



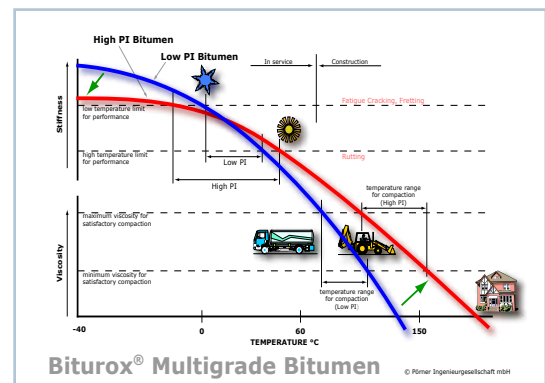
BITUROX® TECHNOLOGY

The increasing worldwide demand for road paving bitumen is in opposition to a stagnating bitumen production. The mission of Pörner Group is to close this future supply gap by means of technology. The Pörner Biturox® Process allows to produce high quality road paving bitumen – thus the bitumen consumption per constructed road kilometer can be reduced.

BITUROX® TECHNOLOGY

Based on the trend to stiffer bitumen grades with excellent fatigue properties the modern bitumen production requires chemical conversion in addition to distillation.

A Biturox® Bitumen Plant produces road paving binders by composing and upgrading blends of short residues and other refinery components chemically by air oxidation. The Biturox® Technology improves the thermal susceptibility, resulting in bitumen that is more resistant against extreme weather conditions.



FEATURES OF THE BITUROX® TECHNOLOGY

- Bitumen can be produced out of a wide variety of crude oils which normally are less suitable for bitumen production.
- High quality bitumen can be produced economically according to premium world standards.
- Flexibility of crude selection allows to optimize the production strategy of a refinery with respect to white product yield.
- Air oxygen is used as the most economic catalyst.

PROJECT REALIZATION

- Pilot tests based on the customer's feedstock components are executed to define reactor sizing, yields and properties of products (e.g. PEN Index, aging properties).
- License and basic engineering package is provided based on reactor capacity.
- Pörner executes engineering and construction of complete Biturox® Bitumen Production Plants with infrastructures and storage, loading and packing facilities out of one hand.

In 35 years Pörner has granted over 40 Biturox® Licenses all over the world. Approximately 10% of global bitumen capacity is produced in Biturox® Bitumen Plants. 35 Bitumen Units have been designed and supplied by Pörner, two further are in construction.

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BITUROX® PROJECTS 2011

BITUROX® PLANT FOR SAMIR, MOROCCO

SAMIR, the Moroccan leading oil company, awarded Pörner as licensor and contractor with the design and construction of a Biturox® Bitumen Plant for the refinery in Mohammedia, near Casablanca, Morocco.

In July 2011, Pörner finalized the project „lump-sum turn-key“ on schedule. This included all engineering services and supplies for the plant with a nominal capacity of 270,000 TPA of road paving bitumen including two storage tanks at 5,500 m³ and HGV filling station.

Pörner provided license, support at financing and executed the project management, basic and detail engineering, supply of equipment and erection on-site up to commissioning and start-up of the plant within a time period of 22 months.



Biturox® Bitumen Unit for SAMIR
Mohammedia, Morocco

BITUROX® PLANT FOR CEPSA, SPAIN

In the beginning of 2009, CEPSA, the Spanish leading oil company awarded Pörner with process design and delivery of the key components for a new Biturox® Bitumen Plant in their refinery in La Rabida, near to the city of Huelva, Spain. The plant's nominal capacity is 350,000 TPA of road paving grades. It is operated continuously and fully automated via the refinery's distributed control system.

Pörner's scope of supply for the CEPSA Biturox® Plant in La Rabida implied provision of license, basic engineering, detail engineering of core components and off-gas treatment including condensate and heat recovery. The La Rabida Biturox® Plant represents technically the highest level of bitumen processing with energy optimization and all features for protection of the environment.

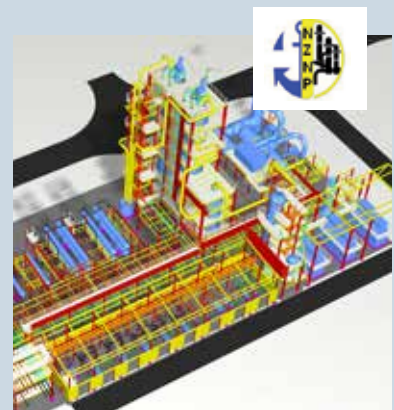
Commissioning was completed in August, 2011 after a design phase of 15 months and an erection period of 12 months.



Biturox® Bitumen Plant for CEPSA
La Rabida, Spain

BITUROX® PLANT FOR NZNP, RUSSIA

In 2011, Pörner signed a contract with OJSC "Novoshakhtinsk Refinery" for engineering and supply of a Biturox® Plant at the refinery near Rostov-on-Don, Russian Federation. The scope of work includes licensing, pilot testing, basic and detail engineering, supply of main components as well as site supervision, commissioning and start up assistance. The start-up is scheduled for December 2012. With a capacity of 700,000 TPA road paving bitumen the plant is able to supply various highway and infrastructure programs of Russia and markets abroad. The project consists of two areas. While in the first area the Biturox® Plant with two reactor lines produces road grade bitumen according Russian and European standards, in the second area the products will be stored in 6 tanks and loaded into rail wagons and road trucks.



3D drawing of the Biturox® Reactor for NZNP
Rostov Oblast, Russia

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