair network and remote support	In-situ disk cleaning for centrifuges	Product investi-gations, process develoments and trials	Cloud-based GEA portal
Monitor, analyze and optimize your equipment	We are at your side, even when not at your site	Save maintenance time, increase your uptime	Specific optimization potential for your setup	Enhance your connectivity any time and everywhere

Engineering for a better world.

GEA.com

Contact us

Learn more on our website

GEA Westfalia Separator Group GmbH
Werner-Habig-Straße 1
59302 Oelde, Germany

Tel +49 2522 77-0
gea.com/contact