



# Tank containers in chemical industry

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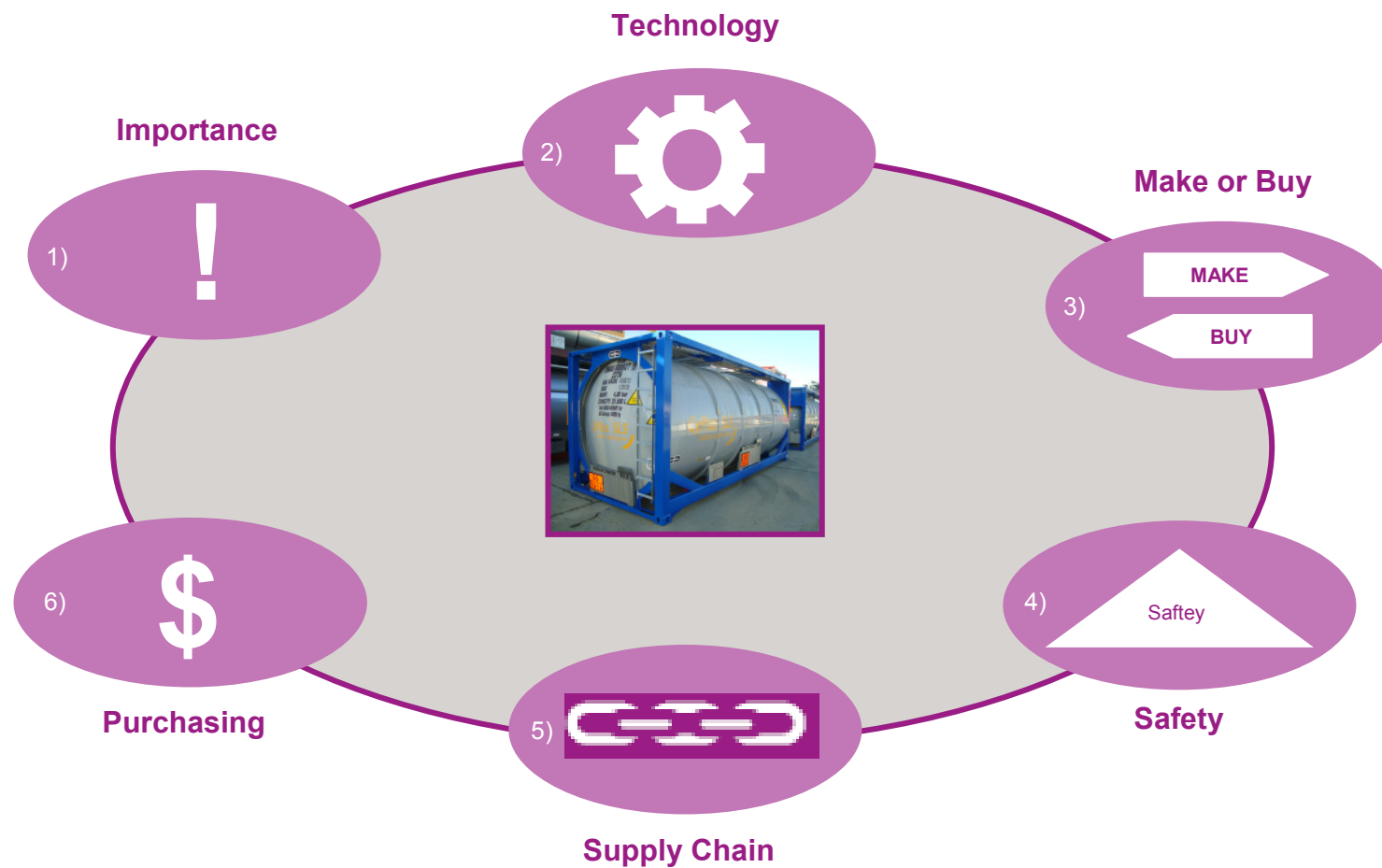
# Only a short introduction ...



- One of the global leaders in specialty chemicals
  - Investments in the energy and real estate sectors
  - Ownership structure: RAG-Stiftung (74.99%) and CVC Capital Partners (25.01%)
  - Production sites in 24 countries, active in over 100 countries
  - Balanced spectrum of business activities and end-markets
  - Market-oriented research and development
- 
- Evonik Services GmbH:  
Head of Procurement Logistics Water & Air
  - Coverage the mode of transport:
    - Overseas container (FCL, LCL, TC\*)
    - Barge, Parcel, Tank storage
    - Airfreight, Courier / Express / Parcel

\* TC = Tankcontainer

# Elements of tank container management



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# Importance



Packaging / shipment size

e.g. 30l



e.g. 200l



e.g. 200l



e.g. 1.000l



Tankcontainer for DG



Flexitank for non-DG



DG = Dangerous Goods

## Importance of tank containers

- Equipment for liquid chemicals or liquified gas chemicals
- Realization of intermodal solutions for sea, road, rail and waterway transports → sustainability
- Equipment which allows the transport of higher volumes without an additional outer packaging (= bulk)
- Optimization of packaging, handling and transportation costs
- Utilization as storage capacity
- Flexibility

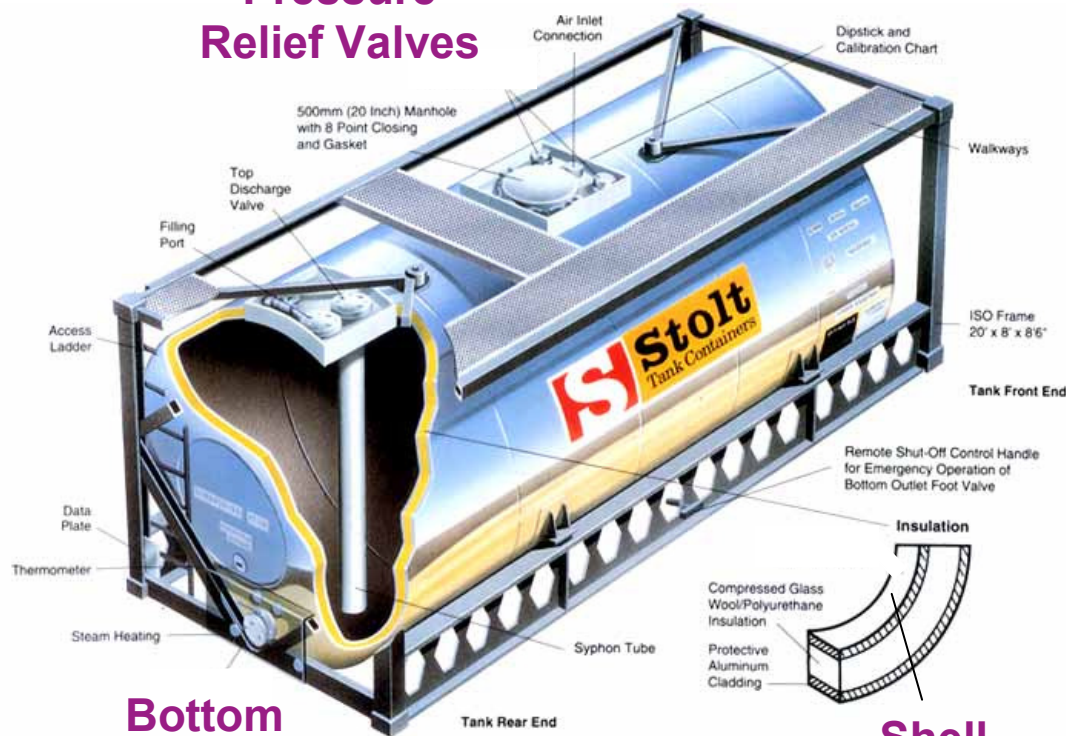




# Technology



## Pressure Relief Valves



## Bottom outlet

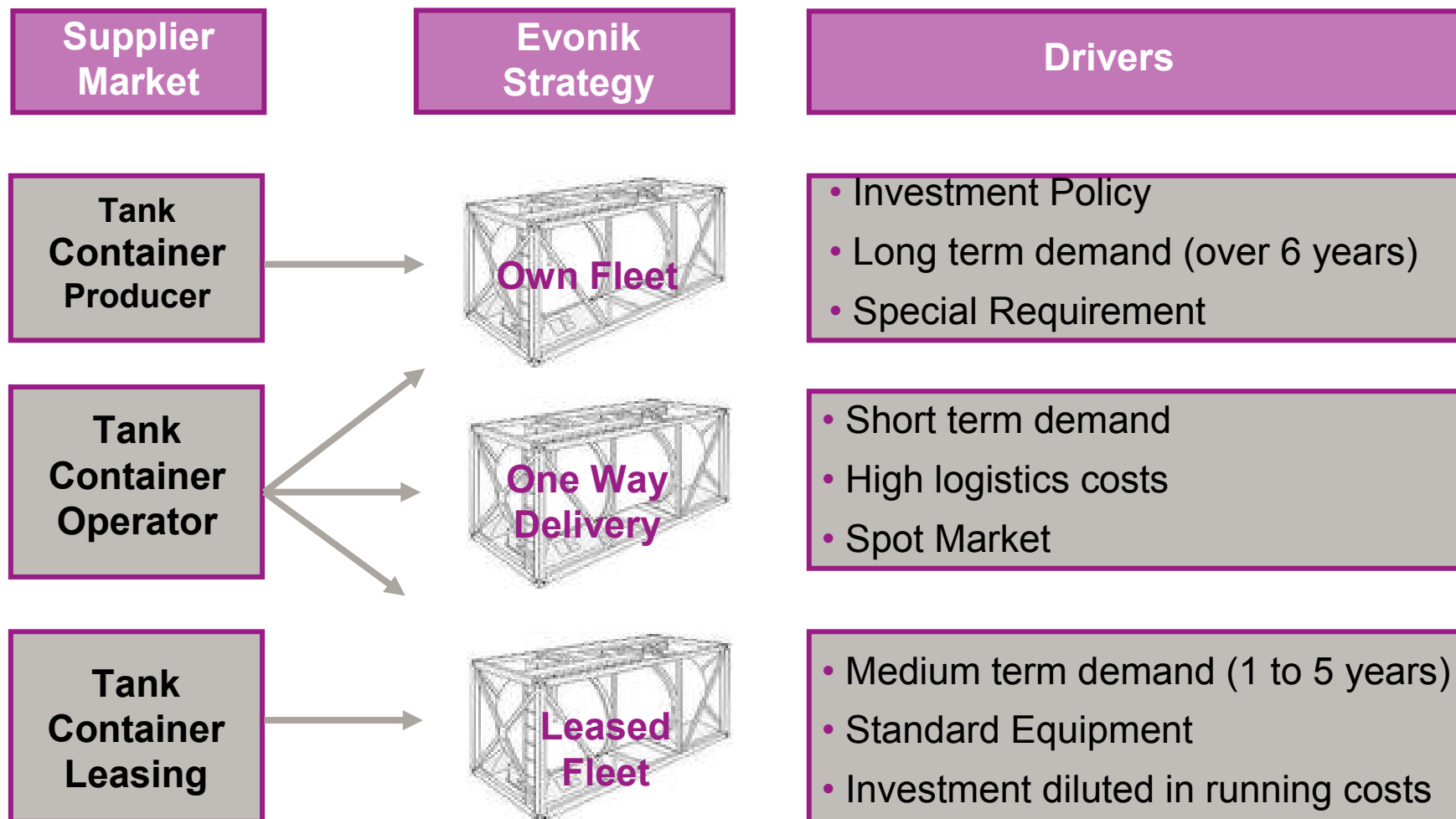
## Shell thickness

## Importance of technology

- The technical configuration of a tank container decides about:
  - transportation safety
  - product quality
  - handling options
- IMO safety requirements:
  - Minimum test pressure
  - Minimum shell thickness
  - Rules towards pressure relief
  - Rules towards bottom opening
- Quality and handling requirements:
  - Insulation / Heating
  - Temperature control systems
  - Material (stainless steel or lined)
  - Internal cleaning systems



# Make or Buy





# Safety



## Registration

- Tank container registration (e.g. DWAO)
- Initial inspection certificate
- CSC safety approval plate

## Equipment

- Regular equipment inspections
- Each 2,5 years: leak test and functional check
- Each 5,0 years: hydraulic pressure test

## TC- Operator / shipper

- Security, Safety, Health, Environment & Quality management systems:
  - e.g. SQAS, ISO-certifications, CDI-certifications

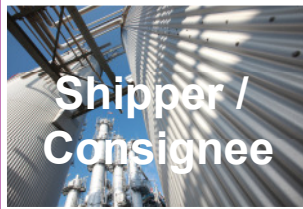
CDI = Chemical Distribution Institute, SQAS = Safety and Quality Assessment System

## Shipping lines / ports

- Mixed load-prohibitions / volume restrictions
- Initiatives like:
  - SPSN (Sustainable Ports and Shipping Network)
  - CINSNET (Cargo Incident Notification System)



# Supply Chain



Shipper /  
Consignee



TC-  
Operator



Depot



Ports /  
Ocean  
Carrier

- Technical requirements
- Quality requirements (e.g. pre-loading lists)
- Demand information / lot sizes
- Tankcontainer as flexible storage alternative
- Equipment philosophy (e.g. size, fittings)
- Global imbalance in TC moves → empty positioning
- Global service providers vs niche providers
- Reporting system for supply chain deviations
- Increasing TC demand needs an adjustment of the depot infrastructure
- Need of multifunctional depot's: storage, cleaning, maintenance / repairing
- Inconsistent attitude of ocean carriers towards tank containers because of:  
heavy weight, dangerous goods share, shippers / operators owned equipment



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# Purchasing



- “Make” Option 1: Buy:  
Request for quote from tank container producers
- “Make” Option 2: Rent:  
Request for quote from tank container rental companies
- RFQ basics:  
Technical requirements / Definition of rental period
- Operated / Shipper’s owned tank container:  
Realization of global tender approaches

# Thank you for your attention !



Lo que a los alemanes nos gusta llevarnos de souvenir: aceite de oliva, jerez, tres puntos.

Ya se trate de fútbol o de química especial, la creatividad hace la diferencia. Mientras que al Borussia Dortmund se abra camino a la portería con ideas sorprendentes, nosotros buscamos soluciones innovadoras para nuestros clientes. Damos respuestas a las Megatendencias Salud, Alimentación, Eficiencia de recursos y Globalización. Somos el grupo industrial creativo de Alemania y uno de los líderes mundiales en química especial. Y apoyamos al Borussia Dortmund.



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