BASF
The Chemical Company

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We need energy to power our future and Wintershall is working hard to find and develop new oil and gas deposits all over the world. We have both state-of-the-art technology and strong partners at our disposal as well as unrivaled regional and technical expertise particularly in Europe, North Africa, South America, Russia and the Caspian Sea region. We are also expanding our activities in the Middle East. As the largest German-based producer of crude oil and natural gas, we are helping to secure the energy supply, both now and in the future.

www.wintershall.com
With about 113,000 employees, six Verbund sites and close to 370 production sites worldwide we serve customers and partners in almost all countries of the world. In 2012, BASF posted sales of €78.7 billion and income before special items of approximately €8.4 billion. We combine economic success, social responsibility and environmental protection. Through science and innovation we enable our customers in almost all industries to meet the current and future needs of society. BASF products and system solutions contribute to conserving resources, ensuring healthy food and nutrition and helping to improve quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. In 2050, around nine billion people will live on this planet. On the one hand, this population growth is associated with enormous global challenges but we also see many opportunities, especially for the chemical industry. BASF expects the chemical industry to grow particularly strongly in the emerging economies, and that these markets will account for around 60 per cent of global chemical production by 2020.

Innovations based on chemistry will play a key role in three areas in particular:

1. Resources, environment and climate: Dramatically rising energy demand is one of the world’s most pressing challenges. In addition, access to clean water and other non-renewable resources is becoming increasingly important.

2. Food and nutrition: A growing world population obviously needs correspondingly more food. And it will be necessary to enhance nutrition quality.

3. Quality of life: Population growth and globalisation present further challenges. Aspirations differ greatly from region to region and among different social groups, but there is a common ambition: people want to improve their individual quality of life.

Sustainability and innovation will be significant driving forces. Against this background BASF has developed a “We create chemistry” strategy and defined more precisely our purpose, our strategic principles and our values.

The BASF story
Ever since its foundation in 1865, BASF have been evolving to respond to the world around them. As we look ahead at how we as a company contribute to a sustainable future, one thing
is clear: We will continue to develop, to meet new challenges, to take advantage of new opportunities and to succeed. To be successful, we need a common understanding of what we do, and why and how we do it. This provides us with a strong foundation to move forward together.

We prove every day that we don’t just make chemicals, we create chemistry.

**Brand Positioning**
BASF creates chemistry for a sustainable future through combining economic success, social responsibility and environmental protection while offering intelligent solutions and high-quality products for almost all industries.

**The BASF brand**
Our purpose, strategic principles and values provide the strong foundation we need to move forward together. This, coupled with our expertise in chemistry, will ensure our future success. To put the pieces together we need each and every employee to make a contribution: All of us act as ambassadors in creating a consistent perception of BASF. We bring the BASF brand to life by connecting everything we do.

**Our Values**
- Creative
- Open
- Responsible
- Entrepreneurial

**Our Strategic Principles**
- We add value as one company
- We innovate to make our customers more successful
- We drive sustainable solutions
- We form the best team

**BASF in the Middle East**
The Middle East is an emerging market. Political, Social and Economic transformation hold the key to future development. As BASF we want to be an important part of this transformation on the economic and social front.

The Middle East is an important pillar to achieve BASF’s strategic goals, it is important for many of BASF’s customers and competitors. BASF continues to develop on the opportunities.

BASF launched its new regional strategy in the Middle East in April 2013, aiming to be the market leader in the region as perceived as the leading chemical company. As part of BASF’s regional strategy, the firm will focus on three industries; construction, chemicals and plastics and energy resources that includes the oil and gas industry, in alignment with the company’s global “We create chemistry for a sustainable future” strategy.

“With about 113,000 employees and close to 370 production sites worldwide we serve customers and partners in almost all countries of the world”
Wintershall - specialists in oil and gas production

Wintershall is a wholly owned subsidiary of BASF in Ludwigshafen, the world’s leading chemical company. Wintershall specialises in energy and is active in various regions of the world in the exploration and production of crude oil and natural gas.

In Europe the BASF subsidiary trades and sells natural gas. Wintershall has been active in the exploration and production of oil and gas for more than 80 years. In its exploration and production activities, Wintershall deliberately focuses on selected core regions where the company possesses a wealth of regional and technological expertise. These regions are Europe, North Africa, South America, Russia and the Caspian Sea region. In addition, these operations are complemented by the company’s growing activities in the Middle East. With an annual production of around 130 million barrels of oil equivalent, we are Germany’s largest crude oil and natural gas producer. The significant increase in oil production in Libya in 2012 and the expansion of natural gas production in Russia were key contributors to this new production record. Today, the activities of Wintershall in Russia extend from the exploration and production of natural gas in western Siberia and crude oil in southern Russia to the construction of the Nord Stream and South Stream offshore pipelines to the sale, storage and transport of natural gas in Germany and Europe. Achimgaz, a joint venture of Gazprom and Wintershall, produces natural gas and condensate of the deepplaying Achimov formation of the Urengoy field in Siberia.

Furthermore, Wintershall Norge has taken over the operatorship of the Brage oil field on the Norwegian Continental Shelf from Statoil on the first of October 2013. The Brage platform of Bergen is the first major production platform operated by Wintershall Norge. The asset swap with Statoil thus turned Wintershall into a major producer on the Norwegian Continental Shelf. With the operatorship of Brage, Wintershall now executes the complete E&P lifecycle in Norway: from exploration, drilling and the development of oil and gas discoveries to production.

Development of technology
Wintershall is synonymous with continuous development and the enhancement of technological knowhow. This is what makes it possible to master our activities in particularly challenging geological conditions. To do so we harness innovative exploration, drilling and production technologies such as 3D seismic surveys, extended reach drilling and steam flooding. Another idea came from nature itself. As is the case with the largest current research project from Wintershall that the German crude oil and natural gas producer is conducting together with BASF. A mushroom is the focus here: Schizophyllum commune – as the mushroom is called – generates a biopolymer. The gelatinlike substance thickens the water that is injected into the reservoir to enhance production. The water can force more oil out of the deposit because it no longer flows past the oil so easily. This technique can raise the recovery rate from a reservoir significantly.

We consider the diversity and uniqueness of our 2,500 colleagues from more than 40 nations a crucial competitive advantage. It helps us identify opportunities and respond to challenges creatively. The company is actively pursuing a policy of ongoing investment in the development of new reservoirs and the expansion of existing fields. While doing so, Wintershall attaches the same importance to stringent environmental protection and work safety requirements as it does to its economic targets.

Wintershall at a glance:
- Annual production in 2012: 126 million barrels of oil equivalent
- More than 2,500 employees
- From more than 40 nations
- Headquarter in Kassel
- Established in 1894
As Germany’s largest internationally active oil and gas producer, the exploration and production of natural gas and crude oil belongs to Wintershall’s core business. Projects with international partners in Russia, Norway, Argentina, Libya and in the Gulf region provide excellent examples for a functioning, cross-border cooperation in the energy sector.

How has Wintershall established successful partnerships in the region?
One of Wintershall’s most important strengths is the ability to build and maintain strong strategic partnerships. We have been in Libya for nearly 60 years, and Libya has gone through several periods of significant turmoil over the last few decades. We have been active for almost 25 years with Russia – in Russia and abroad, and we have been in Qatar since 1973. It takes a while to ignite a solid partnership, but once the trust has been built it can last forever. That is our strategy. We would like to establish a similar partnership with Abu Dhabi, both, in country and internationally. I believe that the current partnership structure in Abu Dhabi allows for more diversification and I understand that the UAE’s political interest in developing closer relations with Germany is quite significant. Another important aspect is that companies like ours specialise in niche technologies that could provide additional value to countries like the UAE.

What is Wintershall’s strategy to develop these partnerships further?
My belief is that you have to build and maintain a true, open, and honest partnership with the host country; irrespective of where you are. We have to share knowledge, experience, and revenue for the benefit of all partners. If we are not able to provide a value proposition that clearly points to a win-win situation both for the host country and also for us as an international oil company, it is not a stable value proposition. We have decided to build our regional headquarters for the Gulf Region in Abu Dhabi but that does not mean that we plan to do business only with Abu Dhabi. We have made a gas discovery in Qatar and work intensively with Qatar Petroleum towards field development.

Given the increase in domestic demand for gas in the UAE, what are Wintershall’s gas credentials?
We know how to efficiently deal with natural gas along the entire value chain. Here in Abu Dhabi, there are fields that are currently not tapped because their development poses significant technological challenges due to the content of hydrogen sulfide – a very toxic gas - and carbon dioxide. Our value proposition for Abu Dhabi combined our gas story and our expertise to safely deal with sour gas fields. The Shuwaihat field, for example, that is currently being appraised by Wintershall as operator contains more than 20 per cent by volume of hydrogen sulfide. Together with our 100 per cent shareholder BASF we possess a very efficient technology for removing the hydrogen sulfide and converting it into non-toxic products. This know-how stems from the fact that many of the German gas fields that were developed in the 1970s and 80s were sour gas fields containing hydrogen sulfide and carbon dioxide, so we gathered a lot of experience there.

Given the challenges here of exploration and production in the region, what focus has Wintershall placed on R&D?
I would like to focus our R&D research efforts on providing solutions for enhanced oil recovery. For many of the fields in the Gulf it will be a challenge in the future to maintain plateau production. Therefore, the time is right to investigate with our shareholder BASF, the world’s largest chemical company, the development of special chemical solutions that could enhance recovery rates in oil fields.

What are your plans to balance your production portfolio in the coming years?
Due to our successful Russian activities our production portfolio has shifted towards natural gas. We have a strategy to balance our portfolio with respect to oil and natural gas but more important is to align our strengths and interests with the needs and requirements of the host country and, of course, the overall commercial attractiveness of our projects. The discovery in Qatar is...
Wintershall is proceeding very well on its growth path. As it expands its worldwide exploration and production activities, BASF’s subsidiary is focusing increasingly on the Middle East, in particular Qatar and the United Arab Emirates. In the coming years, the company is planning to tap additional natural gas and condensate reserves.

Underscoring its commitment, last year Wintershall began collaboration with ADNOC, the state-run oil company. Together with the Austrian company OMV, Wintershall will conduct as operator up to three appraisal wells and utilise 3D seismic imaging to evaluate the Shuwaihat sour gas and condensate field. The Shuwaihat field is located some 25 km to the west of Ruwais in the Western Region of Abu Dhabi. The appraisal campaign will conclude in the draw up of a development plan. Subsequently to the investment decision on these projects and are working towards production start-up. Furthermore, I expect from our successful co-operation with Abu Dhabi National Oil Company (ADNOC) more opportunities in Abu Dhabi that we can jointly develop and, last but not least, that our strategy to develop business activities with Abu Dhabi also internationally has matured significantly.

What are your expectations for Wintershall’s UAE operations five years from now? Our current portfolio in the Gulf comprises the ongoing development work on the discovered Al Radeef field in Qatar and appraisal activities on the Shuwaihat field in Abu Dhabi, both as operator. Five years from now I hope that we have already taken development decisions on these projects and are working towards production start-up. Furthermore, I expect from our successful co-operation with Abu Dhabi National Oil Company (ADNOC) more opportunities in Abu Dhabi that we can jointly develop and, last but not least, that our strategy to develop business activities with Abu Dhabi also internationally has matured significantly.

Martin Bremeier, General Manager in Abu Dhabi.

“New operations on the way – Shuwaihat

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Martin Bremeier, General Manager in Abu Dhabi.

“New operations on the way – Shuwaihat

Martin Bremeier, General Manager for the Shuwaihat project, talks about the progress on the future development of the sour gas and condensate field in Abu Dhabi.
Who is BASF Global Oilfield Solutions?
BASF Global Oilfield Solutions is an industry platform that has been established by BASF, the world’s leading chemical company. The headquarters for Global Oilfield Solutions are located in Houston, Texas. Our headquarters for Global Oilfield Solutions were relocated to Houston, Texas in 2012.

For the oilfield industry we supply a wide range of performance chemicals to every application sector: drilling, cementing, stimulation, production and EOR. Our aim is to help our customers improve productivity results in their oilfield operations. With the acquisitions of Degussa Construction Chemicals in 2006, Ciba in 2009, and Cognis in 2010, BASF has grown to become a global player in this important market segment.

We have dedicated laboratories for application testing, development projects and technical enquiries. We have established a global sales team with a strong presence in all regions, and a global technology team of experts to solve all kinds of technical challenges. Our marketing team is both application and regionally focused, and the customer service group and supply chain team are experienced in meeting customer supply requirements quickly and efficiently. We are set-up in a way that allows us to cater to the needs of our customers.

Why is the Middle East and North African region an important market for you?
The abundance of oil and gas in the Middle East and North Africa (MENA), and the sustained growth that the region is predicted to see going forward, will continue to provide a landscape of diverse challenges in oilfield operations.

BASF’s broad product portfolio is designed to meet all kinds of challenging field conditions. The MENA region brings an abundance of opportunities for us to work closely with customers to find tailor-made solutions to these challenges.

We have a dedicated regional sales team, with people located in both the Middle East and North Africa to provide quick responses to customer questions, and a well-linked global supply network. This allows us to get a solution to the customer quickly, and reliably, making us an ideal partner for service companies that are operating in the region.
Referring firstly to the drilling additives segment, what kinds of challenges can be addressed by your products?
With the growing demand for energy, more unconventional wells are being drilled in the MENA region. Service companies are therefore facing increasingly challenging environments, and require drilling fluid systems to suit such conditions. We offer reliable drilling additives to help our customers address those challenges. For example, our diverse Alcomer® range can deliver superior shale inhibition at high salinities. Additionally, Polydrill® can control fluid loss at temperatures up to 450 °F, and if combined with Polythin®, our highly effective drilling fluids thinner, a synergistic effect is created which further enhances fluid loss control of the drilling fluid.

BASF has a strong cementing additives portfolio. What challenges can your products meet in this application segment?
On the cementing side, our Polytrol® fluid loss control additives are also stable against high temperatures and concentrated salt solutions, and therefore typically suit the well conditions in the MENA. Additionally, Polydrill® can control fluid loss at temperatures up to 450 °F, and if combined with Polythin®, our highly effective drilling fluids thinner, a synergistic effect is created which further enhances fluid loss control of the drilling fluid.

Do you also have solutions for stimulation operations?
Whilst stimulating a well, it’s common for corrosion to occur, especially in highly acidic conditions and in highly saline environments. In MENA, matrix acidising is the most commonly used form of well stimulation, so acid corrosion is very prevalent. We have developed a range of corrosion inhibitors to protect metal equipment in such highly acidic conditions.

In addition, our broad range of specialty chemicals provides solutions to address other challenges in stimulation such as iron control, diversion, clay stabilisation, water shut off, avoidance of emulsion formation, reservoir conformance and efficient wellbore clean up.

What production chemical applications do you specialise in?
One of our largest portfolio segments is production chemicals. The portfolio addresses the three main concerns found in production applications: flow assurance, oil/water separation, and asset integrity. As MENA is one of the largest producers of oil globally, our robust production portfolio has a good fit in this region.

On the flow assurance side, we have a strong set of paraffin inhibitors and pour point depressants which improve cold flow behaviour and help prevent deposits of paraffin crystals.

In oil/water separation, we offer key components for demulsifier formulations which enable the quick separation of produced water from oil. Demulsifiers are one of the most widely used chemistries in oilfield applications in MENA, and each oil type needs to be tested to find the best product fit. We provide a test kit including a range of our products for customers to find the best product fit. For deoiling, where oil is separated from produced water, we offer a different kit with specific deoiler products.

And lastly our asset integrity portfolio includes: a range of corrosion inhibitors to protect steel parts for all production equipment and pipelines, biocides for the control of bacteria growth, and H2S scavengers which effectively reduce levels of toxic H2S gas to meet safety standards.

What innovations will you bring to this region in the near future?
We recognise the constant challenges faced with corrosion in oilfield operations, and have therefore invested time in developing a new range of corrosion inhibitors for use in production, and a set of acid corrosion inhibitors for use in stimulation. In addition, we are continually improving the handling and performance profile of our products, and are launching a new range of pour point depressants with these features (Basoflux® RD).

Mohammed Heraiba - Sales and Industry Manager MENA for BASF Global Oilfield Solutions, details how specific regional challenges can be met by the BASF product portfolio.
What is OASE about?
Gas treatment is a complex process. So the more reliable your partner and the simpler it is to work together, the better. As one of the leading companies in the field of gas treatment worldwide, BASF has a track record of over 300 successful projects across the globe, from North Africa to the Arctic Circle, including the world’s largest gas treatment units.

Under the OASE brand, BASF provides customised, high-performance gas treatment technologies for use in traditional applications like syngas and ammonia, sales gas and liquefied natural gas (LNG) facilities. BASF also has the expertise to support applications in developing markets for carbon capture, biogas and floating LNG. With production and storage facilities on three continents, BASF can consistently ensure dependable supply, optimised logistics and short lead times.

Under the OASE brand, what exactly do you sell to customers?
BASF markets its range of technologies, gas treatment agents and complete technical services under the brand OASE – Gas treating excellence from BASF. All our service packages can be flexibly tailored to individual needs. Some of the most common services we provide include:
- Conceptual studies
- Basic design and Front-End Engineering Design (FEED) support

“ Innovation is key - BASF is constantly striving to increase the efficiency and reliability of its OASE ”

Dr. Jens Rudolph, responsible for the Middle East region in the OASE® global gas treatment team, tells Pipeline Presents about BASF’s leading gas treatment technology

Innovation is key: BASF is constantly striving to increase the efficiency and reliability of its OASE gas treatment processes and agents. In an own pilot plant at its Ludwigshafen/Germany site the company is testing processes and chemicals under realistic circumstances.
Chemical absorption of acid gases

Absorber:
high P, low T

Stripper:
low P, high T

How does BASF gas treatment work?
BASF’s gas treating solvents react with the acid components like CO2 and H2S from incoming gases in an acid-base reaction. The acid components are then separated from the solution by adding energy, allowing the gas treating solvents to be recycled. The CO2 obtained in this way is of such high purity, that it can be used for chemical purposes. The BASF process requires relatively low energy input, featuring very high availability, and delivers high yields of high-purity gases. It is flexible enough to allow specific gas components to be separated selectively. For example, the process facilitates the selective removal of H2S from a gas that contains both CO2 and H2S. The gas treating solvents that are used feature high stability and a long useful life, requiring minimal replenishment as a result.

OASE is reliability
With more than 40 years of experience, BASF offers its customers efficient solutions for the treatment of various gases such as natural gas, synthesis gas, and biogas. Worldwide, these solutions have proven in over 300 reference plants. BASF markets its range of technologies, gas treatment agents and complete technical services under the brand OASE – Gas treating excellence from BASF.

Innovation is key: BASF is constantly striving to increase the efficiency and reliability of its OASE gas treatment processes and agents. With its research and development facilities (photo) the company is at the forefront of innovation.
Innovative technologies for petroleum refining

BASF is a global industry leader in Fluid Catalytic Cracking (FCC) catalysts and additives delivering cutting-edge technology and service to the refining industry.

Catalysis plays an increasingly critical role in modern petroleum refining. Catalysts are a crucial component in the processing of highly valued petrochemicals, gasoline, diesel and other fuels.

BASF is leveraging its leading development platforms, global research infrastructure and passionate pursuit of innovation to develop novel, proprietary technologies to help customers meet the challenges of the market.

BASF offers the highest degree of product flexibility in terms of surface area, zeolite/matrix ratio, metal traps, and particle size distribution. These properties give BASF Fluid Catalytic Cracking (FCC) catalyst products a wide range of performance and cost-effective options that can be customised to meet the specific needs of each customer’s operations.

BASF’s award-winning Distributed Matrix Structures (DMS) and Proximal Stable Matrix & Zeolite (Prox-SMZ) technology platforms form the foundation of BASF’s innovative FCC products.

The petroleum refining landscape is constantly evolving through changing crude slates, shifts in refined product demands, and the necessity to produce more from existing assets. BASF is committed to deliver innovative products, solutions and services to enhance value, sustainability, and performance for its customers.

- Catalysts
- Co-Catalysts
- Additives
- Services and Solutions

**FCC Catalysts**
For more than 50 years, BASF Catalysts has been pioneering innovative catalyst technologies for the petroleum refining industry. Whether your feedstock is vacuum gas oil, resid or Canadian oil sands, BASF has the optimum catalyst for your refinery needs.

The Distributed Matrix Structures (DMS) technology platform has led to breakthrough performance in profitability for refineries around the globe producing gasoline. Proximal Stable Matrix and Zeolite (Prox-SMZ) is a technology platform that extends similar breakthrough performance in maximising distillate yields from the FCC unit.

**FCC Co-Catalysts**
Co-Catalysts have similarities with both Additives and Catalysts, but stand alone as its own category of products available only from BASF. Co-Catalysts replace 10-40% of the base catalyst to rapidly change the core performance of the FCC.

These products allow refiners to capture the economic advantage from changing market preferences or feed characteristics. They provide a refiner with FCC operational flexibility allowing them to respond in the shortest time to rapid shifts in product values or feed change.
It allows for profitability optimisation far more quickly than reformulating the FCC catalyst.

**FCC Additives**
As pioneers in developing innovative catalyst technologies for the petroleum refining industry, we have always focused on helping refiners get the most out of their operations. Additives are added to the base catalyst to promote other chemistry, such as propylene, sulfur reduction, CO promotion, NOx reduction, SOx reduction, etc. Our wide breadth of cost-effective fluid catalytic cracking (FCC) additives continues our commitment to advancing petroleum refining technologies that improve processes, realise better economics, and support environmental compliance.

**FCC Services and Solutions**
BASF offers systematic evaluation of the FCC units’ operating conditions and the impact of the catalyst properties to support the strategic direction of the FCC management. Our commitment to innovation is in tune with the ever-changing market and needs of our customer base. Our product and service model enables customers to securely share operating data with BASF’s technical service experts allowing them to build close relationships at their customers’ sites to deliver timely, proactive solutions and services.

This intimate knowledge of our customer base allows BASF to target and allocate its R&D efforts in developing unique products that deliver immediate value to the market. Products and services are continually reviewed for alignment with our customers’ needs.

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**Treatment of natural gas**

BASF has the expertise to support developing applications such as shale gas, coal bed methane, biogas, and floating LNG.

BASF offers a broad range of technical solutions based on the appropriate absorbent (solvent), adsorbent, and catalyst.

Moreover, BASF supports its customers in the design and operation of gas treatment plants by providing process design and engineering support and a range of technical services such as debottlenecking and process optimisation, troubleshooting and revamps, analytics, and training. In addition to traditional applications in natural gas purification.

Natural gas treatment is a complex process, as shown in the process flow chart:
# TECHNOLOGY AND PRODUCTS PORTFOLIO FOR NATURAL GAS TREATMENT

<table>
<thead>
<tr>
<th>Process / Application</th>
<th>Contaminants</th>
<th>Product / Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acid Gas Removal (Sweetening)</td>
<td>H₂S, CO₂ (bulk), COS, H₂S, CO₂ (trace)</td>
<td>OASE® yellow; OASE® purple BASF Molecular Sieves</td>
</tr>
<tr>
<td>Sulfur Recovery</td>
<td>H₂S, COS, CS₂</td>
<td>BASF Claus &amp; Tail Gas Catalysts</td>
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<tr>
<td>CO₂ Drying (Enhanced Oil Recovery / CO₂ Capture &amp; Storage)</td>
<td>H₂S, CO₂ (bulk), COS, H₂S, CO₂ (trace)</td>
<td>Sorbead® Dehy</td>
</tr>
<tr>
<td>Hydrocarbon Dewpointing</td>
<td>C₆+ (H₂O simultaneous)</td>
<td>Sorbead® HRU</td>
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<tr>
<td>Mercaptans Removal</td>
<td>RSH</td>
<td>Sorbead® HRU, BASF Molecular Sieves</td>
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<tr>
<td>BTX Removal</td>
<td>Benzene, Toluene, Xylene</td>
<td>Sorbead® HRU</td>
</tr>
<tr>
<td>Membrane Protection</td>
<td>C₆+, BTX, H₂O</td>
<td>Sorbead® HRU/Dehy</td>
</tr>
<tr>
<td>Water Dewpointing, Sales Gas/Pipeline Gas, LNG Pretreatment</td>
<td>H₂O (-10°C…-60°C dewpoint) (-110°C dewpoint)</td>
<td>Sorbead® Dehy, BASF Molecular Sieves</td>
</tr>
<tr>
<td>LNG Pretreatment (Export Terminal, Floating LNG, LNG Micro-Plant)</td>
<td>H₂O, CO₂, COS, H₂S</td>
<td>OASE® purple, Sorbead® HRU BASF Molecular Sieves</td>
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<tr>
<td>NGL Drying (liquid)</td>
<td>H₂O</td>
<td>Sorbead® Dehy</td>
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<td>NGL/LPG Purification</td>
<td>Various contaminants</td>
<td>PuriStar®, Selexsorb®</td>
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<td>Underground Storage (UGS)</td>
<td>H₂O Hydrocarbons (H₂O simultaneous)</td>
<td>Sorbead® Dehy</td>
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<tr>
<td>Coal Bed Methane (CBM) Drying</td>
<td>H₂O, CO₂</td>
<td>Sorbead® Dehy, OASE® purple</td>
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<tr>
<td>Guard Bed for Adsorbents &amp; Catalysts</td>
<td></td>
<td>Sorbead®, BASF Activated Alumina</td>
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**OASE®**: Gas Treating Excellence  
**Sorbead®**: Alumino-silica gel adsorbent  
**Sorbead® Dehy**: Sorbead technology for natural gas dehydration (adsorption)  
**Sorbead® HRU**: Sorbead technology for heavy hydrocarbons removal / recovery (adsorption)  
**BASF Molecular Sieve**: Technologies for removal of H₂O, CO₂, H₂S, mercaptans (adsorption)  
**PuriStar®**: Metal oxide-based adsorbents  
**Selexsorb®**: Activated alumina adsorbents  

**LNG**: Liquefied Natural Gas  
**NGL**: Natural Gas Liquids (propane, butane, C₅+)  
**LPG**: Liquefied Petroleum Gas (butane, propane)  
**RSH**: Mercaptans  
**BTX**: Benzene, Toluene, Xylene
separation loves undivided attention

The reliability of the gas separation unit is essential for the successful performance of the whole plant. Our customers can rely on our undivided attention to ensure continuous smooth operation. Under its new OASE® brand, BASF provides gas treatment solutions consisting of technology, services and products. We at BASF combine the experience of more than 40 years and about 300 distinct references with the latest innovations to provide you with your unique solution. So if our undivided attention results in your optimal gas separation and a smile on your face, it’s because at BASF we create chemistry.

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