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REFERENCES

"Reducing the amount of emissions of particles at the METALURGIE Rumburk foundry"

The Investor, METALURGIE Rumburk s.r.o. at:
Žitná 1098/15, Rumburk 1, 408 01 Rumburk

On the day of December 7th, 2020 received the Certificate of Approval

The Project and its execution, at a value of almost 250M CZK within the scope:

- Demolition of the existing buildings
- Ground work and digging
- Erection of new production hall and facilities for the workers
- Installation of technical equipment
- Connections to energy mains and infrastructure

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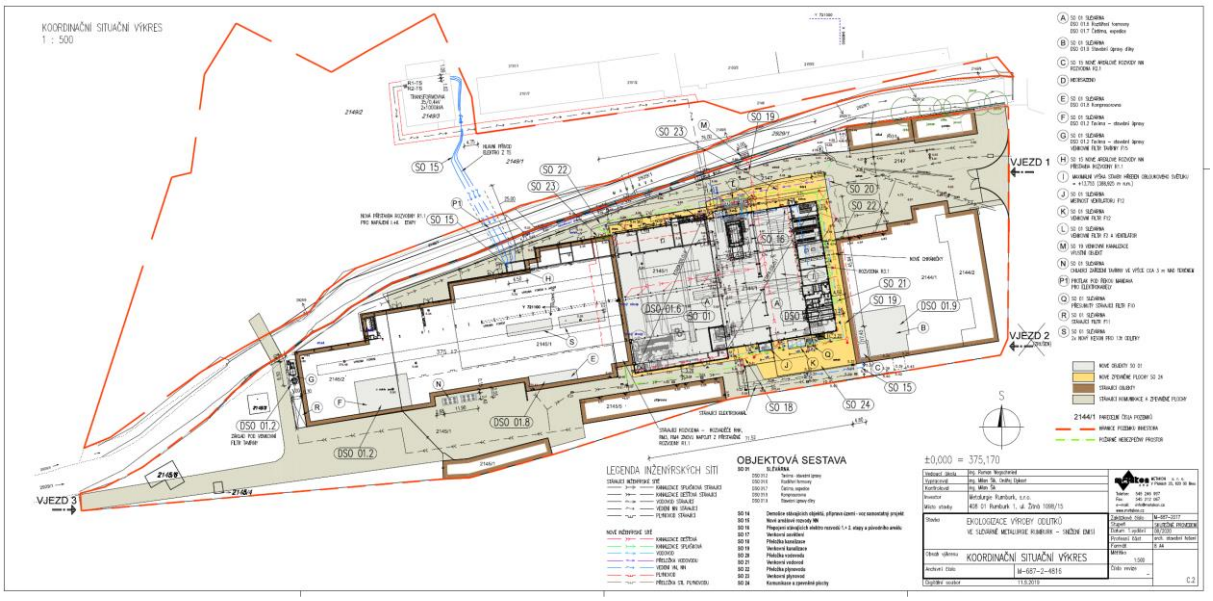
This Project was public-tender, supported by europe grants for within the Operations Program of the Environment. Main objective was to reduce fugitive emissions of solid pollutant particles. (especially fine PM2,5 particles).

This project was delivered as a general contract by PRO-FILTR BRNO s.r.o., with sub-deliveries and own production and assembly.



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The final delivery I. New grinding and welding room and facilities for the workers technological equipment.

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The final delivery II. Conversion of the moulding shop and heavy core shop, technological equipment.

Melting shop

New 6t melting gas, rotational furnace, incl. peripherals, assortment conveyor, cooling liquid circuit, extraction of waste gases, filtration of air mass and capturing of solid pollutants, utilization of waste heat, SIEMENS SIMATIC control system.

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Products delivered by PROFILTR

Link conveyor and exhaustion of waste gases
furnaces

Piping and accumulation tanks for the utilization of waste heat from the melting

Waste gas exchanger with the utilization of heat energy waste

Waste gas piping heat

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Filtration equipment for capturing solid pollutant particles from the 5t gas melting furnace

Parameters of the filtration equipment monitored and verified. It was necessary to give evidence of the guaranteed parameters via "Test A" and again upon handover via "Test B". These parameters had to be confirmed after 9 months of operation.

MONITORED PARAMETER Filtration equipment F15	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP	min. 10 000Nm^3/hour	10 224Nm^3/hour	10 120Nm^3/hour
Filtration area load	max. 1.6m^3/m2/min	0.55m^3/m2/min	0.55m^3/m2/min
Emission limit	up to 3mg/m^3	2.1mg/m^3	1.1mg/m^3
Guaranteed consumption of electricity	2 343 kW per 100 hours of operation	384 kW per 100 hours of operation	532 kW per 100 hours of operation

Furthermore, all noise standards within the working environment and the external premises, dust, organic substances, lighting, etc. were met.

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Cleaning room

New workplace for surface improvement of ingots, incl. the delivery of high-frequency grinders. pneumatic blasting box and the rebuilding of the odl dust filter, casts repair workplace, shot blasting machine, knock-out grid and return of sand, regeneration of sand, workshop cranes, extraction and filtration, air/conditioning, SIEMENS SIMATIC control system and more.

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Products delivered by PROFILTR

Filtration equipment F 12 for capturing solid pollutant particles

Piping network

Filtration equipment F 02 for capturing solid pollutant particles from the knock-out grid

Alignment of the knock-out grid and piping

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Suction central cleaning - vacuum cleaner, special filtration device

Suction central cleaning – vacuum cleaner,suction unit, ROOTS exhauster

Inlet air-conditioning units with heating and recuperation

Outlet air-conditioning units with filtration

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Parameters of the filtration equipment monitored and verified. It was necessary to give evidence of the guaranteed parameters via "Test A" and again upon handover via "Test B". These parameters had to be confirmed after 9 months of operation.

MONITORED PARAMETER Filtration equipment F12	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP	min. 53 000Nm^3/hour	53 143Nm^3/hour	53 206Nm^3/hour
Filtration area load	max. 1.6m^3/m2/min	1.47m^3/m2/min	1.47m^3/m2/min
Emission limit	up to 3mg/m^3	0.2mg/m^3	0.2mg/m^3
Guaranteed consumption of electricity	7 577 kW per 100 hours of operation	4 314 kW per 100 hours of operation	2988 kW per 100 hours of operation

MONITORED PARAMETER Filtration equipment F02, F13	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP	min. 50 000Nm^3/hour	50 670 Nm^3/hour	50 870Nm^3/hour
Filtration area load	max. 1.6m^3/m2/min	1.48m^3/m2/min	1.48m^3/m2/min
Emission limit	do 3mg/m^3	0.3mg/m^3	0.4mg/m^3
Guaranteed consumption of electricity	7 203 kW per 100 hours of operation	338 kW per 100 hours of operation	3 440 kW per 100 hours of operation

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MONITORED PARAMETER Central vacuum cleaning	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP		1 621Nm^3/hour	1 656Nm^3/hour
Filtration area load	max. 1.6m^3/m2/min	1.35m^3/m2/min	1.35m^3/m2/min
Emission limit	do 3mg/m^3	1.5mg/m^3	1.9mg/m^3

MONITORED PARAMETER Air-conditioning	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP	min. 12 000Nm^3/hod	15 634Nm^3/hour	14 396Nm^3/hour
Emission limit	do 3mg/m^3	0.9mg/m^3	2.7mg/m^3

Furthermore, all noise standards within the working environment and the external premises, dust, organic substances, lighting, etc. were met.

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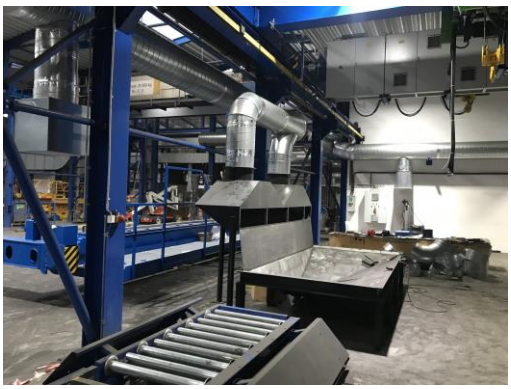
Moulding shop and heavy core shop

New moulding shop and heavy core workplace, new WÖHR mixer, racks and rack feeder for models, pouring baths, workshop cranes, extraction and filtration, air-conditioning, SIEMENS SIMATIC control system, etc.

Products delivered by PROFILTR

Filtration equipment F 14 for capturing solid pollutant particles. Pouring baths, extraction and dedusting of the pneumatic transporter and the WÖHR mixer.



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Parameters of the filtration equipment monitored and verified. It was necessary to give evidence of the guaranteed parameters via "Test A" and again upon handover via "Test B". These parameters had to be confirmed after 9 months of operation.

MONITORED PARAMETER Filtration equipment F14	GUARANTEED PARAMETER	ACHIEVED PARAMETER "TEST A"	ACHIEVED PARAMETER "TEST B"
Extracted quantity QS NP	min. 3 500Nm^3/hour	3 589Nm^3/hour	3 559Nm^3/hour
Filtration area load	max. 1.6m^3/m2/min	1.45m^3/m2/min	1.45m^3/m2/min
Emission limit	do 3mg/m^3	1.6mg/m^3	2.4mg/m^3
Guaranteed consumption of electricity	233 kW per 100 hours of operation	215 kW per 100 hours of operation	232 kW per 100 hours of operation

Furthermore, all noise standards within the working environment and the external premises, dust, organic substances, lighting, etc. were met.

By

Pavel Kala