



We create chemistry

Excellence in operations ***Smart Supply Chains***

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Ludwigshafen site efficiency depends on reliable inter- and intra-logistics



Road:
2,100 trucks daily 
32% of transport volume

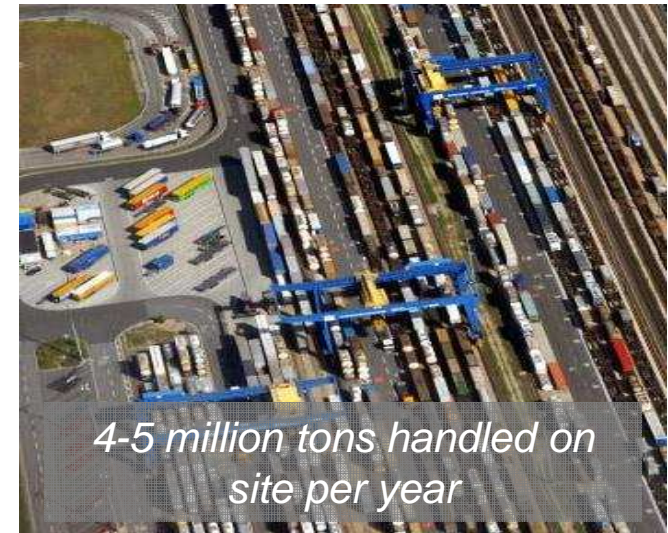
Pipelines:	2,850 km
Roads:	106 km
Rail tracks:	230 km



Rail:
400 rail cars daily 
26% of transport volume



Inner waterways:
20 ships daily 
42% of transport volume



By combining elements of excellence we are able to develop new supply chain solutions

Operational Excellence

Operational Excellence improves our plant availability and efficiency



Site Logistic Operations

Dynamic site logistics allow to be more agile in delivering our products



Digitalization

Digitalization enhances our technology footprint



New supply chain solutions

- I. BASF Class Tank Container
- II. Tank container storage yard
- III. Automated Guided Vehicles



The current intra-site rail bulk process is rather cumbersome



- Every day railcars need to be stringed into 40 trains, delivering railcars to 160 loading stations
- Train building process at the hump is very time consuming and complex
- High amount of shunting activities lengthens the process further

Three distinct measures increase the process efficiency

I. We innovate: BASF Class Tank Container – a new container type



Classical rail tank car
70,000 liter volume
64 tons payload



BASF Class Tank Container
up to 73,000 liter volume
66 tons payload



Standard tank container
25,000-36,000 liter volume
25 tons payload

Three distinct measures increase the process efficiency

II. We build: Fully automated BASF tank container storage yard



Storage capacity of 2,000 twenty-foot equivalent units with a maximum stacking height of 6 containers



Accessibility via two cranes spanning across 3 railroad tracks and 8 loading bays



Compliance with highest safety standards allows the storage of a wide range of chemicals

Three distinct measures increase the process efficiency

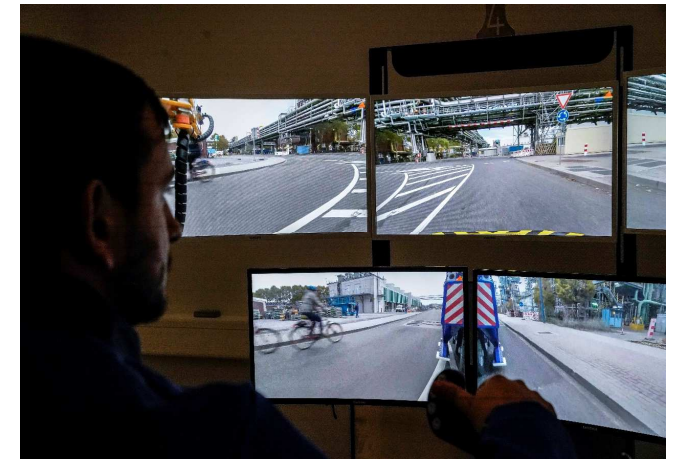
III. We develop: New Automated Guided Vehicle (AGV) transport system



AGV at a gross weight of 110 tons with a payload of 78 tons distributed across 32 wheels



Intermodal switch between regular rail carrier and AGV ensures fast deployment on site



Tele-operated control stands allow monitoring and vehicle operation even if transponder lane is blocked

The revamped process results in a higher service level at reduced cost



~ 1 hour

- Fully automated yard as de-coupling point between external and internal transport
- Fast and flexible onsite transport with Automated Guided Vehicles
- Noise and payload optimized rail wagons for external transport
- BASF Class Tank Container a new Segment in intermodal transport



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