



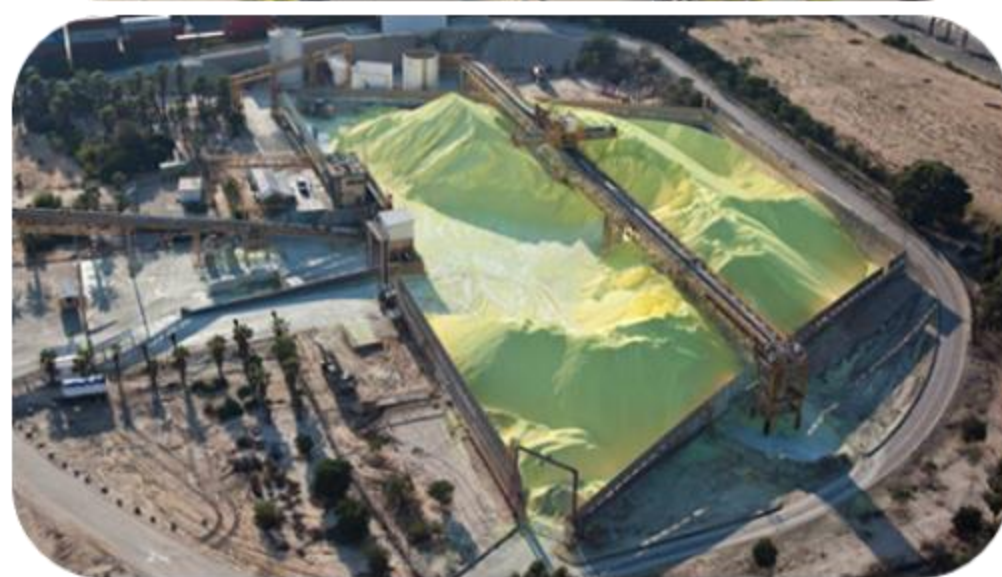
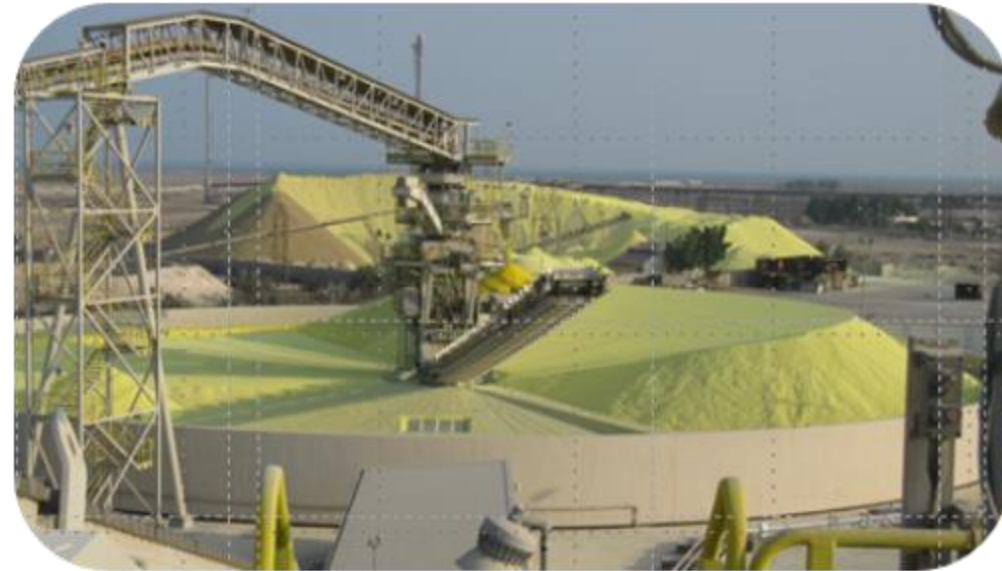
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## **FBC: A Strategic and Holistic Solution for the Handling, Storage, and Logistics of Hazardous and Hydrophobic Bulk Commodities**



# How Do Sulfur Storage Operations Look Today?

Flexible Container for  
Bulk Commodities





# Sulfur Handling in Ports: Dangerous, Labor-Intensive, Inefficient, and Costly

Flexible Container for  
Bulk Commodities



# How Sulphur Storage May Look Like With FBC technology?



- ✓ *FBC is an environmentally friendly solution recognized by the UN as well-suited for the transportation and storage of hazardous bulk cargo, such as sulfur*

**As a storage solution, FBC stands out for the following advantages:**

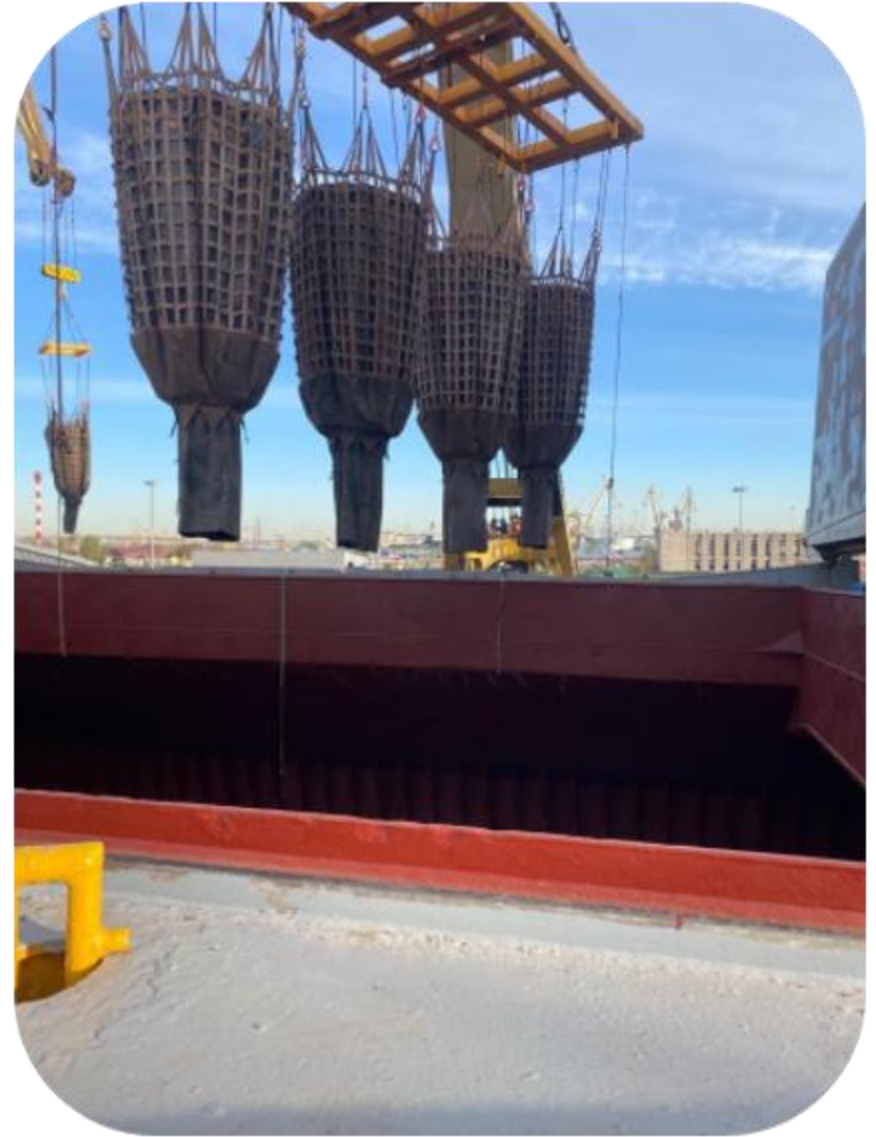
- ✓ Waterproof and dust proof storage solution (IP65 standard)
- ✓ Stackable up to 4 rows;
- ✓ Eligible for the storage of bulk commodities under open air;
- ✓ Streamlines loading operations from an FBC storage into freight transport;
- ✓ **Can be organized in the area beyond the port's territory, offering a cost-effective solution.**





# FBCs Enable Efficient Unloading of Bulk Commodities into Dry Bulk Vessels: 5,000-6,000 Tons per Working Shift

Flexible Container for Bulk Commodities



# ESG-compliant Delivery of Sulphur from Point A to Point Z

Oil or Gas Refinery



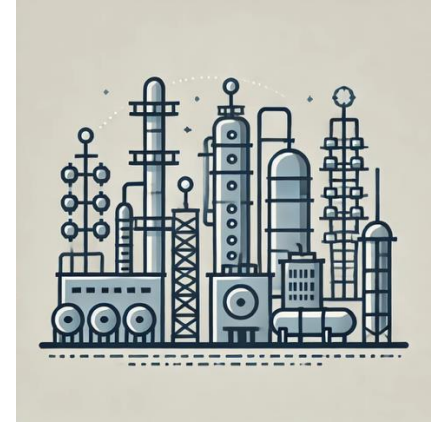
Port of Export



Port of Import



Sulphur Processing



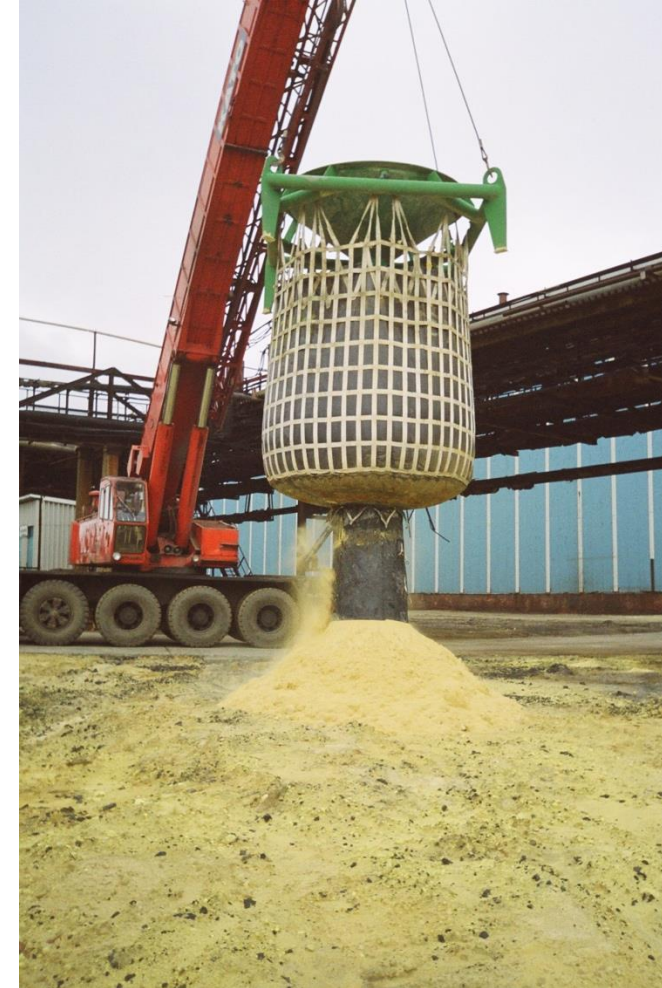


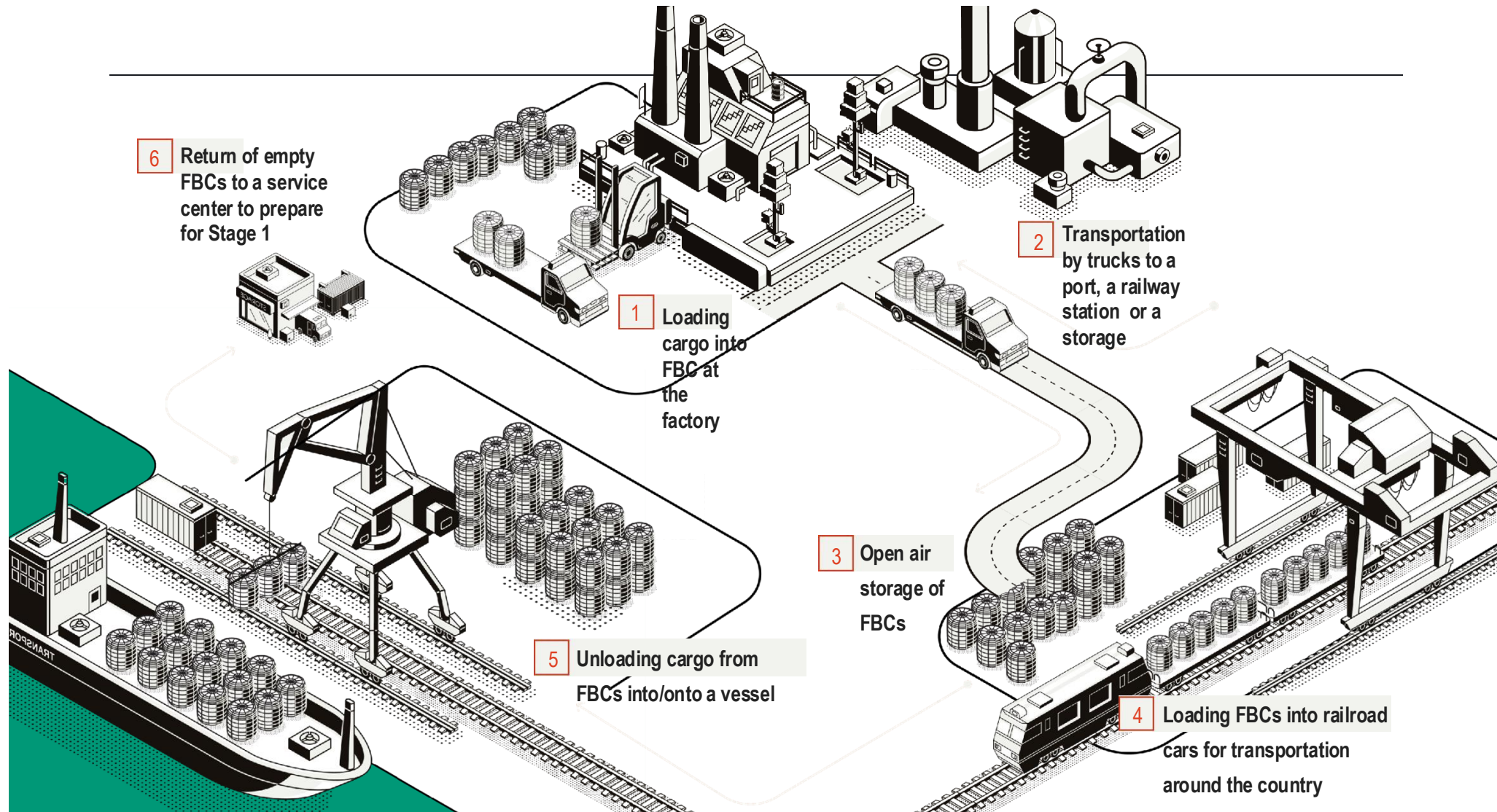
# FBC: 25 Years of Experience in the Logistics and Handling of Sulfur

Flexible Container for  
Bulk Commodities



- ✓ *FBCs were created by a sulfur trader as a solution to increase the efficiency of shipping lumpy and granular sulfur produced by its clients. Over time, this innovation gradually grew into a major bulk handling operation.*
- ✓ **1999:** Designed the first FBC for sulfur transport between the Kapotna Oil Refinery and a mineral fertilizer plant.
- ✓ **2002:** Transported several shipments of sulfur in FBCs from Gazprom Astrakhan to the port of Taganrog. The sulfur was stored in FBCs, unloaded into a bulk vessel, and shipped to Greece in bulk.
- ✓ **2007:** Managed a sulfur storage and transport project in Norilsk under extreme conditions ( $-50^{\circ}\text{C}$ ), storing 10,000 tons of sulfur in FBCs outdoors.
- ✓ **2010:** Another project in Astrakhan, transporting sulfur in FBCs by truck and then by open wagons to the port for storage, and bulk unloading from FBCs onto a dry bulk vessel.







# FBC is Tailored for Transportation of Hazardous and Hydrophobic Goods and Enhancing ESG Compliance

Flexible Container for  
Bulk Commodities



- ✓ Provides IP-65 protection
- ✓ Ensures environmental safety during loading and unloading
- ✓ Reusable for up to 750 cycles
- ✓ Included in UN recommendations for the transport of dangerous goods
- ✓ Carries no environmental penalties
- ✓ Produces no dust
- ✓ Zero cleaning costs for transport (dry bulk vessels or railcars) or for storage areas





Lloyd's Register

### Type Approval Certificate Extension

This is to certify that Certificate No. 07/00005(E2) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	New Technology in Transportation 10 Building 3 Tverskaya St. 125009 Moscow Russia
PLACE OF PRODUCTION	New Technology in Transportation Bld. 3G, Dzerzhinsky St Kizhach Russia
DESCRIPTION	Flexible Bulk Container
TYPE	MK-14-10
APPLICATION	Flexible Bulk container for the transportation and storage of dry cargoes
STANDARD	TU 2297-001-565/9756-06 – Special flexible containers for loose products. NTT Operation Guide No. 26469-01
RATINGS	Diameter / m 2.4 Nominal Capacity / m <sup>3</sup> 15 Lifting Capacity / Te 14 Maximum stacking height / m 4

OTHER CONDITIONS The flexible containers must be operated and inspected in accordance with NTT Operation Guide 26469-01

Certificate No.	07/00005(E2)
Issue Date	9 July 2018
Expiry Date	8 May 2023
Sheet	1 of 2
	JJ Baghurst Bsc (Hons) Specialist Marine Technology & Engineering Services, London or Southampton Lloyd's Register EMEA

Lloyd's Register EMEA  
71 Finsbury Street, London EC3M 4BS

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20 апреля 2014 г., № ЗР-107-11.4 от 30 апреля 2014 г.

The Certificate has been issued based on the results of tests carried out by the FSUE "Krylov State Research Center" Saint Petersburg. Tests Reports No. ЗР-107-11.4 от 14 марта 2014 г., № ЗР-107-11.3 от 25 апреля 2014 г.

Сертификат действителен до 28 мая 2017 г.

The Certificate is valid till 28 May 2017.

Сертификат терять силу ранее указанного срока при каждом изменении конструкции, материала или способа изготовления контейнера. Маркировка ООН действительна в течение всего гарантийного срока хранения контейнера.

The Certificate shall cease to be valid before indicated date in case of modification which alters the design, material or mode of manufacturing of the container. The UN marking is valid within the whole warranty shelf life of the container.

Дата выдачи: 28 мая 2014 г.

Date of issue: 28 May 2014.

Заместитель генерального директора  
Deputy Director

Ю.М. Иванов  
Y.M. Ivanov

Россия, 190115, г. Санкт-Петербург, ул. Канонерская, д. 6  
Kanalnaya Street, Saint Petersburg, 190115, Russia

### Transport of Dangerous Goods in Soft C for Bulk Cargo

The main stage of work of experts in the Sub-Committees of the UN Economic Commission for Europe (UNECE) was carried out under the guidance and direct participation of experts of the Inter Goods and Containers Association (IGCA) that has the consultative status in of the UNCESOC. Mr. E.A. AKHUNDOV, doctor of technical science, Techno "New Technologies in Transportation" (NTT), describes some results of that work.

As a result of work carried out on transport of dangerous goods under the Sub-Committee of the UNCESOC, a new type of container that is a soft container for bulk cargo was included in the Model Regulations of the UN Recommendations-2011 on the Transport of dangerous Goods. Its definition and scope of application was specified. Requirements were established for the structure of the BK 3 container, for its manufacture and quality control. Requirements were also developed for testing the BK 3 containers, for registering tests and their marking. A list of dangerous goods was also compiled, which are allowed for the transport in BK 3 soft container, and certain operational requirements were elaborated for its transportation.

The International Maritime Organization included the BK 3 soft containers in the IMDG Code in 2013 and developed special requirements for their carriage by sea. The profile Sub-Committees of the UNECE developed special requirements for road, railway and inland waterway transportation. So, the Working Party on the Transport of dangerous Goods of the Inland Transport Committee (ITC) of the UNECE included the BK 3 containers in ADR from 2017. The joint meeting of experts on the Rules annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway of the Safety Committee of ADN included the BK 3 containers in the ADN from 2017. The RID Committee of Experts' standing working group of the Inter-Governmental Organisation for

International Carriage by Rail the BK 3 containers for rail inclusion concerning the Inter Dangerous Goods by Rail II

Below is the table showing promotion of the BK 3 soft cargo to the International rail of dangerous goods.

Therefore, a new type of bulk cargo has been international practice, which reusable container that corr of BK 3 container.

CJSC "New Technology (NTT) has long-term expert and operation of soft high-alpha type MK-14-10 that carries BK 3 container. Using such applying combined transport nificant increase in effective bulk cargo, therefore increase competitiveness of inter freight traffic.

MBAM - Federal Institute for Materials Research and Testing - D-12205 Berlin

JSC "New Technology in Transportation"  
Emil Akhundov  
12, bld.4, Maly Gnezdnikovskiy per.,  
125009 Moscow  
Russia

FBC UN-Tests – Top-Lift Tests

Our Visit and Observation of FBC-Top-Lift Test

Dear Mr. Akhundov, dear Mr. Ognev,

Enclosed you will find our observation report of the Top-Lift Test at Krylov State Research Center.

You will receive the invoice by different letter.

If you have any further questions please do not hesitate to contact us.

Best regards  
By order

Dipl.-Ing. (FH) J. Werner  
Technischer Regierungsamtman

Safety and reliability in chemical and materials technologies



Soft containers for the carriage of bulk dangerous goods





## 1. Environmental and Ecological Compliance

- ✓ **Sustainability:** Supports producers of sulphur and ports in meeting environmental mandates by minimizing dust, reducing plastic waste, and implementing eco-friendly practices
- ✓ **Impact:** Enhances the reputation of sulphur producers and ports and ensures compliance with international environmental standards

## 2. Capital Savings on Warehousing

- ✓ **Cost Efficiency:** Reduces the need for extensive warehousing by optimizing storage and handling processes, and reducing amount of labor involved in these operations
- ✓ **Benefit:** Increases operating margins and frees up investment capital, allowing resources to be allocated to other critical areas

## 3. Optimized Utilization of Assets

- ✓ **Efficiency Gains:** Maximizes the use of handling equipment, such as cranes, jetties, and railways, ensuring they are fully utilized
- ✓ **Benefit:** Increases operational efficiency, reduces downtime, and extends the life of port assets, vessels and railcars



## 4. Faster Vessel Loading and Unloading

- ✓ **Efficiency Advantage:** FBC is advanced loading solution that reduce vessel loading time significantly compared to traditional methods
- ✓ **Impact:** Minimizes vessel idle time, leading to faster turnaround and increased port capacity

## 5. Flexibility in Maritime Transport

- ✓ **Options:** Enables transportation in general cargo vessels, not just bulk vessels
- ✓ **Impact:** Offers greater flexibility in finding vessels, with simple and quick loading/unloading, reducing demurrage costs

## 6. Savings on Depreciation and Zero Product Waste

- ✓ **Cost Efficiency:** Optimizes storage and handling, reducing material waste
- ✓ **Benefit:** Frees up working capital and improves inventory management

## 7. Maintaining Product Quality

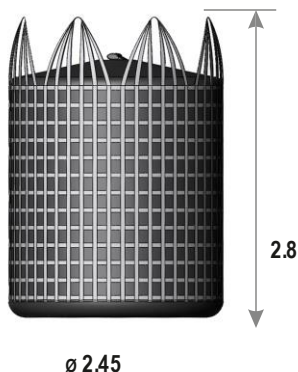
- ✓ **Options:** No need to wet sulfur, thanks to the opacity and waterproof nature of the FBCs
- ✓ **Benefit:** Saves on transport costs, reduces weight mismatches, eliminates unnecessary extra weight, and minimizes cleaning needs—boosting overall logistics efficiency





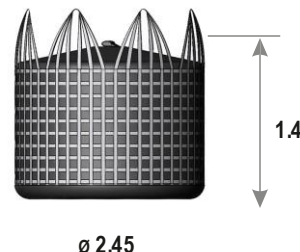
Industrial and chemical  
bulk materials, grains, sugar

**FBC-14-10**



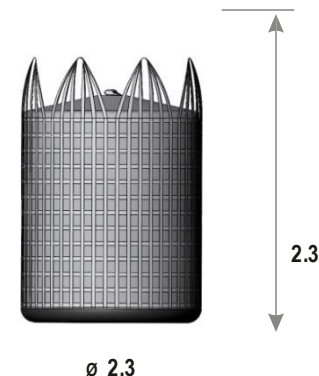
Industrial and chemical  
materials with high density

**FBC-14-10Y**



TEU version

**FBC-14-10TEU**










Design	Reusable Multipurpose Flexible Container for Bulk Materials and Aggregates		
Cargo load	14 metric tons		
Safety factor	8:1		
Weight per unit	75 kg	55 kg	60 kg
Loading capacity	13 m <sup>3</sup>	6.5 m <sup>3</sup>	9.5 m <sup>3</sup>
Inner liner	Rubberized PES	Rubberized PES	Rubberized PES
Water resistant	Yes	Yes	Yes
Dangerous goods	UN certified	UN certified	UN certified
Stackable (levels)	Up to 4 rows	Up to 4 rows	Up to 4 rows

# FBCs Provide Distinctive Excellence in Handling of Hazardous and Hydrophobic Bulk Materials

Flexible Container for  
Bulk Commodities

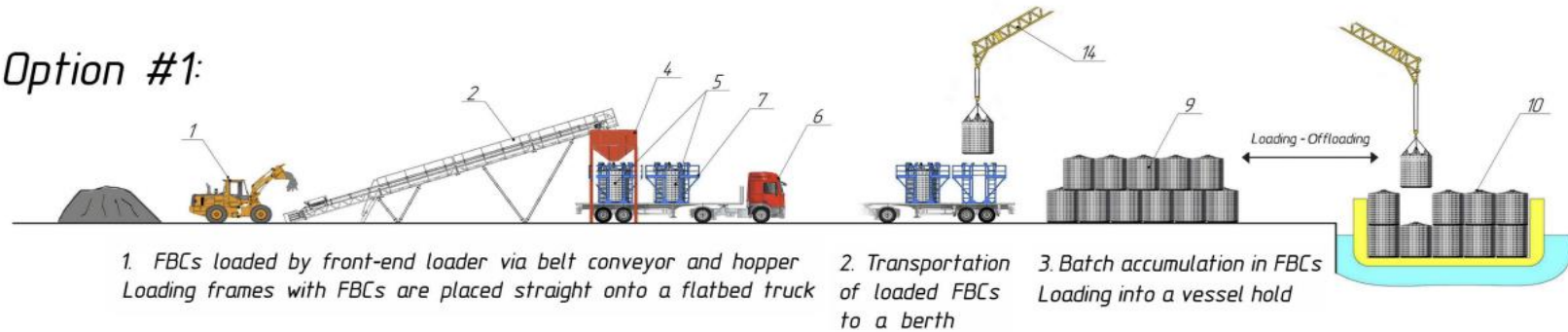


Loading cargo into FBC		up to 3 000 tons/working shift*
Unloading cargo from FBC		up to 6 000 tons/working shift
Loading/unloading 1xFBC on a railcar/auto platform (2xFBCs or ~27 tons per a truck trailer)		3-5 minutes
Transshipment of cargo to specialized transport (e.g. cement truck)		7-15 minutes
Loading FBC onto the vessel		up to 5 000 tons/working shift
Unloading bulk cargo from the vessel into the FBC		up to 3 000 tons/working shift
Loading and unloading 1 railcar with filled FBC (5xFBCs or 68 tons per railcar)		15-20 minutes

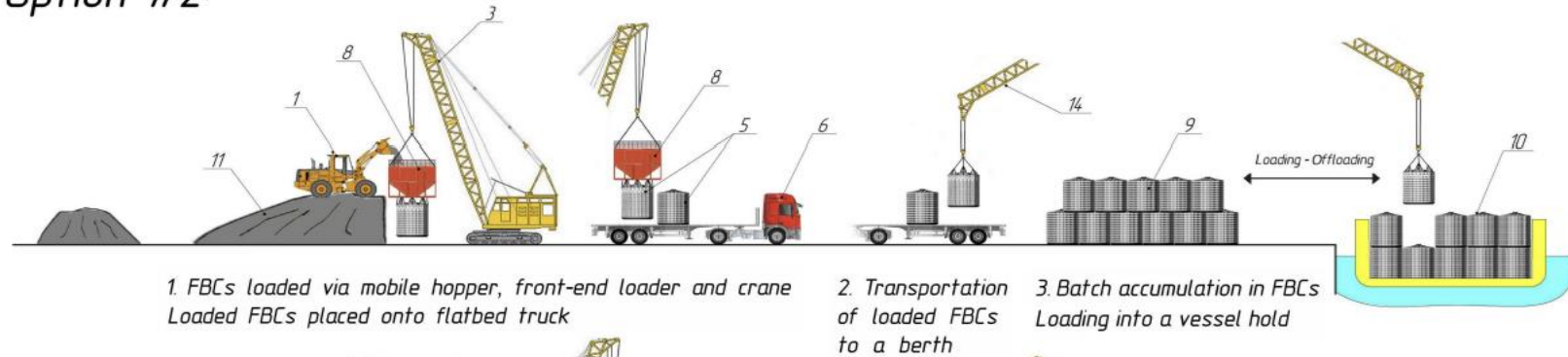
*\*These operational metrics are derived from real-time client cases, wherein flexible bulk containers sometimes operated under 8-11-hour working shifts as per clients' requests with 2 loading stations*



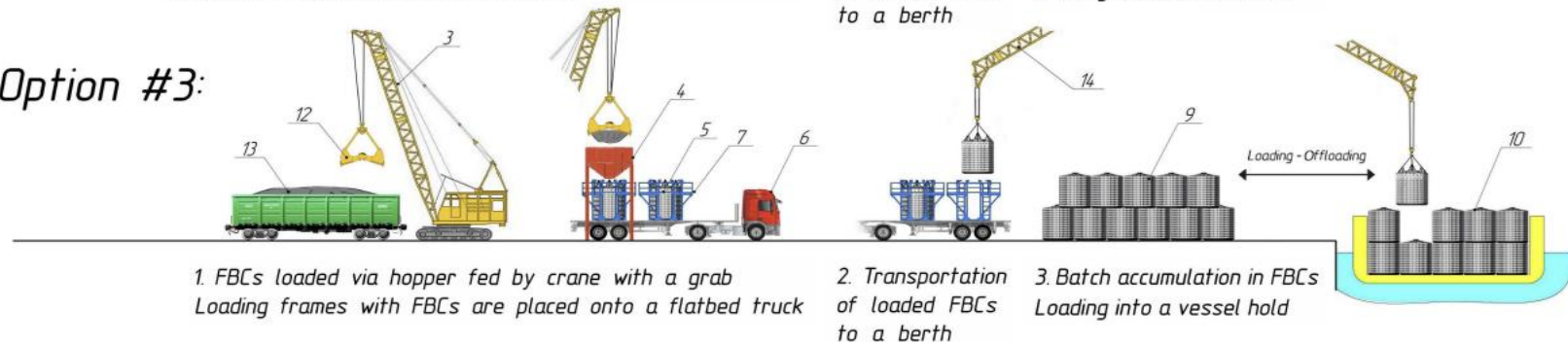
## Option #1:

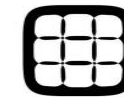


## Option #2:



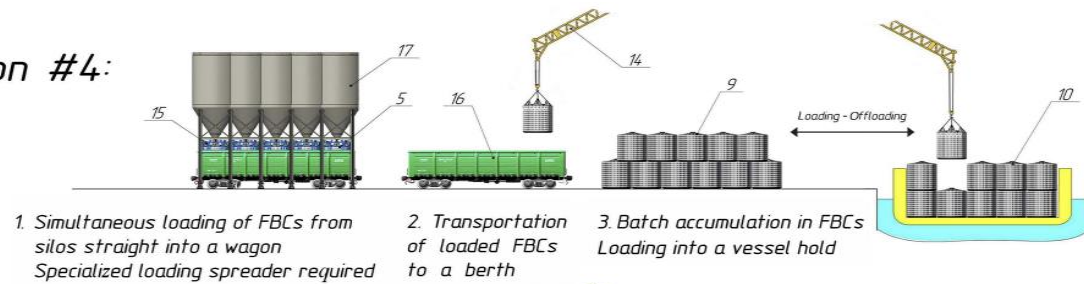
## Option #3:



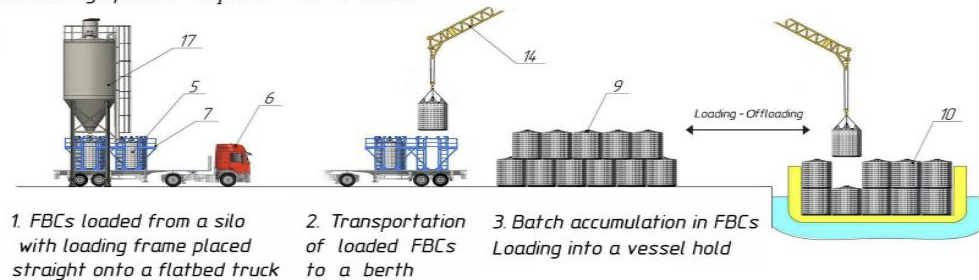


**FBC**  
Flexible Bulk Container

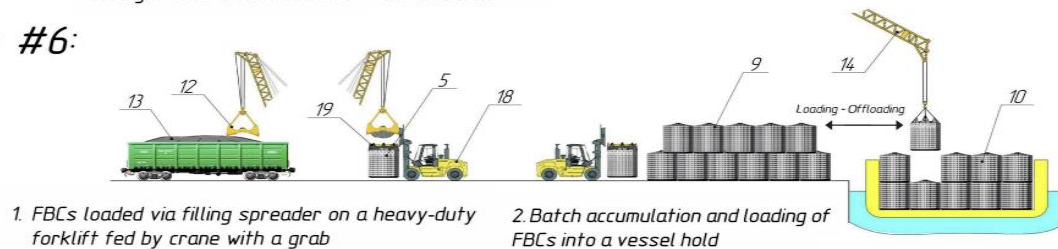
## Option #4:



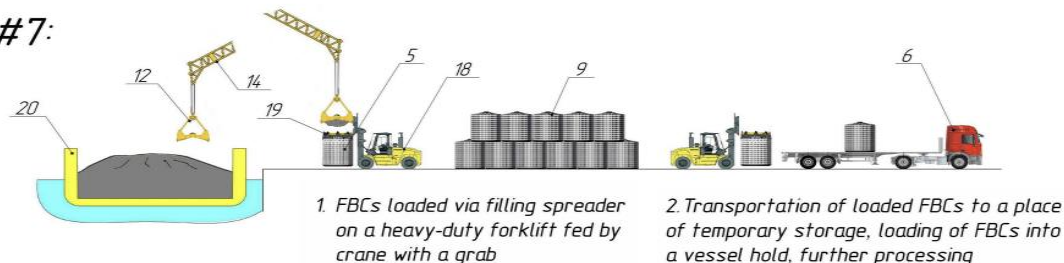
## Option #5:



## Option #6:



## Option #7:



1. Front-end loader
2. Belt conveyor
3. Crane 32 tons lifting capacity
4. Loading hopper 20m3 capacity bic meters.
5. FBC
6. Flatbed truck
7. Loading frame
8. Mobile hopper with spreader
9. Stack of FBCs
10. Vessel hold
11. Front-end loader ramp
12. Crane grab
13. Wagon with cargo
14. Portal crane
15. Specialized loading spreader
16. Wagon for transportation of FBCs
17. Silos
18. Heavy-duty forklift or reach stacker
19. Loading spreader
20. Bulk / break bulk vessel



## **Annex: 25 Years of Successful and Efficient Bulk Commodity Handling**



# We Provide Our Clients with the Opportunity to Transport, Store and Handle a Diverse Range of Goods

Flexible Container for  
Bulk Commodities



## Raw materials



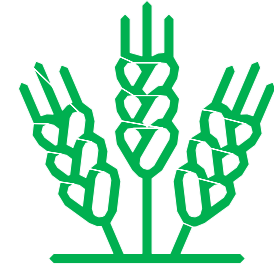
- ✓ Potash;
- ✓ Phosphate fertilizers;
- ✓ Apatite;
- ✓ Metal ores and concentrates;
- ✓ Quartz sand, limestone, etc.

## Industrial cargo



- ✓ Cement
- ✓ Sulfur;
- ✓ Urea / AN;
- ✓ Sodium carbonate and bicarbonate;
- ✓ Plastic granules;
- ✓ Industrial salts;
- ✓ Complex fertilizers;
- ✓ Aluminum oxide.

## Agricultural products



- ✓ Grains;
- ✓ Raw sugar;
- ✓ Biofuel (pellets, briquettes);
- ✓ Feed additives;
- ✓ Flour, starch;
- ✓ Gravel, peat;
- ✓ Charcoal.

# We Solve Complex Logistic Problems and Provide an Opportunity to Reach New Markets

Flexible Container for  
Bulk Commodities



**Cargo:** Sulphur

**Origin:** Turkmenistan (Caspian Sea; Persian gulf)

**Destination:** Black Sea and East Africa

**Our solution:** Sulphur is a problematic material for ports and logistics companies. We provide effective environmental solutions to deliver sulphur from Turkmenistan in FBCs, unlocking new trade routes previously unavailable.



**Cargo:** Potash

**Origin:** Belorussia

**Destination:** LatAm / Africa

**Our solution:** FBCs are used as an intermediate solution to deliver potash from a plant and unload it into a bulk vessel destined for global markets, and as a temporary storage solution close to the end users of this fertilizer in Africa.



**Cargo:** Cement

**Origin:** Belgium / Indonesia / CIS

**Destination:** Scotland / Taiwan / CIS

**Our solution:** FBCs are used either as an intermediate solution to deliver cement from a cement plant and unload it into a bulk vessel, or as a turnkey A-to-Z solution to deliver material to the end market.



**Cargo:** Urea / Ammonium Nitrate

**Origin:** Russia / Azerbaijan / Central Asia

**Destination:** Global markets

**Our solution:** FBCs are used as an intermediate solution to deliver urea from a plant to a port, accumulate consignments, and unload them into a bulk vessel destined for global markets.



**Cargo:** Raw Sugar

**Origin:** Brazil / Dominicana

**Destination:** Uzbekistan / Caribbean

**Our solution:** FBCs are used either as an intermediate solution to deliver sugar from a plant and unload it into a bulk vessel, or as a turnkey A-to-Z solution to deliver material to the end market in containers (TEU version of FBCs).



**Cargo:** Calcium Carbonate

**Origin:** Jordan

**Destination:** Israel / Gulf States

**Our solution:** FBCs are used either as a turnkey A-to-Z solution to deliver calcium carbonate from Jordan to the end market, addressing the lack of storage capacities and the deficit caused by the recent embargo from Turkey.

# We Address Unique Challenges of Our Clients and Helped Some of Them to Reduce Costs by up to 50%

Flexible Container for  
Bulk Commodities



**Client:** Belarusian Potash Company

**Our solution:** Transportation of potash fertilizers in 14-ton FBCs by railroad. A new logistics framework was developed due to limitations of the previous one. The FBCs with potash are shipped to a port and then potash is unloaded into ships. Client chose us because FBC total cost of ownership proved to be 50% less than jumbo bags.



**Client:** SIKA/BASF (end users are offshore oil projects)

**Our solution:** We have been assisting SIKA/BASF in the transportation of a specialized cement concentrate (MBS) using FBCs, carefully preserving this expensive formula. Our service contract encompasses on-shore loading of cement at client's premises, followed by the safe transportation of MBS in our FBCs and the precise unloading of cement at offshore oil projects.



**Client:** RUSAL

**Our solution:** We are grateful to RUSAL for entrusting us with the transportation of alumina for the past 20 years. This trust has allowed us to deliver a reliable and efficient service tailored to meet RUSAL's specific needs. RUSAL has recognized the reliability of our FBCs and made them part of the company's ESG framework.



**Client:** Polymetal

**Our solution:** Polymetal has adopted our FBC for the transportation of flotation concentrate. Our solution involves multimodal transportation, with different modes utilized during winter and summer. Importantly, our loading, accumulation, and unloading methods remain consistent throughout the year.



**Client:** CemRoss (former EuroCement group)

**Our solution:** We addressed the client's need for river vessel transportation by developing special moisture-protected FBCs.

Our solution helped the client to enter into four new regions, and also optimized its cost structure. This optimization allowed the client to adjust cement prices, resulting in increased sales volume. As a result, the client has achieved a significant increase sales volume.



**Client:** STG (international conglomerate)

**Our solution:** We have delivered a turn-key solution for the transportation of mineral fertilizers to this client. This project posed unique challenges, including the complete absence of infrastructure at both the desert mining site and the shipping port. To overcome these challenges, we designed a logistics chain centered around the use of FBCs and successfully implemented it.



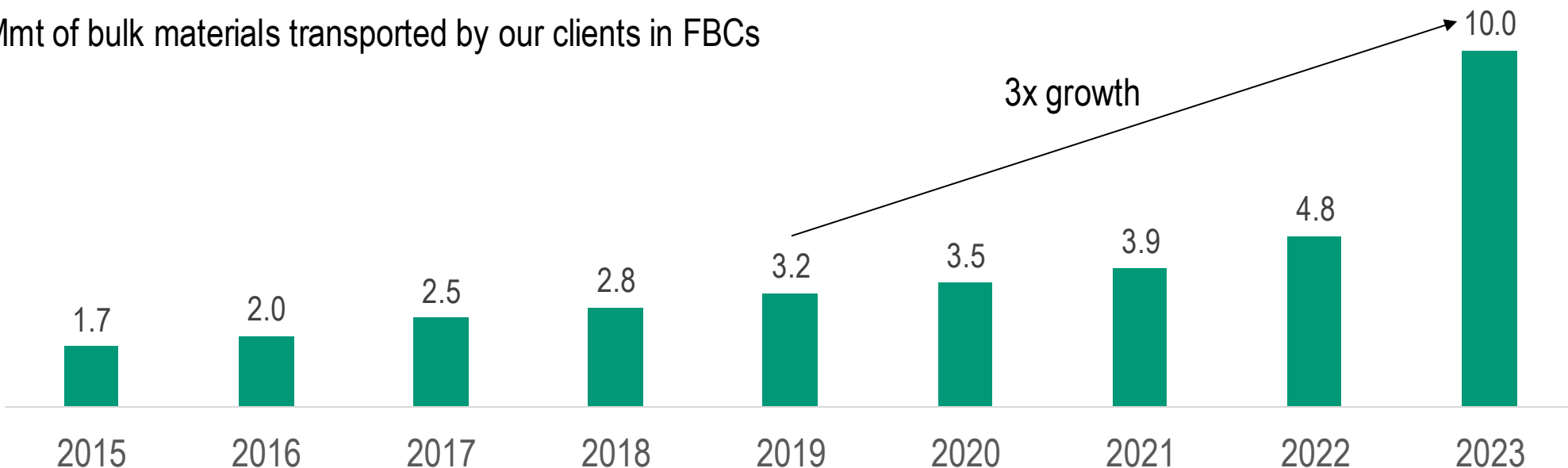
## Our Clients Have tripled Their Demand for Our Product in the Past Five Years

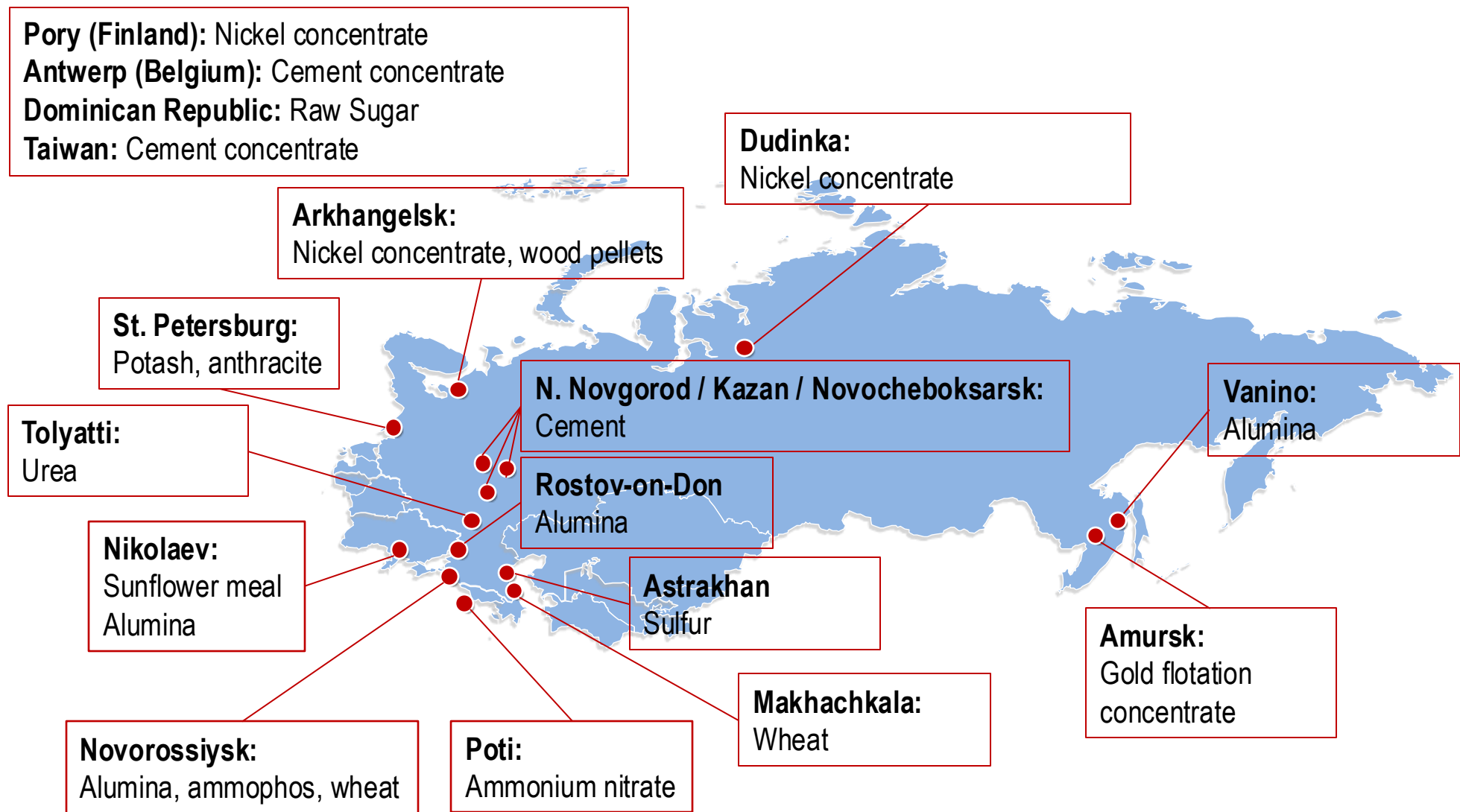
Flexible Container for  
Bulk Commodities



- ✓ Our clients are from the EU, the MENA region and the CIS, they are bulk materials producers, traders of bulk materials, and logistics companies who benefit from a substantial reduction in transport, handling, and storage costs.
- ✓ Over the last 5 years, our flexible, reusable containers for bulk goods have facilitated the transport of over 30 million tons of cargo across various transportation modes and countries.

Mmt of bulk materials transported by our clients in FBCs





# FBC: A Versatile Multimodal Logistics Solution for a Client and a Port

Flexible Container for  
Bulk Commodities



- ✓ Our clients overcome bottlenecks in the logistics chain by enabling the transportation of their goods shipped within FBC on various platforms, including flat auto- and rail platforms, river and sea vessels adhering to the principles of logistical multi modality

**Storing in a port**



**Unloading into a dry bulk vessel**



**Transporting as a general cargo**



**Transporting by trucks...**



**...and by railroad**



**Handling of bulk commodities**







**JSC “NT Trans” / “Innovations in Logistics” LLC (Georgia) / Technologies for Logistics (PTY) LTD**

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