



**The Oilfield Guardian –  
GEA Westfalia Separator eagleclass  
Smart. Strong. Reliable.**

# At Home on the Oil Fields of the World

Oil and gas production installations have to meet their quotas 24 hours a day. GEA Westfalia Separator supports them in this process with tried-and-tested centrifugation for various tasks.

Drilling rigs and production installations in ice-cold Siberia are subject to background and process conditions which are fundamentally different to those encountered in installations in extremely hot desert regions or FPSOs on the world's oceans. Whatever the conditions or location – the overriding priority has been unchanged for years: The machines have to run. 24 hours a day. As reliably as the movement of the sun and the cycle of the tides.

Centrifuges from GEA Westfalia Separator provide reliability in every respect. For many decades, they have had a place in the oil field industry and are known for the reliability and precision with which they do their job. Unconditionally. Even under extremely difficult climate conditions.

## Decades of experience

GEA Westfalia Separator has been setting the standards in this sector since 1893. The robust design and extremely adaptable separating technology of the separator types are exemplary for the customized symbiosis of tradition and innovation. This experience and the process know-how gained in around 2500 process engineering applications benefit every project. Processing installations of GEA Westfalia Separator are always customized solutions. All components are customized precisely to meet the requirements of the specific separating task.

This always guarantees optimum processing of the relevant media – ranging from slop oil right through to drain water – even when large volumes are involved.

The integrated control systems provide additional reliability. With these systems, the separators monitor defined separating and clarifying processes and respond automatically to changes in the composition of the liquids.

They feature robust, reliable and completely automatic operation. After installation and commissioning, the systems operate automatically, with maximum reliability.

## Reliability in all respects

- Technology leader in the field of centrifugal separating technology
- 115 years of experience with high-speed separators
- High-performance process installation technology for the mineral oil industry
- Reliable processing of a wide range of media
- Intelligent monitoring and control systems
- Operating reliability even under extreme cold/heat and weather conditions



Whether in -40 °C in Siberia or 50 °C on the Arabian peninsula – the machines must run. GEA Westfalia Separator supports oil production companies with reliable processing systems for maximum performance.

In addition to the economic benefit, the process technology of GEA Westfalia Separator is also valuable from the ecological point of view: Capacities are boosted, energy resources are used efficiently, CO<sub>2</sub> emissions are reduced and the strain imposed on the environment is reduced as a result of increased separating efficiency.



# In Sight of the Optimum Solution: System Solutions for Extremely Demanding Requirements

In the desert or offshore, complex challenges have to be overcome in the oil field. GEA Westfalia Separator has the necessary know-how and process technology.

Separating oil and water phases. Purifying emulsions. Removing cat fines. The requirements and procedures for processing crude oil, slop oil and other solid-liquid mixtures are fundamentally different. In all applications, the separating and process technology of GEA Westfalia Separator is the first choice – and is used throughout the world. On drilling platforms and FPSOs in the Atlantic as well as in the oil sand mines in Canada, and for refineries throughout the world.

Oil processing systems are the core competence of GEA Westfalia Separator. With the experience gained in around 2500 process engineering applications, the company has expertise in complex separating and clarifying processes for processing viscous, diluted and heavily contaminated media. The focus is on highly specialized high-speed centrifuges. With throughput capacities of up to 80 m<sup>3</sup>/h, these machines are used in various applications, e.g. dewatering and desalinating crude oil, processing contaminated drilling suspensions and sludges or de-oiling produced water before it is recycled back into the sensitive ocean ecosystem.

## Processes strengthened by engineering

The performance level of the centrifuges is exemplary for maximum efficiency, more reliability and efficient use of natural resources.

This is because GEA Westfalia Separator not only supplies individual separators and additional units, but also designs complete process lines. Precisely in line with the customer's requirements.

Designed in modular form and in accordance with the plug-and-play principle, all components are designed for their specific application conditions on site, and ensure optimum processes and process results. With the new generation GEA Westfalia Separator **eagle** class, they are now more efficient and more reliable than ever before.

## Oil-field-specific process competence

- Advance process technology for complete system solutions
- Competence gained in more than 2500 process engineering applications
- Processing of drilling mud and drilling sludges
- De-oiling of produced water and drain water
- Dewatering of crude oil
- Dewatering of diesel oil
- MEG clarifications (mono-ethylene glycol)
- Purification and processing of fuel oil, lubricating oil, hydraulic oil and slate oil
- Separating cat fines from oil residues
- Cleaning and disposal of slop oil

## Other process lines

- Drilling brine
- Glycol
- Oil sand
- Paraffin
- Wax
- Heavy crude oil



# Time for a New Generation

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## GEA Westfalia Separator **eagleclass**

**Smart. Strong. Reliable.**

### **Smart**

With the know-how of the technology leader in centrifugal separating technology, the GEA Westfalia Separator **eagleclass** sets the new standard in the efficient processing of liquid-liquid-solids mixtures. The new equipment is innovative in separator design, and complemented by the new GEA Westfalia Separator **unitrolplus** sensor system.

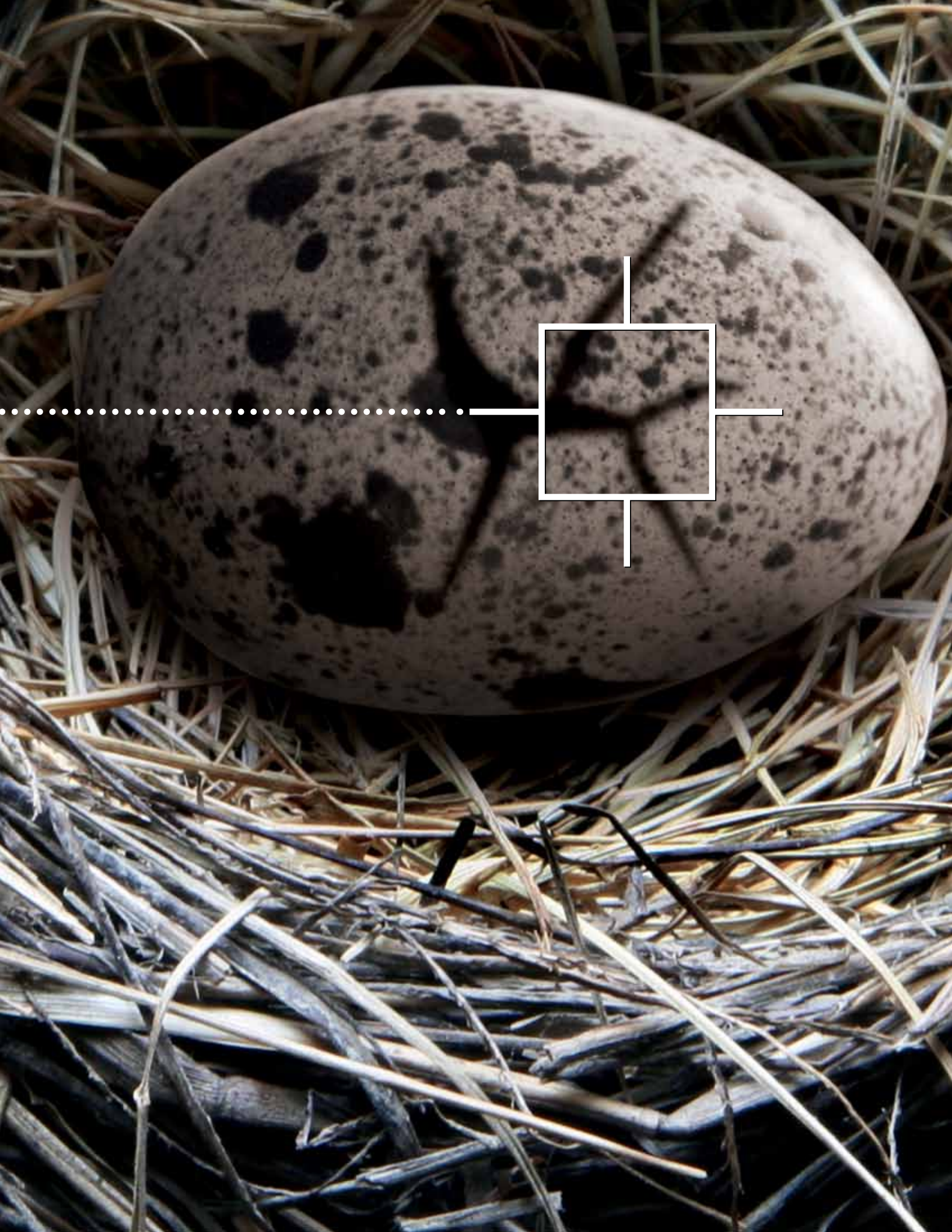
### **Strong**

The strong g-force permits throughput capacities of up to 80 m<sup>3</sup>/h for the first time. The high centrifugal forces also enhance the separating efficiency. The automatic monitoring and control system GEA Westfalia Separator **unitrolplus** ensures constantly optimum result qualities in the processing of a wide range of media in the oil field.

### **Reliable**

The compact and robust design means that the GEA Westfalia Separator **eagleclass** is particularly reliable and durable. A further advantage is GEA Westfalia Separator capitalcare, the pro-active service of the original manufacturer. This combination ensures maximum availability and cost-effectiveness throughout the entire life cycle, whether the machines are used in the desert or on the high seas.



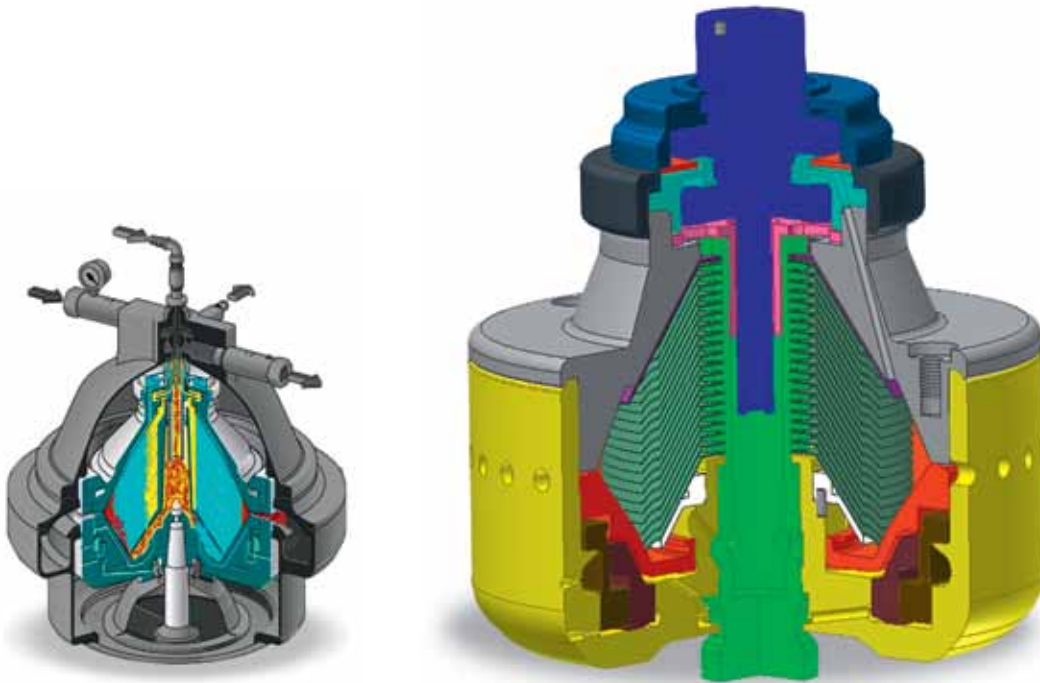


# The Bright Economist

With the new bowl design, the engineers of GEA Westfalia Separator have succeeded in reducing the energy requirement approximately 20 %.

The separator bowls have been fundamentally redesigned for the GEA Westfalia Separator **eagleclass**. The innovative design is convincing in every respect. As shown by the figures below, our engineers have succeeded in reducing the energy requirement by around 20%, irrespective of the oil qualities separated. The considerably optimized consumption figure has a beneficial impact on the environment as a result of lower CO<sub>2</sub> emissions and as global electricity prices

continue to rise, the financial benefit is also obvious. In addition, the modified bowl design has allowed the new GEA Westfalia Separator **unitrolplus** system to be integrated; this enables the processes to be monitored and controlled completely automatically. This means maximum safety – even under conditions of unsupervised operation.



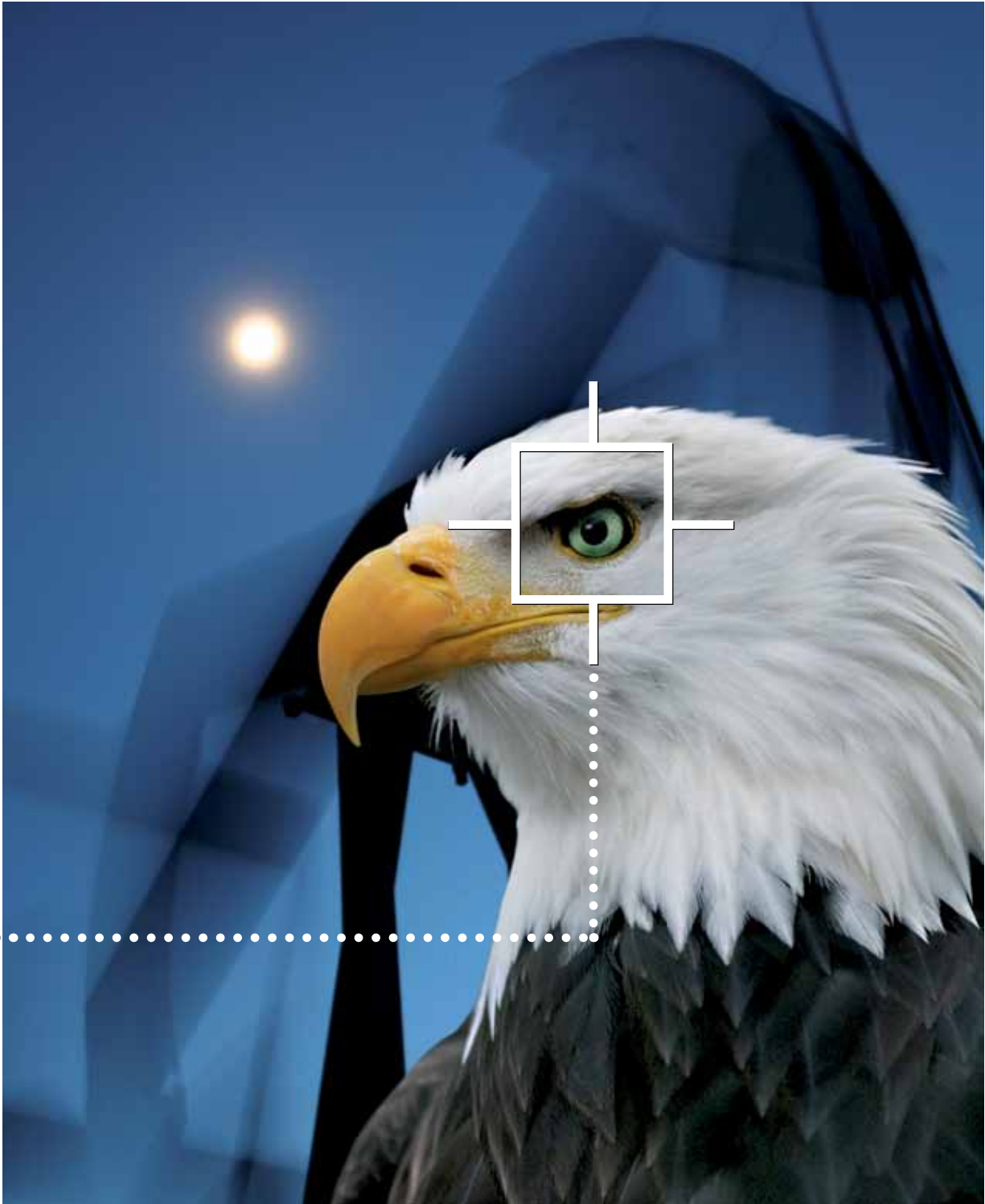
## Old – OSD 6/5

- IF 180: 1900 l/h
- IF 380: 1200 l/h
- MDO: 2250 l/h
- LO-HD: 1050 l/h
- Power consumption: 3.5 kW

## New – OSE 5/5

- IF 180: 1900 l/h
- IF 380: 1200 l/h
- MDO: 2250 l/h
- LO-HD: 1050 l/h
- Power consumption: 2.8 kW





Irrespective of the oil qualities which are separated: as a result of the innovative bowl design, the separators of the new GEA Westfalia Separator **eagle**class consume much less energy than the previous machine generation. Whereas the operators benefit financially, the environment also benefits as a result of lower CO<sub>2</sub> emissions.

# The Smart Giant

Record precision landing: For the first time, the strong GEA Westfalia Separator **eagle** class, permits throughput capacities of up to 80 m<sup>3</sup>/h with maximum separating efficiency.

Quicker, stronger, more efficient: With the extremely high centrifugal forces in the separator bowl, the new generation of high-performance separators has set a new record. For the first time, it is now possible for capacities of up to 80 m<sup>3</sup>/h to be handled. The higher throughput capacity is also accompanied by separating efficiency which has been improved further compared with the previous series. In terms of quality and quantity, the GEA Westfalia Separator **eagle** class thus provides new possibilities of efficient processing of a wide range of media. A very important aspect: the g-force does not have a negative impact on the tried-and-tested robust nature of the machines. This is because the engineers have also succeeded in turning a product which is already good into something which is even better. The combination of high performance and robust construction provides optimum cost-effectiveness throughout the entire life cycle.

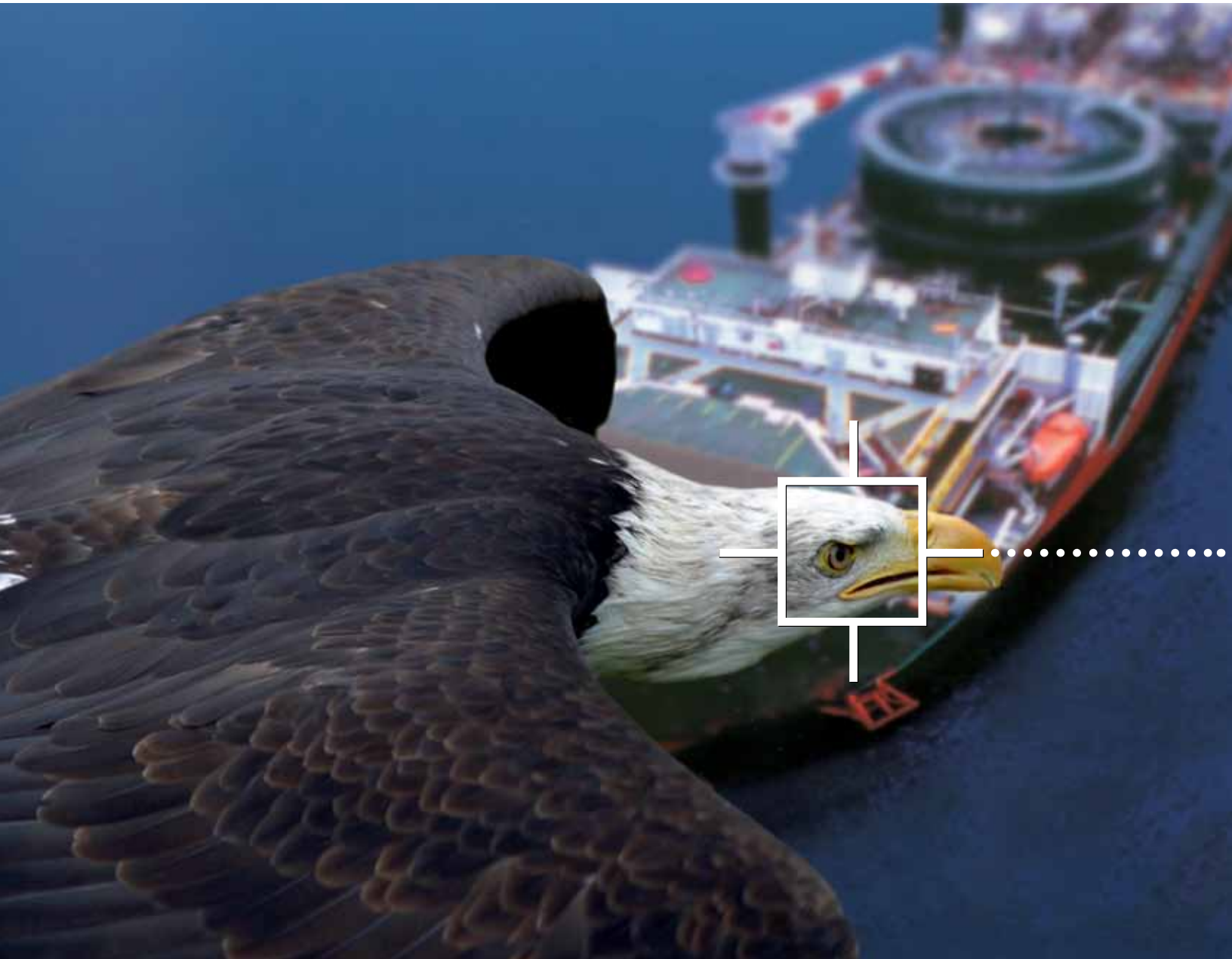
State-of-the-art separating technology

- Maximum g-force
- Throughput capacities of up to 80 m<sup>3</sup>/h
- Maximum separating efficiency
- Particularly robust and durable
- Maximum cost-effectiveness throughout the entire life cycle





• With an increased g-force, the new GEA Westfalia Separator **e**type  
• separators have again set a record. The extremely high centrifugal  
• forces ensure higher throughput capacities and a further  
• improvement in separating efficiency compared with the previous  
• GEA Westfalia Separator **d**type generation.



# The Strong Lightweight

The GEA Westfalia Separator **eagle**class is convincing not only with its strong performance but also with its clarity and compact form.

Oil fields, offshore installations, FPSOs – oil production is a fiercely competitive business in which every square centimeter counts. This is the reason why increased performance was not the only criterion for the development of the new high-performance separators. The engineers were also required to compress performance and performance components and develop a machine which meets a wide range of requirements and is fully compatible with every extreme condition. Fewer components and a modified design ensure that the machines of the GEA Westfalia Separator **eagle**class are lighter and have a reduced space requirement. Moreover, the increase in throughput volume/hour means that considerably fewer separators are required in order to achieve the same separation effect.

Reduced dimensions, more power, tried-and-tested quality – a valuable contribution for future planning.

A further advantage is the reduced energy requirement of the GEA Westfalia Separator **eagle**class. In times of rising energy prices and also in view of making efficient use of resources, this is an economic as well as ecological necessity.

Advantages of the new machine design

- Increased performance
- Minimized weight
- Minimized space requirement
- Minimized energy requirement, lower CO<sub>2</sub> emissions

The GEA Westfalia Separator **eagle**class requires less space and energy to provide its full performance – with ease! A major advantage, especially with the limited space available on the FPSOs.



# Champions League

On the ball: six high-performance separators for various applications and requirements. Assembly and operating costs have been further reduced.

The performance range has also been increased compared with the predecessor separators in the GEA Westfalia Separator **d**type generation.

The new GEA Westfalia Separator **eagle**class consists of six separators: OSE 5, OSE 10, OSE 20, OSE 40, OSE 80 and OSE 120. This generation accordingly covers all needs in the processing of various media, ranging from small and medium right through to very large volume streams. The separator type can be chosen specifically to meet the individual process and performance requirements, and thus also improves operating cost management.

This series has also been designed as a modular system, with fewer components. Consequently, installation and assembly costs have been

minimized and the commissioning process has been accelerated.

Because the number of wear parts has also been reduced, lower maintenance costs have a further positive impact on operating costs. The GEA Westfalia Separator **eagle**class – in a league of its own in terms of cost-effectiveness.

The optimum solution for every application

- A choice of six separator types
- Extended and largest performance range: up to 80 m<sup>3</sup>/h
- Fewer components and wear parts
- Plug-and-Play
- Ease of operation
- Very service- and maintenance-friendly



OSE 120



OSE 80



OSE 40



Cost-effective from A to Z:  
The new GEA Westfalia Separator **e**type generation, GEA Westfalia Separator **eagle**class, has been designed using the modular principle. The separators can thus be assembled more rapidly, are able to operate immediately and offer the benefit of low maintenance.



OSE 20

OSE 10

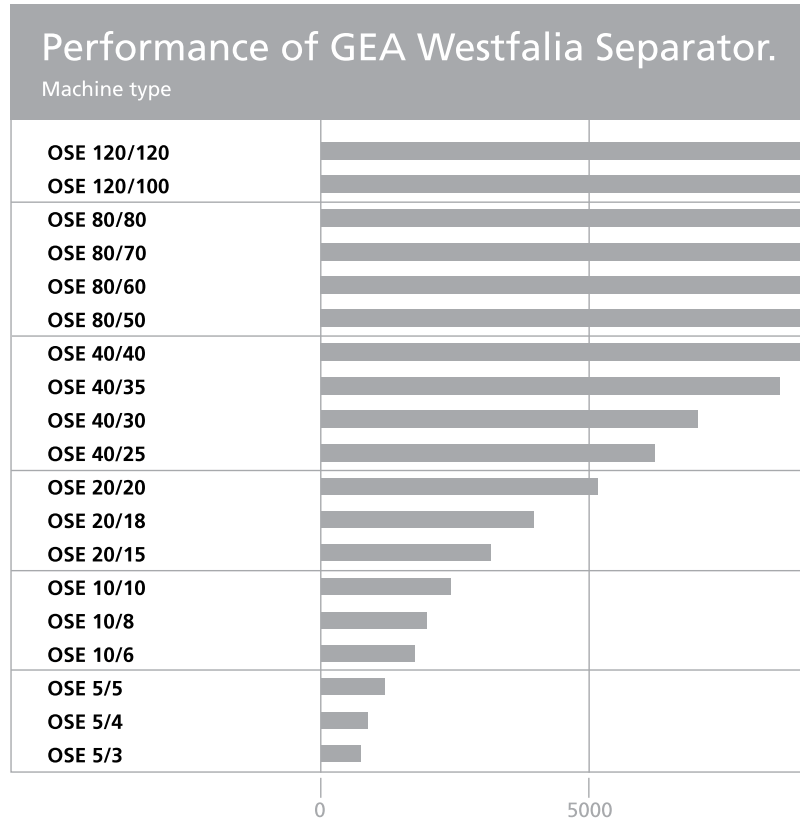
OSE 5

# Data and Facts

The GEA Westfalia Separator **eagleclass** is setting new standards: In all major parameters, it considerably outperforms the separators of the GEA Westfalia Separator **d**type generation and the competition.

The list of parameters demonstrates that the GEA Westfalia Separator **e**type models of the new **eagleclass** have significantly improved the values of its predecessor, the GEA Westfalia Separator **d**type. The **eagleclass** is also exemplary in terms of a comparison with other makes of separators in the same performance class.

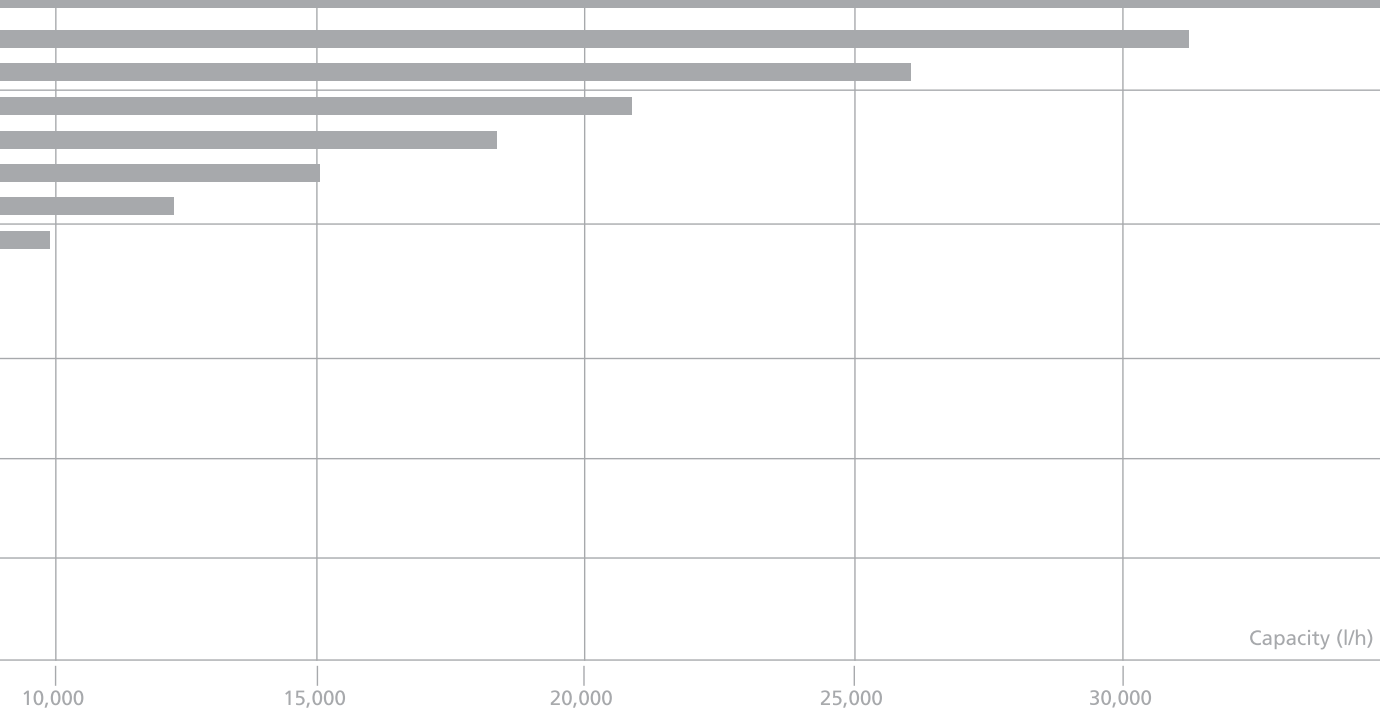
Conclusion: anybody who is looking for the best cannot ignore the GEA Westfalia Separator **eagleclass**. The design, durability and reliability of these machines have been legendary for many decades. They are now more cost-effective and more powerful than ever. Created for the extreme requirements and conditions encountered in oil fields, offshore installations and FPSOs. Even in the most extreme conditions.







Product: Crude oil with a viscosity of 380 cSt @ 50 °C.



# Ensuring Maximum Process Efficiency, Availability and Budget Security with serv&care from GEA Westfalia Separator

Wherever separating technology tasks have to be carried out, our serv&care program assures comprehensive services right from the very beginning. In close cooperation with the customer, solutions are identified to meet their needs.

The partners benefit not only from traditional services such as inspection, maintenance, original spare parts and repair work provided by the original manufacturer; they also benefit from pro-active solutions which avoid risk, e.g., online and offline monitoring with our serv&care program.

Accompanying modernization or upgrading to state-of-the-art technology also offers the option of boosting services as required.

Training provided on site or in the modern training center of GEA Westfalia Separator ensures that the customer's employees receive training in the proper handling of high-tech installations. This provides additional safety.

## Authorized workshops worldwide

And if problems occasionally occur, or if a spare part is required at short notice, the specialists are able to attend to the customer quickly. This is ensured by a global network with more than 50 sales and service companies as well as 60 sales partners. Our authorized workshops are able to service every location in the world at short notice.

Our serv&care program accordingly makes for maximum process efficiency and installation availability as well as budget security. And these benefits are provided throughout the entire life cycle of the entire installation.

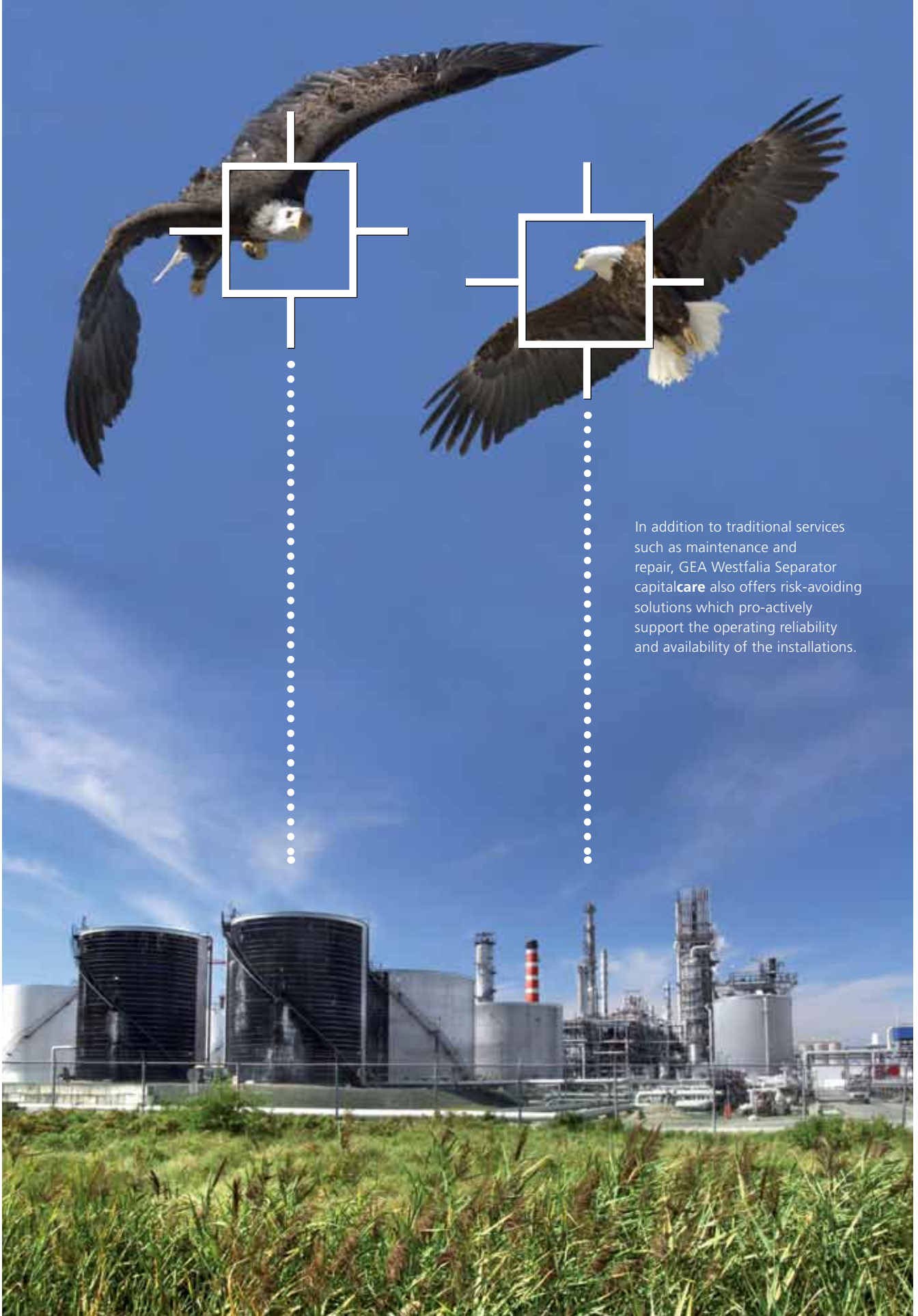
## Service from the original manufacturer

- Service engineers move quickly to the site
- Extensive service network
- Risk avoided by service provided by the original manufacturer
- Pro-active solutions which avoid risk
- Upgrading to boost performance
- Staff training

## Services performed by specialists

When normal equipment use results in wear and tear, we stand behind the quality of our repair services. GEA Westfalia Separator has trained mechanics on staff that have the proprietary knowledge to make the necessary repairs. In true emergencies, a response team can be quickly deployed to your facility. Spare bowl and scroll assemblies are readily available for your use, so process/production lines are not idle while repairs are underway. And when equipment needs to be repaired off-site we offer two full service locations. Our facility in Patterson, California was specifically developed to service customers based in western North America. Here, decanter and separators of all sizes can be repaired. There is also a large parts inventory and a specially designed training facility.

**serv&care**



In addition to traditional services such as maintenance and repair, GEA Westfalia Separator capital**care** also offers risk-avoiding solutions which pro-actively support the operating reliability and availability of the installations.



*We live our values.*

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

## **GEA Mechanical Equipment US, Inc.**

GEA Westfalia Separator Division

### **Headquarters:**

100 Fairway Court  
Northvale, NJ 07647  
201-767-3900

### **Midwest:**

725 Tollgate Road, Suite B  
Elgin, IL 60123  
630-503-4700

### **South:**

4725 Lakeland Commerce Parkway, Suite 4  
Lakeland, FL 33805  
863-603-8900

### **Southwest:**

2408 Timberloch Place, Suite C-4  
The Woodlands, TX 77380  
281-465-7900

### **West Coast:**

Western Region Customer Support Center  
555 Baldwin Road  
Patterson, CA 95363  
209-895-6300

## **GEA Mechanical Equipment Canada, Inc.**

GEA Westfalia Separator Canada Division

835 Harrington Court  
Burlington, ON L7N 3P3  
289-288-5500

Toll-Free: 800-722-6622

24-Hour Technical Help: 800-509-9299

[www.wsus.com](http://www.wsus.com)