Pörner Group

The Pörner Bitumen Packing System

Vienna, November 2012

Pörner Ingenieurgesellschaft mbH
**World Bitumen Demand**

*Bitumen demand is expected to increase substantially by 2015-2020*

- Demand is expected to reach 130mln tons
- Increasing demand in countries like:
  - China + 10MT/yr.
  - Turkey + 10MT/yr.
  - Central and Western Africa + 3MT/yr.
  - Russia, Kazakhstan + 4MT/yr.
  - Other developing countries are India, Brazil, Indonesia...
- Stable demand in industrial countries
- Main exporters, including Iran, Mexico and Venezuela are increasing their own demand
- International bitumen trade is becoming more prominent
BITUMEN TRADE ROUTES WORLDWIDE

Singapore (2010): 1.590,0MT/yr
China (2010): 3.300,0MT/yr
Iran (2010): 1.500,0MT/yr
Russia (2010): 590,000MT/yr
Australia (2010): 870,000MT/yr
Bahrain (2010): 430,000MT/yr

Bitumen trade routes
- Bitumen exporters
- Bitumen Importers
INCONVENIENCES OF BITUMEN TRANSPORT IN STEEL DRUMS

Steel drums – an ancient method of bitumen transportation

Steel drums must be produced near bitumen filling facility

Limited volume: 180-200 Liters

3% to 8% of product loss / rests are not recovered

1 drum = 8kg of steel + protection against corrosion / 100-120$ per ton

Does not comply with environmental requirements

Empty drums cannot be transported (thickness = 0,6mm)
INCONVENIENCES OF BITUMEN TRANSPORT IN HOT-CONDITION

1. Road trucks

- Developed highway infrastructure
- Heated tanks
- Safety standards and handling
- Limited transportation distance (24h)
- Additional heating in low temperatures
- Limited loading capacity
INCONVENIENCES OF BITUMEN TRANSPORT IN HOT-CONDITION

2. Railway

- High-speed railway system
- Heated tanks
- Loading / unloading terminals
- Loading / unloading terminals
- Continuous heating required
- Problematic in developing countries
3. Seagoing vessels

- Extensive storage facilities
- Heated tanker ships
- Harbors with tank infrastructure
- Complex storage, loading / unloading
- Tanks have to be full (at charge site)
- Ships must return empty

Solution: Pörner Bitumen Packing System
The Pörner Bitumen Packing System

Pörner created an innovative solution

- Enables storage of bitumen in cold condition
- Does not involve fixed costs when there is no bitumen production
- Does not require any special infrastructure for transportation
- Allows shipment of bitumen in any volume
- Economic: up to 50% of cost savings on logistics
- Frees bitumen production from seasonal constraints
The Pörner Bitumen Packing System consists of three elements designed as integrated solution for the bitumen storage, transport and distribution in cold condition:

I. The Pörner Cooling & Packing Unit
II. The Pörner Bitumen Bag™
III. The High-Performance Melter
I. Pörner Cooling & Packing Unit

Packing and cooling of bitumen is **safe, convenient and reliable** ...

- Designed to fill Pörner Bitumen Bags™
- Nominal capacity – 10 tons per hour
- Can be operated 24h/day, 7,200h/year
- Nominal packing volume per Unit – 950kg

- Filling temperature is digitally controlled
- Bitumen is hot enough to be pumped...
- … but cool enough to avoid liner damage
- Packed bitumen is transferred for storage

*The cooling and packing process also ensures that NO foul smelling gases are emitted as a by-product.*
II. The Pörner Bitumen Bag™

... economical, flexible and environmentally friendly

- Flexible bag with self-stabilizing design
- Capacity: up to 1000kg of bitumen
- Suitable for packing in liquid condition
- Optimised for 20 ft. container or truck loading

- Bitumen can be transported without heating
- Storage at any place, even outdoors
- Inner liner bag is melted and therefore integrated with the bitumen at target destination
- Bearing outer bag can be recycled

The innovative 3rd generation Bag has been developed and filed for patent by Pörner and is produced by world leading companies in industrial packing.
CONVENIENCES OF THE PÖRNER BITUMEN BAG™

An innovative solution in bitumen logistics ...

- Perfect balance between price and quality
- 8% to 10% of cost economy / 40$ per ton
- Does not require any special infrastructure
- Fully compatible with environmental requirements
- Adapted for regional and international transportation
- Long-term storage without quality loss

12 | Pörner Bitumen Packing System | Vienna, November 2012
III. THE HIGH-PERFORMANCE MELTER

**Instant access to road paving bitumen where demand exists**

- Melting of bitumen in Pörner Bitumen Bags™
- Capacity up to 4t/h and 80t/day (depending on ambient temperature)
- 2 Step process:
  - Liquefaction by melting grid (patent pending)
  - Further heating up to application temperature in the collecting tank (up to 160°C)
- 20 ft. tank with heating tubes
- Tank volume – approx. 27m³
- Required personnel – 2 persons per shift
- Parallel operation of several units possible

The High-Performance Melter can be transported by standard road trucks to any place where bitumen is needed.
COMPETITIVE ADVANTAGES

- Oil Refinery
- Steel Drums
  - «KRAFT» Bags
- Buffer Tanks
- Bitutainers
- Cooling & Packing Unit
- Road Trucks
- Railway
- Seagoing Vessels
- High-Performance Melter
- Off-season Storage
- End User
COMPETITIVE ADVANTAGES

Pörner Bitumen Packing opens new opportunities for bitumen industry:

I. Cooling & Packing Unit
- Energy efficient
- Environmentally safe
- Flexible capacity

II. Pörner Bitumen Bag™
- Safe transportation
- No quality loss
- High loading capacity

III. High-Performance Melter
- Easy maintenance
- High mobility
- Cost-saving
COMPETITIVE ADVANTAGES

Pörner Bitumen Logistics compared with bulk logistics

BULK LOGISTICS
- just-in-time necessary heating required during transport
- empty return of ships and trucks
- high fixed cost of infrastructure
- limited transportation distance (24 h)

PÖRNER LOGISTICS
- NO FIXED COSTS
- ANY HARBOUR: no special infrastructure required
- unlimited transportation distance
- BITUMEN MELTING UNIT: long-term storage
INTERNATIONAL IMPLEMENTATION

1. How to start …

- Pörner conducts a preliminary market study
- Pörner supplies necessary equipment
- Customer only needs to provide bitumen

2. Implementing the Pörner Bitumen Packing System

- Pörner supplies Cooling & Packing Units, the Pörner Bitumen Bags™ and High-Performance Melter
- Conclusion of JV Agreements (optional)
- Pörner supplies packing material
- Pörner provides maintenance, back-up and service throughout the Unit’s life cycle

Pörner is the leading technology provider for bitumen production and handling – licensor and contractor of more than 40 Biturox® Units!
THANK YOU FOR YOUR ATTENTION!

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