

News Release

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BASF presents innovative tanker for low water on the Rhine

- **Tanker makes an essential contribution to the security of supply and competitiveness of the Ludwigshafen site**
- **Significant increase in transport volumes at low water compared to conventional tankers**

The new tanker will be one of the largest tankers on the Rhine and will be particularly useful when the Rhine is at low water. It will still be able to pass the critical point in the Rhine near Kaub with a cargo of 650 tonnes even at a water level of 30 centimetres (corresponds to a water depth of 1.60 metres), which is significantly more than any other tanker available today. At average low water level, its transport capacity of around 2500 tonnes will be twice that of conventional inland vessels. Contracts for the construction and use of the ship were signed.

"Following our experience with the low water levels of the Rhine in 2018 and based on our assessment that such events may occur more frequently in the future, we have taken a whole range of measures at the Ludwigshafen site to increase the security of supply for production. An important element of our considerations was to have a ship that can still reliably transport substantial quantities even at the lowest Rhine levels," says Dr. Uwe Liebelt, BASF European Site & Verbund Management. "We took the initiative ourselves in 2018, because a suitable ship was not available on the market. Today, I am pleased that despite many challenges, we have succeeded in developing

this new type of ship and that we will now complete the project with a strong partner."

BASF developed the ship design together with a consortium consisting of Duisburger Entwicklungszentrum für Schiffstechnik und Transportsysteme e.V., (DST), Technolog Services GmbH and Agnos Consulting, who specialise in various aspects of shipbuilding. BASF was able to attract the shipping company Stolt Tankers for the subsequent detailed design. The company has contributed its expertise to the project and will build the ship and operate it exclusively for BASF. On behalf of Stolt Tankers, Mercurius Shipping Group will be responsible for the further construction of the ship. Commissioning is scheduled for the end of 2022.

"This exciting partnership with BASF supports our commitment to working with other industry leaders to develop new technologies and ship designs for a greener maritime industry. This innovative inland tanker is designed with a unique draft and will set a new mark for the transport of cargo on the river Rhine, especially in low water situations, keeping products moving even as river levels are becoming more unpredictable. We have a long history of working closely with customers to create solutions that help them adapt in a constantly changing environment and this project showcases our team's unrivalled experience, gained over 60 years, in building the most innovative ships in the market" says Lucas Vos, President Stolt Tankers.

The main objective of the development of the new ship was a high load-bearing capacity with a shallow draught. This should ensure safe operation and full manoeuvrability at all times in extreme low-water situations.

The dimensions of the new ship are 135 metres by 17.5 metres, which is considerably larger than the dimensions of the usual tankers on the Rhine, which are usually 110 metres by 11.5 metres. In order to achieve a high load-bearing capacity with these ship dimensions, a hydrodynamically optimised casco with a propulsion adapted to it was developed. Another innovative feature is the lightweight construction, which ensures high structural stability by transferring methods from seagoing shipbuilding to inland waterway vessels.

The ship is powered by three electric motors, which are fed by the latest generation of highly efficient stage v diesel generators with exhaust gas after-treatment. The new

ship design was tested with regard to flow behaviour and efficient operation in the test facility at DST in towing tests on a scale model.

For maximum flexibility with the transported chemical products, the ship is equipped with ten stainless steel tanks and three separate loading systems and can also be used for products with high density, such as acids and alkalis.

Well prepared for low water

To make the Ludwigshafen site more resilient to prolonged low-water events, BASF has initiated and implemented a number of measures:

- Together with Bundesanstalt für Gewässerkunde (Federal Institute of Hydrology), BASF has developed a digital early warning system for low water with an advance warning time of up to six weeks.
- With a view to logistics, among other things, more ships suitable for low water were chartered.
- Loading points have been converted and expanded in order to be able to switch to alternative modes of transport, such as rail.

In addition, BASF is a co-signatory of the Federal Ministry of Transport's 'Low Water Rhine' action plan presented at the beginning of July 2019. Various measures are planned to improve the navigability of the Rhine in the coming years.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 117,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €59 billion in 2019. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at www.basf.com.