



LIBERTY OSTRAVA A.S.

TRUSTED USER OF AIR, LAND AND WATER

Ostrava, 20/6/2022

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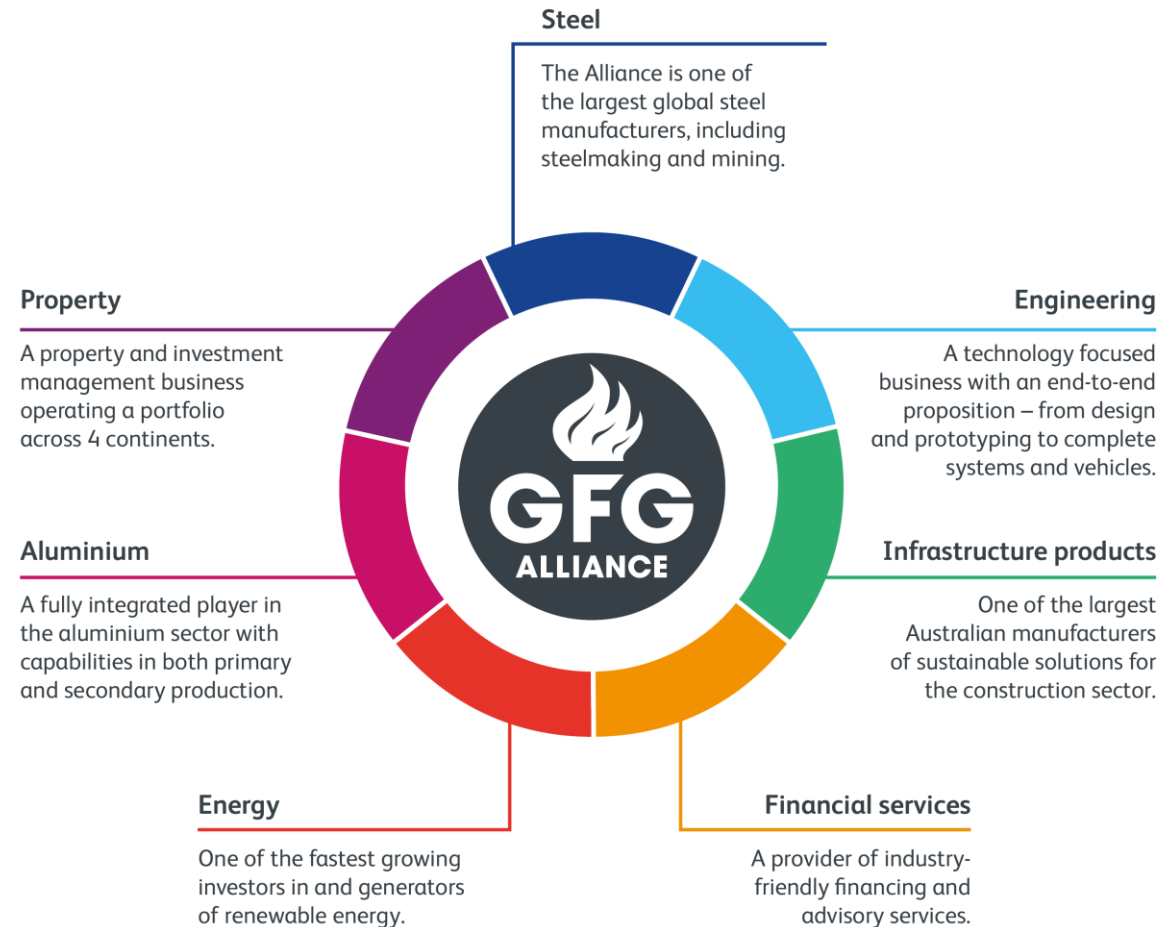
MEMBER OF



A member of the GFG Alliance



- **GFG Alliance:** A global grouping of independent businesses with a focus on natural resources, renewable energy, metal manufacture and engineering. Supported by financial, property and educational resources.
- **Vision:** an economically and environmentally sustainable future for industry as a foundation for a stronger and more prosperous society.
- **Synergy:** seven pillars working together to deliver competitive and resilient business model



About Liberty Steel



- Liberty is an integrated **steel and mining business**, with capabilities ranging from liquid steel making from raw and recycled materials through to high-value precision engineered products and associated services, sold around the world.
- Operating across **30+ countries** internationally
- Part of GFG Alliance with global turnover of **US\$20bn**
- Total steel rolling capacity of **18m tonnes**
- Customers range from the steel making processing and distribution industries to automotive, aerospace, construction, oil and gas, marine, power generation, general engineering, motorsport, white and yellow goods, agriculture and mining.



Key facts and figures



Only

manufacturer of
steel long
products
in **Australia**

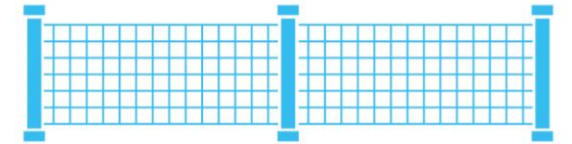


#4 largest

steel manufacturer in
Europe



#1 steel supplier to
engineering, construction,
residential and non-residential
projects in **Australia**



#1 agricultural **steel fence**
brand in the **USA**

Largest

steel producer
in **Romania**
and the
Czech
Republic



Only

producer of
large diameter
pipe in the **UK**



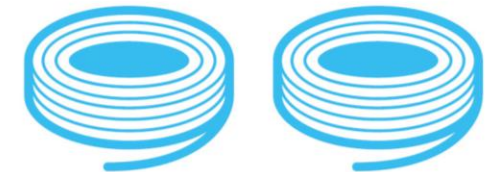
Every 3 seconds

undercarriages manufactured
by the Alliance
land a civil
aircraft
round the
globe

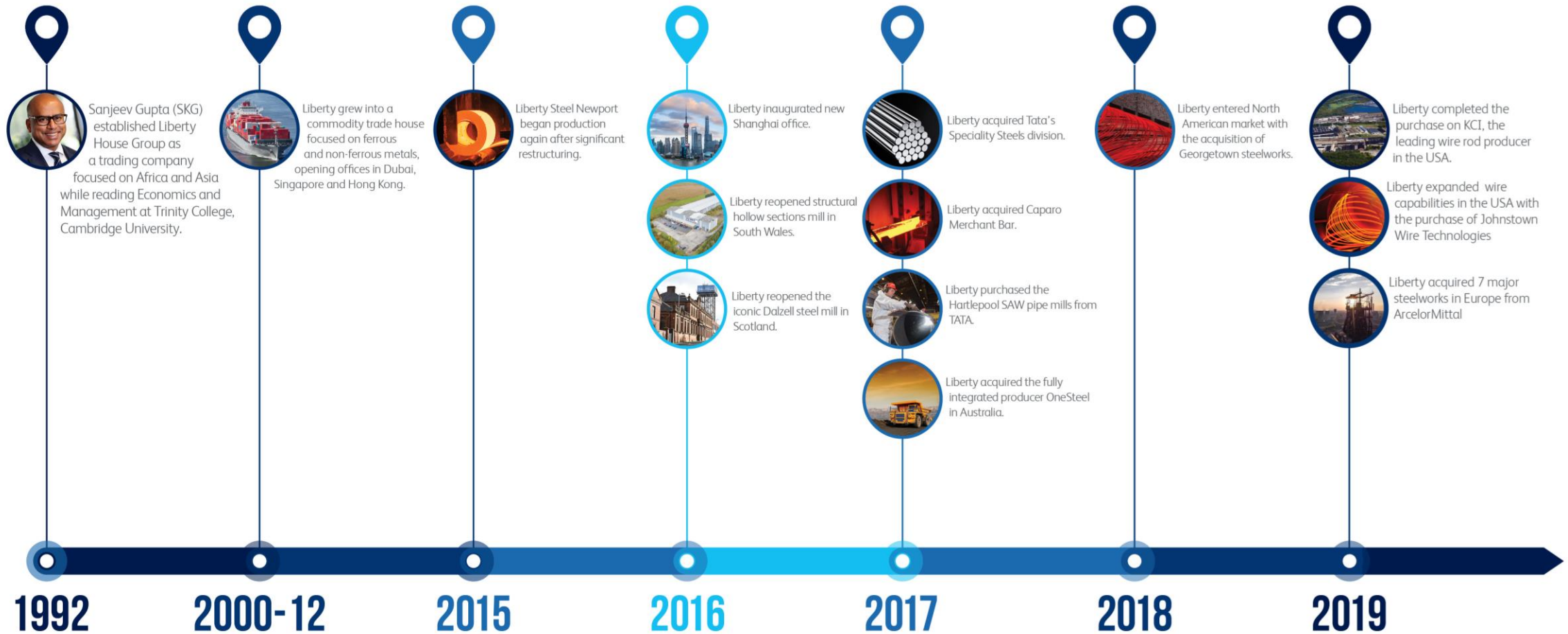


100%

American made producer of **steel**
and **fabricated steel products**



History of Liberty Steel





Liberty Ostrava

Strategic Blueprint



Strategic Priorities

Mission

Through steelmaking be a partner of choice for employees, customers and local communities.

Vision

Make Liberty Ostrava a leading producer of high quality, green steel.

Our principles



These principles are aligned with the global values set by the GFG Alliance:

Family

Sustainability

Change

Become a benchmark in Safety and Environmental performance

No compromise on safety

Key initiatives:

- Improve safety through training
- Increase automation & digitization
- Develop new, innovative products such as road safety systems

Leverage the circular economy around steel

Key initiatives:

- Hybrid steelmaking technology
- Alternative fuel & energy efficiency
- By-product valorization

Be a regional supplier of choice and a strong social partner

Strengthen customer service and quality of products

Key initiatives:

- Strengthen our commercial network
- Proactively develop quality as per future market demand
- Wider product portfolio for construction, industry and transport

Robust partnerships with local and regional communities

Key initiatives:

- Support technical education and collaboration with R&D centres
- GFG Academy
- Support for cultural and social sphere

Agile and flexible business model driving profitability across business cycles

Progressive and flexible producer of competitive and quality products

Key initiatives:

- Innovation in steelmaking
- Rolling mills modernisation
- Cost optimization & flexibility in operation



New strategy for 2030 year



Investment of EUR 750 million by 2030

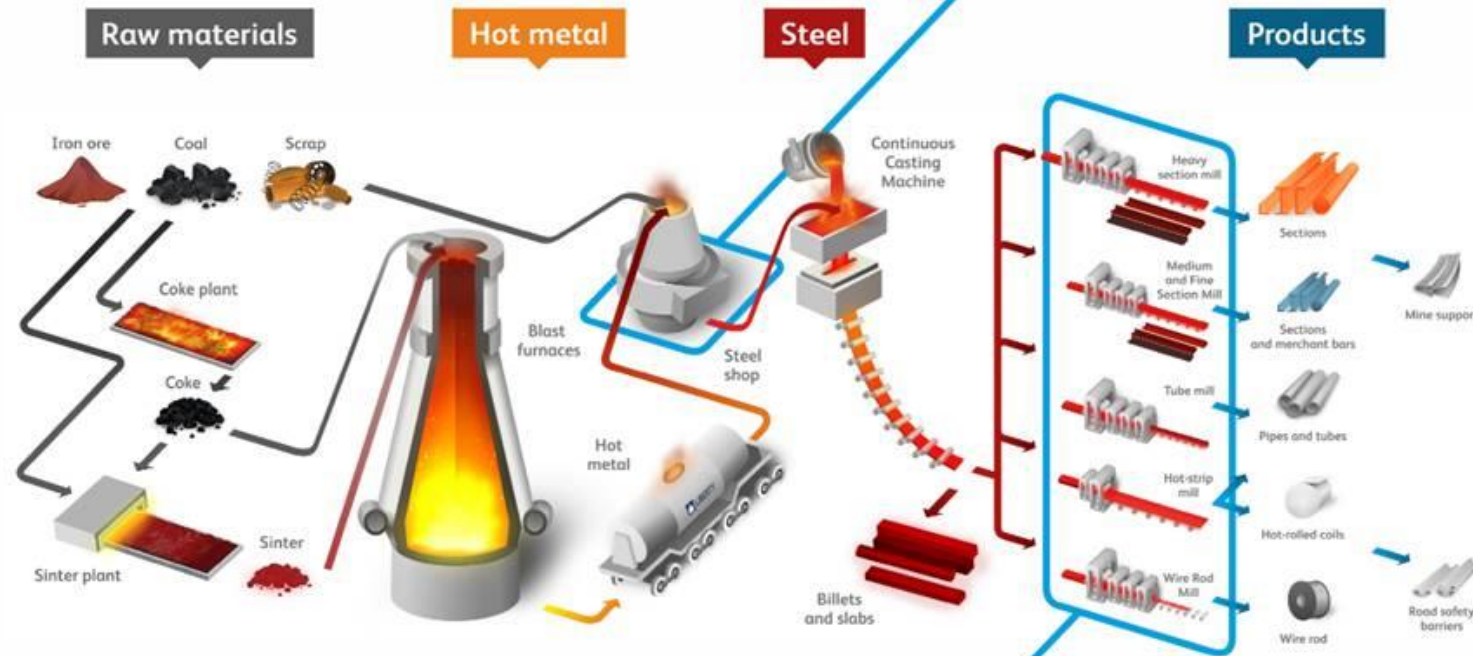
We want to become a leading producer of high quality, green steel.

1. Become a benchmark in Safety and Environmental performance
2. Be a regional supplier of choice and a strong social partner
3. Agile and flexible business model driving profitability across business cycles

New steelmaking technology for Ostrava

We have launched the project of building new hybrid steelmaking technology

- The first in Europe
- Possibility to adjust the raw material mix to market conditions
- Significantly reducing the environmental footprint



Modernisation of rolling mills

- To improve the quality of products and optimize customer service
- To become more competitive on the difficult steel market in open Europe

Through this substantial investment package we are preparing LIBERTY Ostrava to become a regional champion in steel production and kick starting its journey towards carbon neutrality, which GFG aims to achieve by 2030. Our focus is on investing in the latest technology for steel-making and rolling to ensure LIBERTY Ostrava is competitive and sustainable over the long term, so it can reinvest and continue to provide high quality local employment for generations to come.

Sanjeev Gupta, GFG Executive Chairman

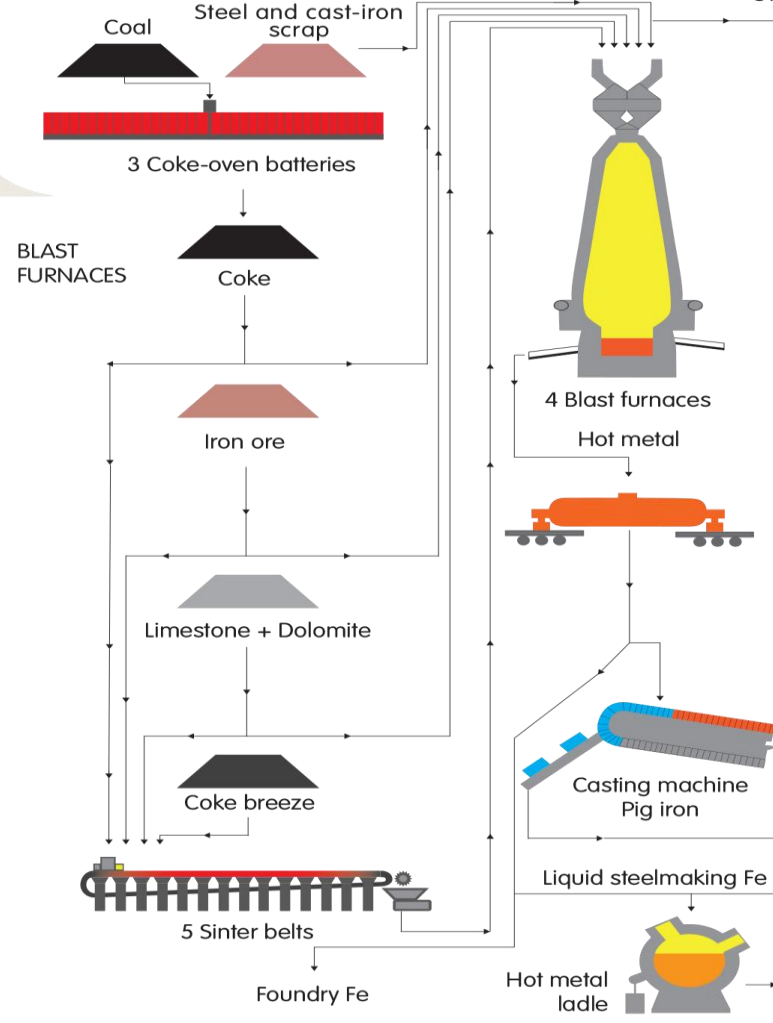
Liberty Ostrava is an integrated steel producer



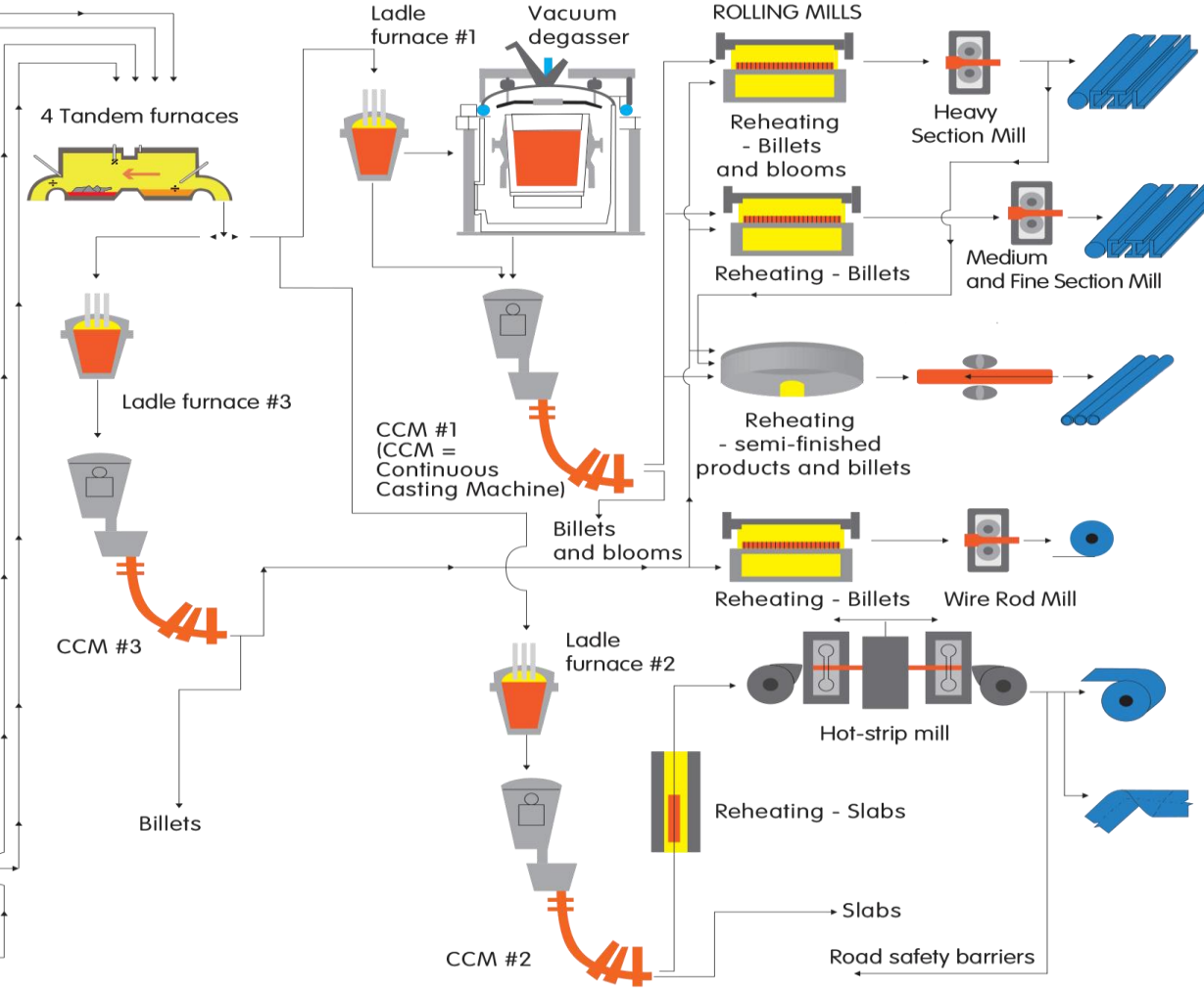
Production Flow of LIBERTY Ostrava



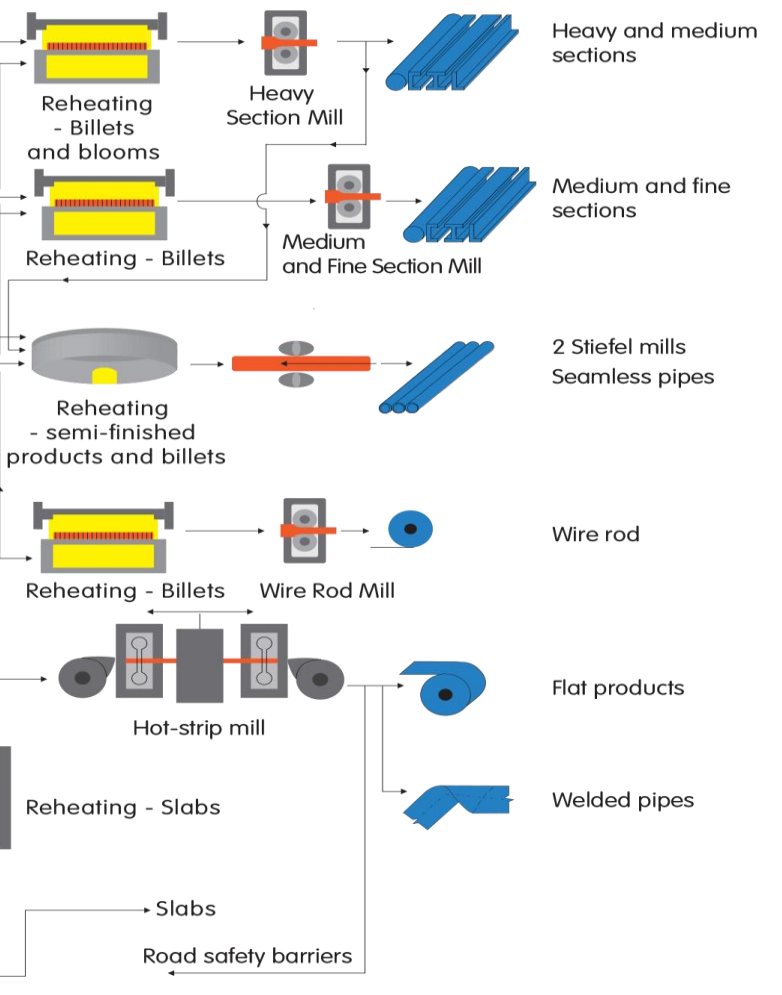
IRON & STEEL PRODUCTION



STEEL PLANT



ROLLING MILLS



Liberty Ostrava - Modern steel producer



The largest steelmaker in Czech Republic

Nearly 80 % of the Czech safety barriers comes from Liberty Ostrava

Annual steel production :

2,4 million tons

Annual capacity of production:

3 million tons

Number of employees: 7 100



GREENSTEEL Strategy



- 1) Implementation of **environmental management systems** including ISO 14001 certification for all production facilities;
- 2) **Compliance** with all relevant environmental laws and regulations, and other company commitments;
- 3) **Continuous improvement** in environmental performance, taking advantage of systematic monitoring and aiming at pollution prevention;
- 4) Development, improvement and application of low impact, **environmental production methods** taking benefit of locally available raw materials;
- 5) Development and manufacture of **environmentally friendly products** focusing on their use and subsequent recycling;
- 6) Efficient use of **natural resources, energy and land**;
- 7) Management and reduction where technically and economically feasible of the **CO₂ footprint** of steel production;
- 8) **Employee commitment** and responsibility in environmental performance;
- 9) **Supplier and contractor awareness** and respect of ArcelorMittal's environmental policy;
- 10) **Open communication** and dialogue with all stakeholders affected by ArcelorMittal's operations.



Modern steel producer



- Our products:
 - Road safety barriers
 - Seamless and welded pipes
 - Sheets
 - Wire rods
 - Mining support
 - Merchant bars
 - Steel profiles
 - Finishing railway wheel sets
 - Steel castings



Responsible environmental protection



Environmental protection



- Environmental protection must be perceived as a whole - called integrated approach.
- In the Czech Republic, the environmental legislation of the European Union and national legislation where apply.
- The main legislation is the Industrial Emissions Directive, the BAT conclusions and the Integrated Prevention Act

- We focus on all areas of the environment, mainly to:
 - Waste management
 - Water management
 - Plant care and green maintenance
 - Air protection

Waste reduction

- Reducing the volume of by-products and waste from production is the goal of our company
- We are looking for ways to reuse waste:
 - Some high-volume wastes and by-products are certified as products
 - We reuse many by-products directly in our production
- Can we reduce waste production?
 - 2000 waste generation: 834 332 tones
 - 2021 waste generation: **176 364 tones**



Technology for millscale deoiling – NTD



(Example of recycling)

During rolling operation was origin oil-contaminated scale and scale sludge (in LO and sub.approximately 10 thou t/year). This metal-bearing material (Fe content is about 70%) used to be processed as a part of sinter plant charge. Due to installation dedusting system at sintering plant (electrostatic precipitators) it was not possible to process this material anymore (fire risk). Limit oil content still enabling to process scale and scale sludge at sintering plant was set as 0.3 mass %. In case the oil content exceeded this limit, this material had to be handled as hazardous waste and it was not possible to reuse like secondary-raw material.

This fact meant substantial financial loss for LO resulting from the fees to be paid for waste disposal (approximately 240 USD/t in 2009) and replacement of the feedstock (approximately 75 USD/t). That is why the decision was taken to build up a technology to utilize oil from scales.

Technology was developed and realized by R&D of AMO, cooperating with company VUCHZ Brno, research was start at 1997, standard operation was start at 1999.



Technology for millscale deoiling – NTD



Main operational data:

Capacity: 20 000 tons/year

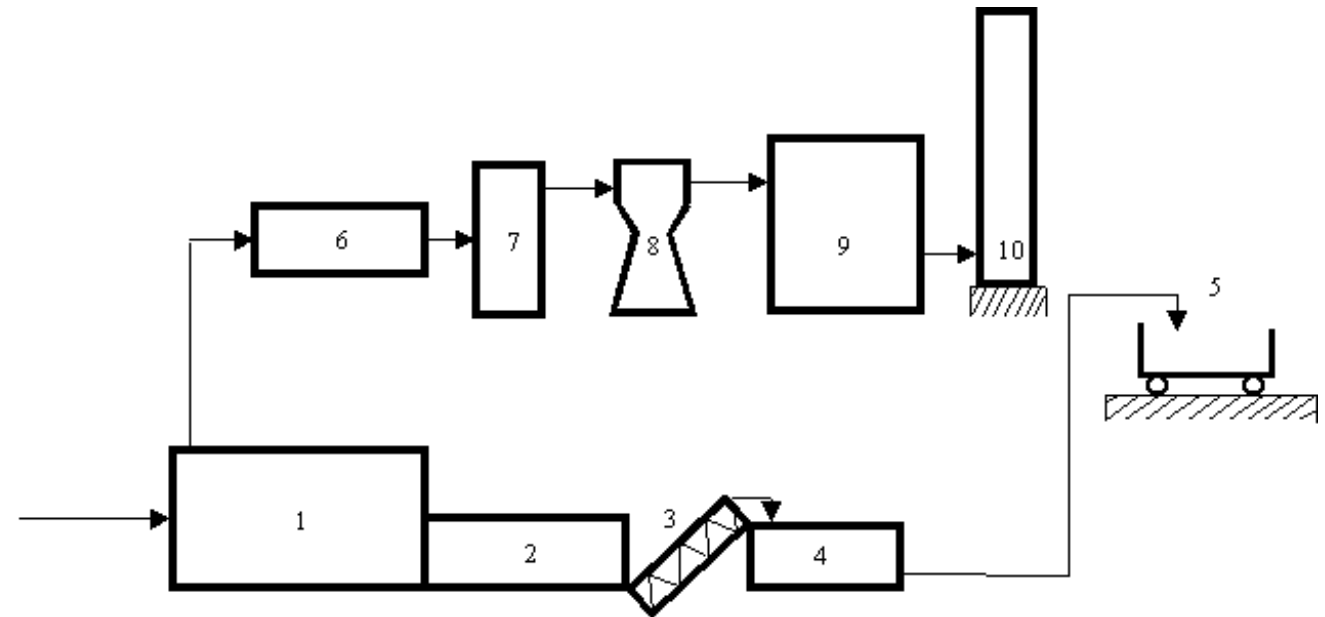
Operating temperature: less than 500°C

Oil contents after operation: less than 0,1 mass%

Collected dust is mix with product

Operating costs: app. 70 USD/ton

Diagram of equipment:



- 1 – Rotary dryer
- 2 – Cooler
- 3 – Conveyer
- 4 – Homogenising unit
- 5 – Rail wagon

- 6 – Post-combustion chamber
- 7 – Cooler
- 8 – Cyclone (1. dedusting)
- 9 – Bag Filter (2. dedusting)
- 10 – Chimney

Technology for millscale deoiling – NTD



Innovation character:

- new device NTD developed by own R&D dep.
- no waste, environmental friendly
- deoiling mill scale substitute iron ore on the sintering plant (save 70USD/ton)
- saving for no disposal dangerous waste to the landfill

Corporate responsibility benefits:

Compliance with permit - Sustainability of activities - Better image

Actual implementation CAPEX costs, including costs of construction of a chimney and a building (1.9 mil USD) the procurement costs of this technology are approximately 4 mil USD. Payback period of the technology operated in the Czech Republic is less than three years (savings of 170 USD/t at waste generation of 10 thou t/year).

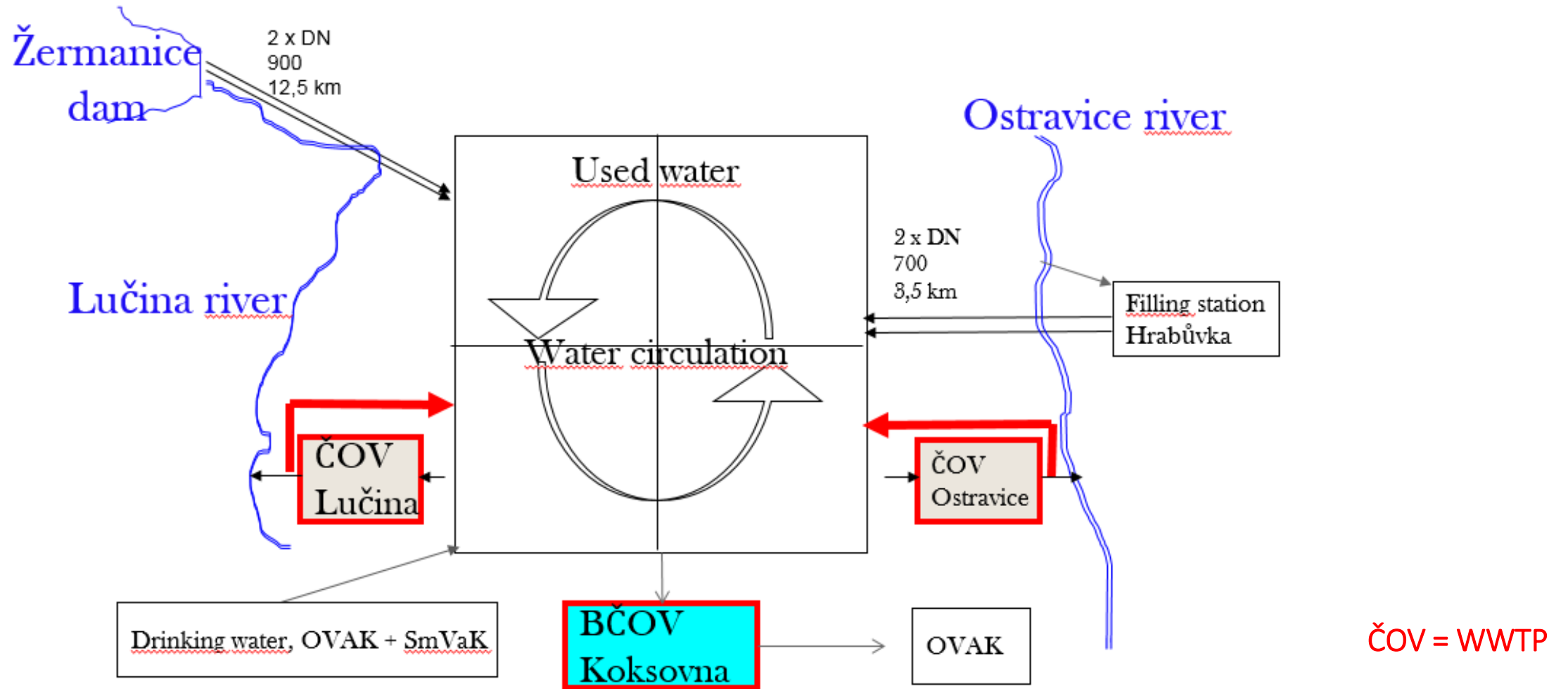
Replicability: The process is fully replicable; no barrier or obstacle identified, can utilize oily millscale from external comp.



Technology for millscale deoiling – NTD



Water management



Water management



- 3 types of water in LO production activity
 - drinking water
 - utility water
 - operational auxiliary water
- All waste water is discharged into a single corporate sewer system that ends with sewage treatment plants
- The Wastewater Treatment Plant technology allows part of the treated waste water to return to the water distribution system for further use.
- LO runs three end-of-site WWTPs

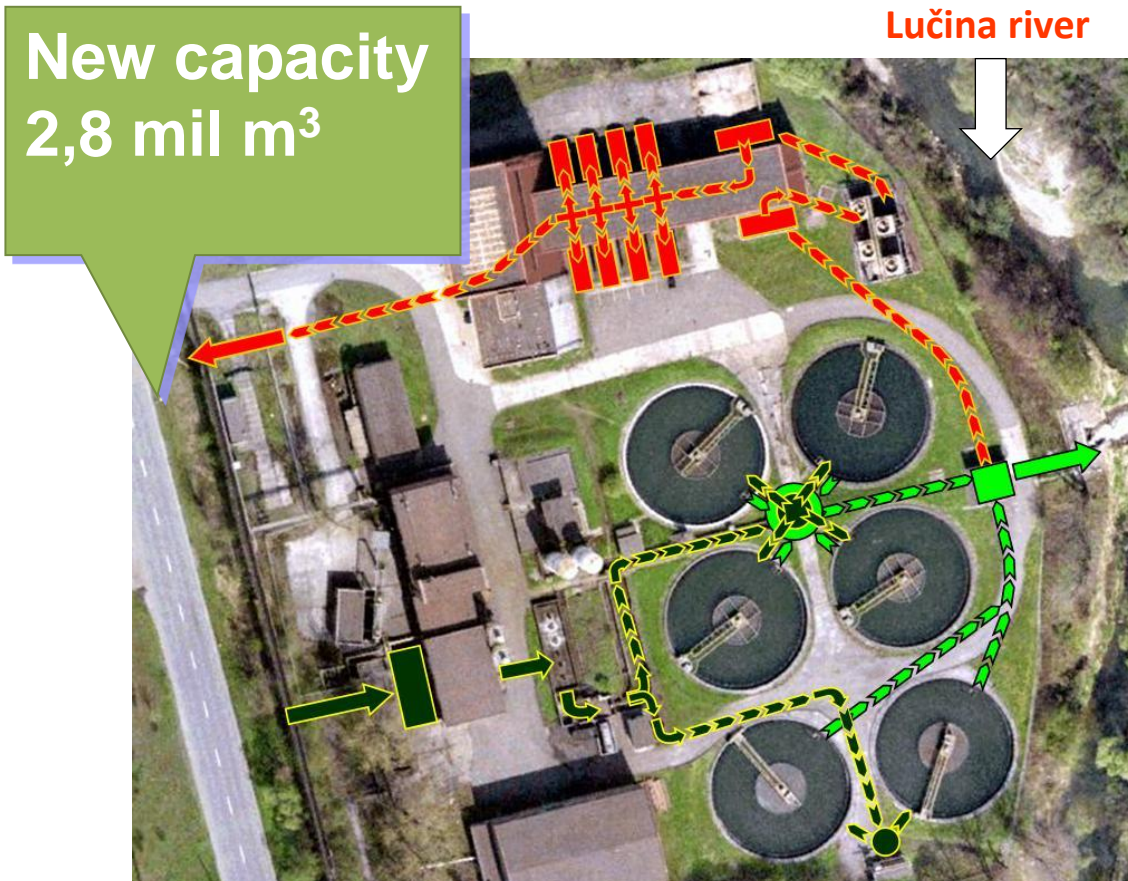
Total yearly need water
211 125 007 m³

Most water circuits are closed,
only refilling the water
consumed, e.g., due to evaporation.

Total yearly water consumption
16 748 389 m³



Modernization of recycling waste water at WWTP



Operations whose waste water enters the Lučina WWTP

- Blast furnaces
- Sinter plants
- Steel plant
- Coke plant
- Tubular plant
- Rolling mills
- Heating plant

The maximum hydraulic capacity of Lučina WWTP is 1,200 l/s

The maximum recirculation capacity is 350 l/s

Water savings

	Before	After	Unit of measure
Annual water consumption in LO	19,5	19,5	mn.mil. m ³ /per year
Recycling of Ostravice WWTP	3,3	3,3	mn. m ³ /per year
Recycling of Lučina WWTP		2,8	mn. m ³ /per year
Request for external resources	16,2	13,4	mn.m ³ /per year

Total new annual water savings 2 855 020 m³

Green planting

- Effective tool to decreasing of dust and noise emissions
- Planted greenery in surrounding communities in 2008 - 2021
- Planting made by LO
 - Steel road: 189 trees + 1 976 shrubs
 - Colors of Ostrava: 1 111 trees
 - Avenue RUDNA I: 100 trees
 - Open door days: 608 trees
 - Replacement plantations in LO:219 trees + 345 shrubs
- Trees planted in LO by external company
 - 85 trees + 5 shrubs



Air protection



Main emissions sources



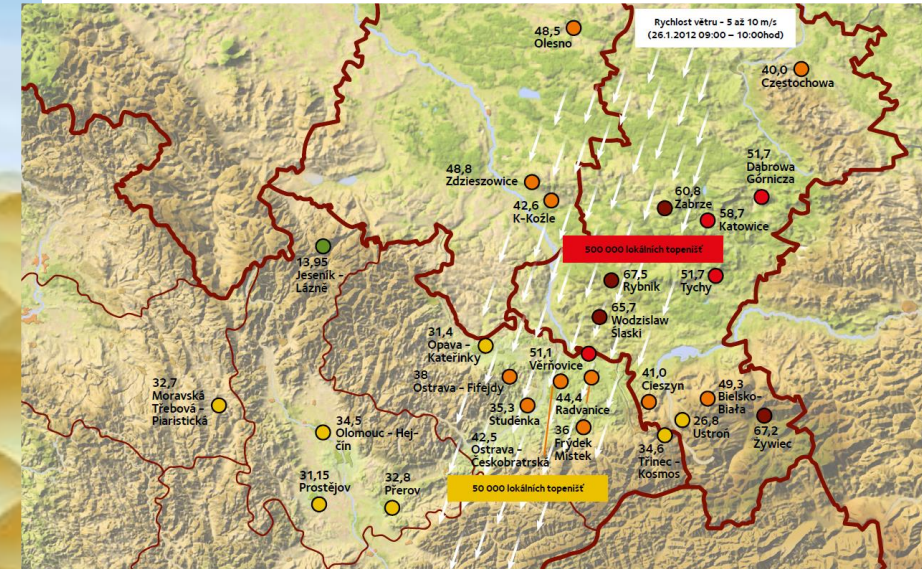
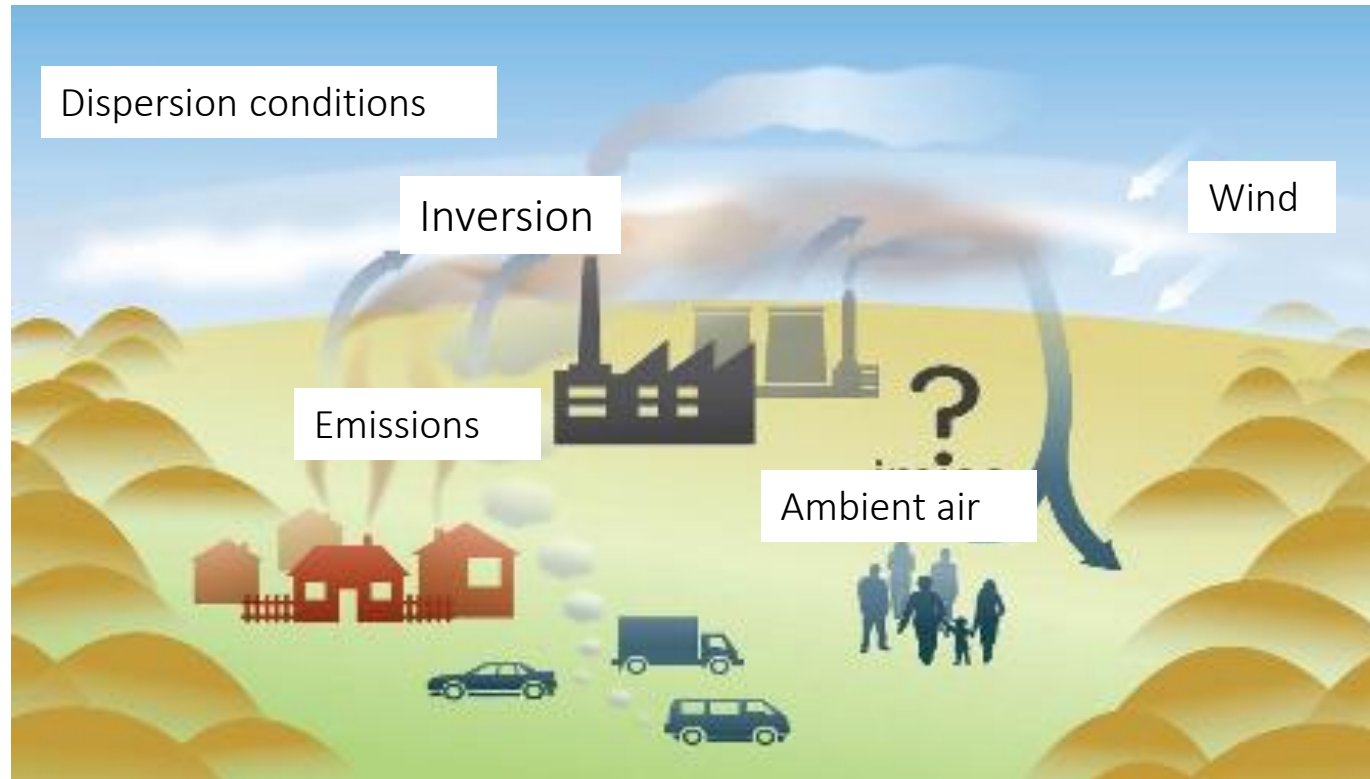
Industry

Local heating sources

Transport/traffic

Sources in other countries with cross-border extension

Air protection

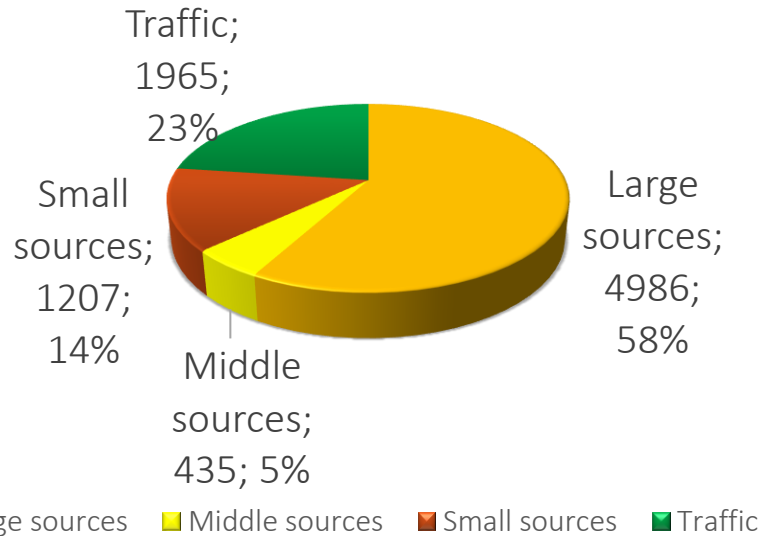


Emission: Pollutants that come from a particular source into the air, measured directly by the source.

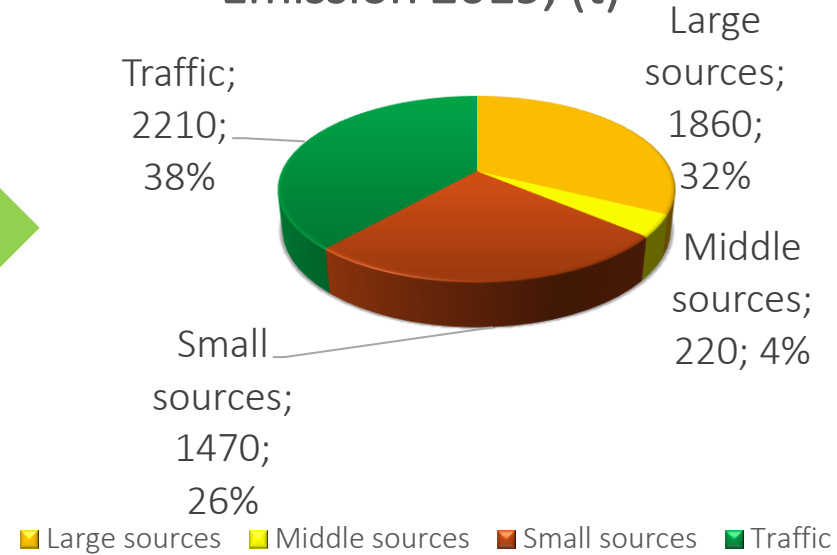
Ambient air: Air quality at some specific location. Is affected by emission sources, but also dispersion conditions, geographical location and other factors.

Main emission sources

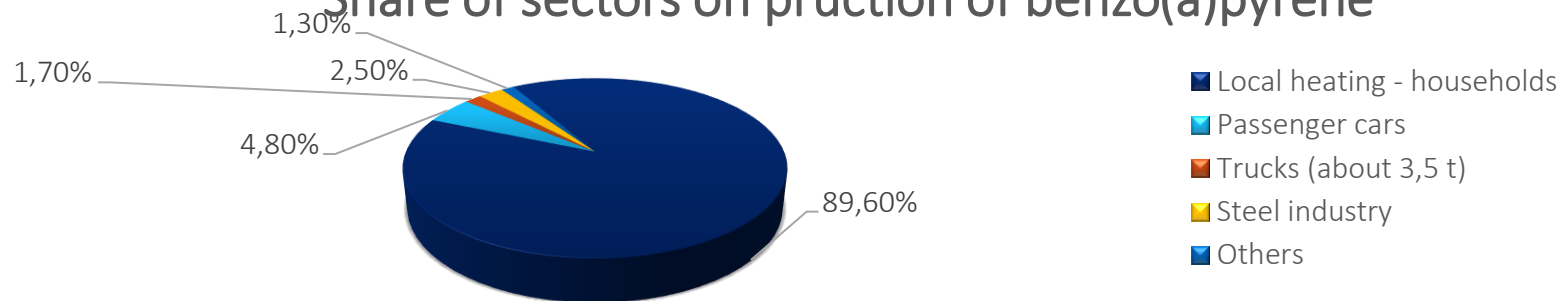
Emission 2003, (t)



Emission 2019, (t)



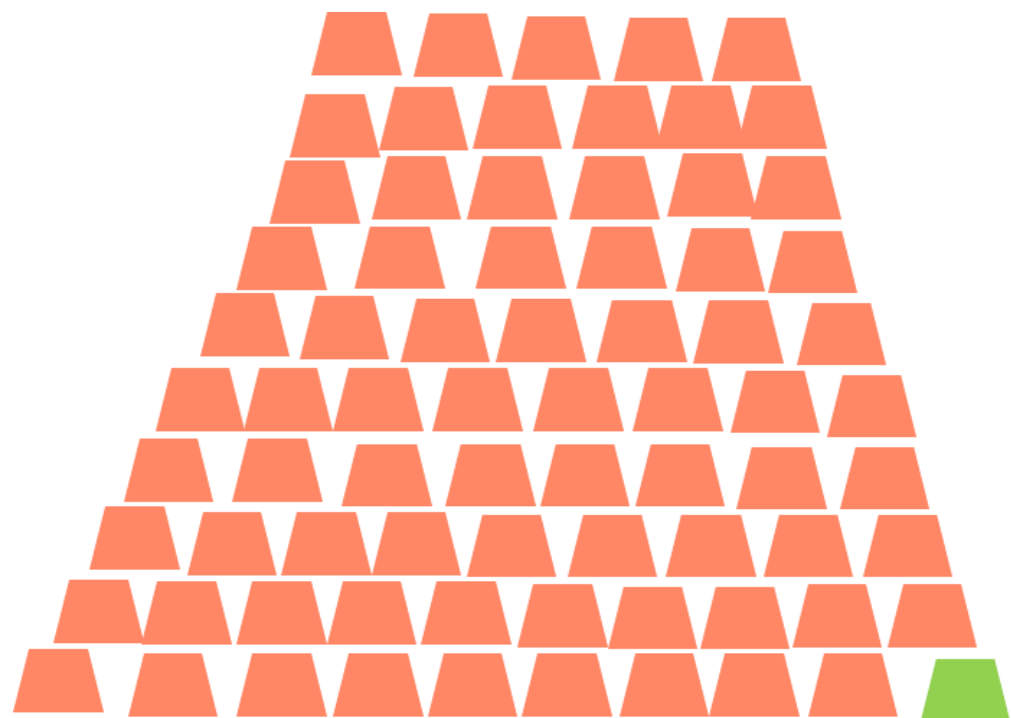
Share of sectors on pruction of benzo(a)pyrene



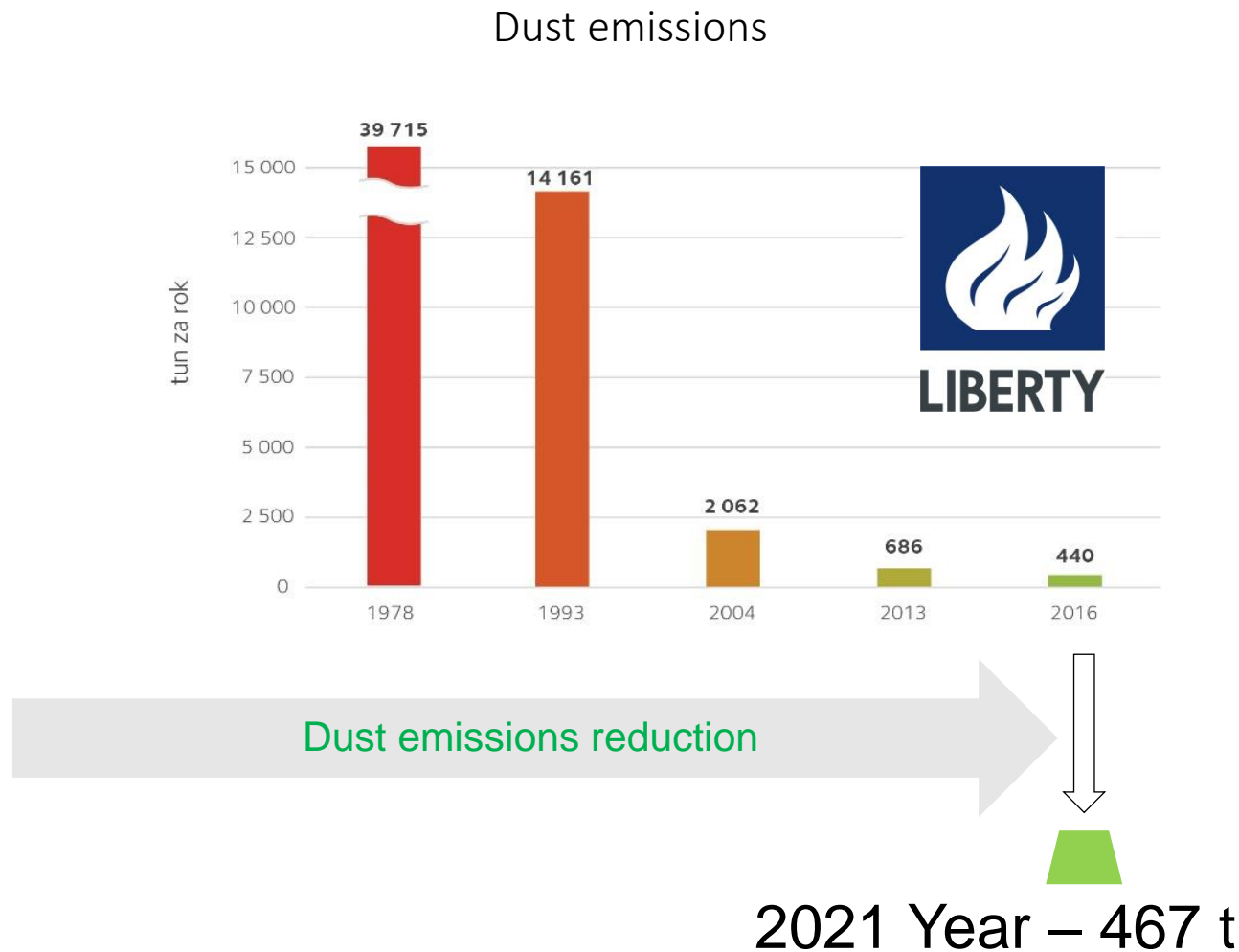
Our goal is to reduce our emissions



- Since 1978, Liberty Ostrava has been reduced the volume of Dust emissions cca by **99 times**?



1978 Year – 39 715 t



Primary measures to eliminate fugitive dust emissions of particulate pollutants



Dedusting the place of cutting of sculs

Collecting and eliminating the red smoke generated by the process of sculs cutting by oxygen firing

12/2009 - Start of permanent operation



Secondary measures to eliminate fugitive dust emissions



Cleaning of roads both in the LO area and outside the company

Efficient road cleaning system at LO

Own cleaning vehicle

Cleaning the entire area

Cleaning adjacent roads outside the company

- Support for cleaning in neighboring municipalities

2009: cleaning vehicle for neighboring municipalities - CZK 5 million

2009-2021: car operation - about CZK 5.4 million



Greening investments



From 2003 to 2014 investments to greening technologies worth 160 000 000 USD

In 2015 started to work 13 ecological projects worth 80 000 000 USD

Massive installation of fabric filters

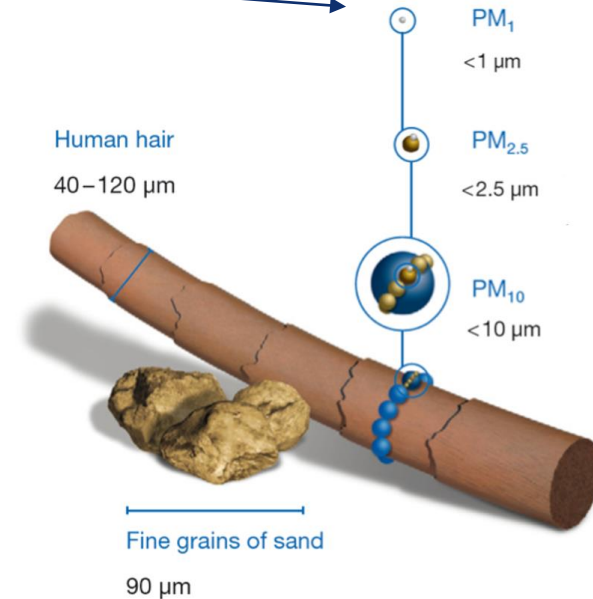
It captures with 99% efficiency the smallest dust particles PM1, PM2,5 and PM10

We have been fulfilled BAT emission limits since 2012



Fabric filters

- The best available technology for dedusting
- Efficiency for Dust removing is more than 99%, even for fine dust size smaller than PM1.
- Similar efficiency is for benzo (a) pyrene and dioxin - dosing of additives
- The total area of fabric filter hoses 13 new technologies exceeds 73 thousand square meters, corresponding to the size of 10 football (soccer) playground.

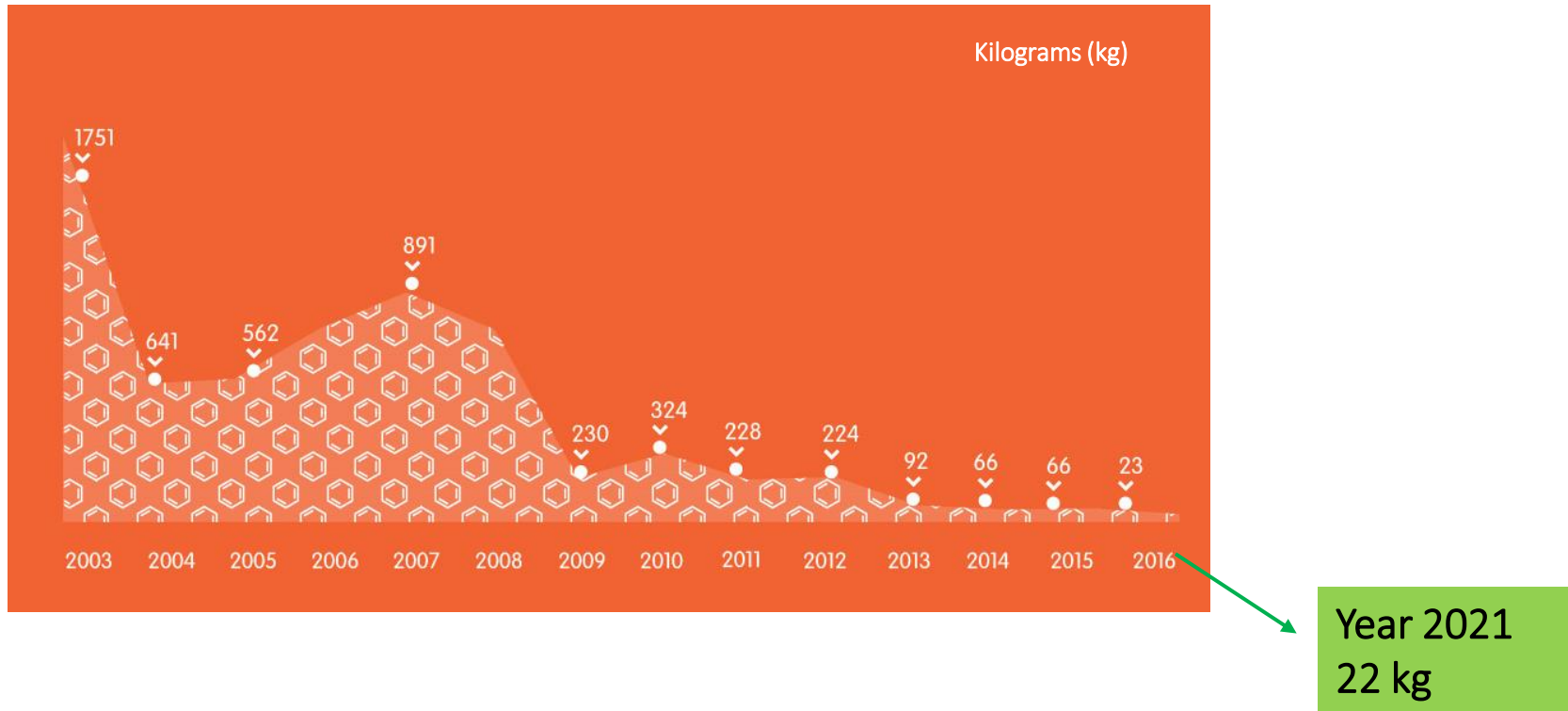


AIRS Code ^b	Type Of Collector	Particle Size (μm)		
		0 - 2.5	2.5 - 6	6 - 10
016	Fabric filter - high temperature	99	99.5	99.5
017	Fabric filter - med temperature	99	99.5	99.5
018	Fabric filter - low temperature	99	99.5	99.5

Zdroj: U.S. EPA EMISSION FACTORS (Reformatted 1/95), APPENDIX B.2

Historically the lowest emissions of polycyclic aromatic hydrocarbons

- Dosing of special additives into the flue gas stream before entering fabric filters on the Sinter plant



A yearly reduction in PAH including benzo (a) pyrene by 65% in 2015 to 2016



Thank you for your attention!