



PROJECT INTRODUCTION EIA NNPP JASLOVSKÉ BOHUNICE

AMEC s.r.o.

Křenová 58, 602 00 Brno, Czech Republic

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Ing. Petr Vymazal



INFORMATION ABOUT THE PROPOSED PROJECT



**New Nuclear Power Plant in Jaslovské Bohunice –
comprising the construction of a new nuclear power plant
including all associated building objects and technological facilities**

The following elements form the project basis:

Power units:

Type: pressurized water reactor (PWR), *generation:* III+

Installed electrical power: up to 2400 Mw_e, variant of 1 or 2 units

Power output:

Power output: overhead power lines 400 kV

Reserve Power: overhead (or underground) power lines 110 kV

Water connections:

Water supply: underground pipelines, existing infrastructure

Discharge of waste and rain water: underground pipelines

Construction : site needed for construction facilities

End of operation : no additional requirements

CLIENT

& EIA AUTHOR



CLIENT : Jadrová energetická spoločnosť Slovenska, a. s. / JESS (Nuclear Energy Company of Slovakia, Ltd)

- JESS was founded to prepare the project of a new nuclear power plant in Jaslovské Bohunice;
- The aim of the company JESS is to prepare a suitable type of nuclear power plan, with maximum safety, minimum impact on the environment, to ensure energy security and economic efficiency in Slovak Republic.

EIA AUTHOR - AMEC s.r.o.

- One of the main activity fields of AMEC is impact assessment of nuclear installations on the environment (EIA). The most important projects were the EIA for NPP Temelín 1,2, international EIA for Temelin 1,2, EIA for all storages for spent fuel in CR, the assessment of the broader conceptual designs for new nuclear plants, the EIA for the new nuclear source in Temelin, EIA for nuclear fuel storage in Kozloduy (Bulgaria), and the assessment of the impact of the Dukovany NPP power uprate on the environment.
- Collaboration with leading companies for specific areas – such as the company VUJE as a main subcontractor in the technical field.

Legal Framework

Act No. 24/2006 Coll., on the environmental impact assessment, as amended

The law provides full compatibility with EU law and the international conventions to which the Slovak Republic is bound.

The EIA process comprises several sequential steps. The participants in the evaluation process are a town or village, the competent authority, other authorities concerned and the public.

Mandatory assessment consists of the following steps:

- EIA Notice/Preliminary report
- Comment procedure
- Decision on the scope of the EIA assessment and the time table
- EIA Report
- Comment procedure and public hearing
- Development of the expert review
- Final statement of MoE

Current situation of EIA process-
Submission of EIA Notice to MoE

APPROACH TO EIA NOTICE DEVELOPMENT



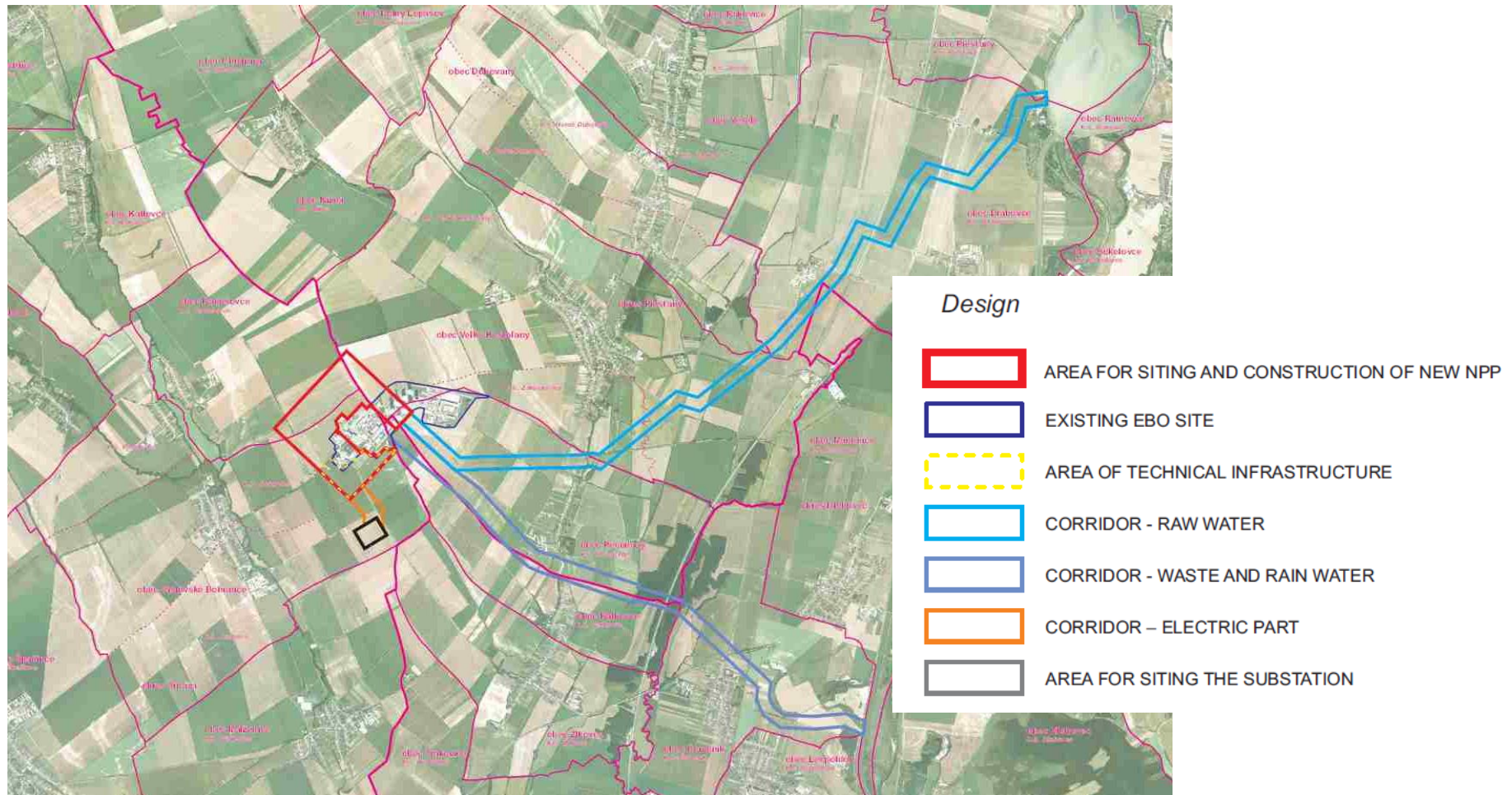
One variant

- The proposed activity is presented in **one implementation variant (+ zero variant)**, consisting of the construction of new nuclear power plant in Jaslovské Bohunice site.
- **Given the current status of approved and planned strategic documents of Slovak Republic and the availability of the best technologies, there exists no other realistic alternative solution (different site / other technology) other than the one proposed.**

Alternative technical solutions – Conservative evaluation envelope

- several potential suppliers (AP1000, EU-APWR, MIR1200, EPR, ATMEA1, APR1400) - *not an EIA variant*;
- environmental and safety requirements are identical for all suppliers;
- **impacts are considered within their maximums - Conservative envelope**
- **Conservative envelope also used for cumulative effects(A1,V1,V2, ...).**

SITING



JUSTIFICATION FOR THE NPP SITTING WITHIN THE REGION

- Location of NPP in Jaslovské Bohunice is proposed within the document *Government Resolution no. 948/2008, the draft of Energy Policy of Slovak Republic, Concept of Urban Development of the Slovak Republic and the draft of Land Planning of large spatial area of Trnava self governing region.*
- No other sitting options of NNPP are currently anticipated in any of the government and strategic documents of SR.
- Jaslovské Bohunice site complies with the terms of legislative requirements for the sitting of the nuclear facility.
- The necessary facilities and infrastructure are available on the site.
- The project will need less new-land occupation due to the use of developed areas;
- The proposed project does not require any changes in the settlement structure (urban) area.



OTHER BENEFITS FOR THE REGION AND THE OPERATOR

Construction in the area benefits both the region and the operator

- Guarantee of long-term employment for staff of existing nuclear facilities, need for new staff;
- Utilization of the available workforce, both for highly qualified professionals, as well as for low-skilled professions;
- Long term stable entrepreneurial environment for highly skilled and professionally qualified companies tied to existing nuclear facilities;
- Related development of educational institutions.



BASIC TECHNICAL DATA OF NEW POWER PLANT - I



- Type or nuclear block - reactor PWR, generation III+
- The total installed power capacity – up to 2400 MW, proposed in one-unit arrangement (1x1200 MW up to 1x1700 MW) or in two units arrangements 2x1200MW;
- Life expectancy - at least 60 years;
- The reactor must be licensed at least in the country of origin. The manufacturer must be internationally certified with a strong reference base;
- The proposed type of reactor is at least at an advanced stage of construction and there is a high probability that the reactor will be under the operation in one of the nuclear developed countries (EU, USA, R, China, Japan, Korea) before the pre-construction phase of NPP;
- Delivery will be made as a whole turnkey or as a delivery of technological islands with the supplier providing coordination function;
- Delivery of the technology will be together with the supply of nuclear fuel, taking into account the possibility of diversifying the supplier of nuclear fuel.

BASIC TECHNICAL DATA OF NEW POWER PLANT - II



- Securing of the licensing process in compliance with the law of the Slovak Republic and using the experience and recommendations of reputable international institutions IAEA, WENRA, Euratom.
- The power plant will provide the daily base load and will be capable to provide the support services to the operator of the national transmission system corresponding to primary, secondary and tertiary regulation.
- Units will be able to operate continuously at a performance level ranging from 50 to 100% of the nominal power and will be able to switch into the island's regime in case of defect of the transmission system.
- Coefficient of the unit capability to operate for the time period of 12 months will be greater than 0.9 (the time at which the block is capable of operating divided by the whole calendar year).

POWER CONNECTION

- *Power output* - through overhead power lines of 400 kV into a new electric station in Jaslovské Bohunice. This station is part of the SR transmission system.
- *Reserve power* – through overhead or underground 110 kV line from the new electric station in Jaslovské Bohunice. This station is part of the SR transmission system.



CORRIDOR – ELECTRIC PART

WATER CONNECTION

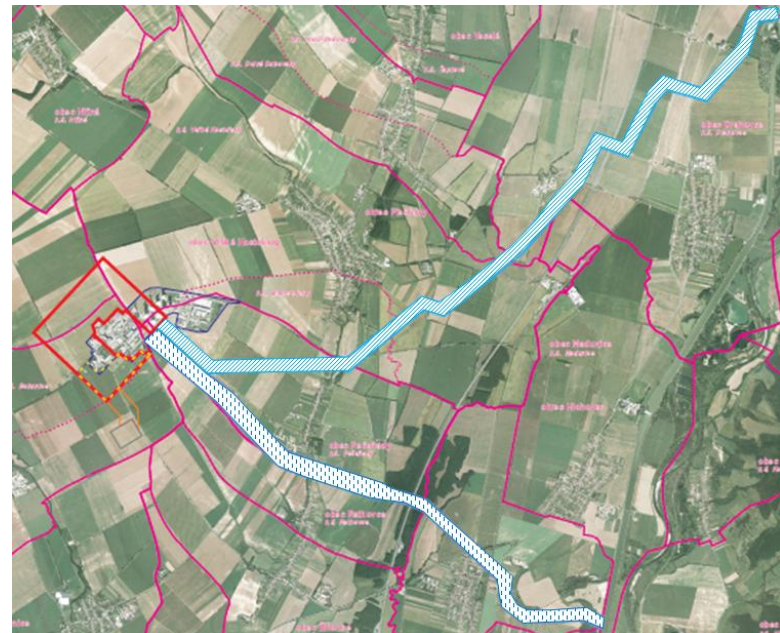
- Raw water supply will be through the new underground pipes from the water source (Sĺňava water reservoir);
- Drinking water will be supplied from the existing infrastructure on the site;
- Waste water will be discharged by a newly constructed underground pipeline into to Drahovský channel to the Váh river;
- Rainwater will be discharged by a newly constructed underground pipeline to the Dudváh river;



CORRIDOR - RAW WATER



CORRIDOR - WASTE AND RAIN WATER



INPUTS AND DISCHARGES IN NUMBERS

INPUTS

Land use: permanent occupation areas: up to 70 ha
temporary occupation areas : up to 42 ha

Due to the different spatial arrangement of individual components of NNPP, the area for the location and construction of NNPP is defined conservatively, that allows all considered orientations of the NNPP facilities. The area respects the limits set out in the draft of land planning documentation of the Trnava Region.

Real permanent and temporary occupation area will be significantly less than this conservatively defined area for the location and construction of NNPP.

Water supply: process water: up to 1.995 m³/s

Power: onsite consumption: up to 170 Mwe

Road transportation: intensity of road transport:
up to 600 vehicles/24 hours

Number of employees : up to 1050

Consumption of nuclear fuel : up to 42.0 t UO₂/year

DISCHARGES

Air emission: insignificant

Waste heat: waste heat: up to 4400 MW_t
evaporation : up to 1.645 m³/s

Process waste water:

recipient: Váh river

Sewage water: recipient: Váh river

Rain water: recipient: Dudváh river

Noise: analogous conditions as for existing sources in EBO, their noise emissions are qualitatively and quantitatively identical.

Radioactive discharges into the air and waterways: EIA assumes conservative maximum values given by suppliers. Similar or lower than the values of existing discharges in the EBO can be expected.

Radioactive waste: total volume: up to 120 m³/year

Spent fuel: up to 42.0 t UO₂/year

FINDINGS OF EIA NOTICE



- With regard to the technologies considered for the NNPP, current impacts of existing nuclear facilities on the site and the addition affect of nuclear energy on population irradiation which is generally negligible, **no significant adverse radiation effects are expected on public health, even with interaction with other nuclear facilities on the site.**
- No significant negative impacts are expected in terms of the non-radiation effects (particularly air pollution and noise impacts).
- The occupation is the most significant impact on the soils. Occupation area is defined as the area for the location of NNPP - (max. permanent land occupation 70 ha. Other occupation will be only temporary during the construction phase).
- No significant negative impacts on other components and parts of the environment (surface and underground water, fauna, flora, ecosystems and protected areas, landscape, geological environment and natural resources, cultural heritage and tangible assets, etc.) are expected.
- The regular monitoring of individual components of the environment will continue during operation of NNPP.
- Cross-border effects are virtually eliminated, highly unlikely to occur.

EIA REPORT - CONTENTS



Detailed impact assessment of the new nuclear power on the individual components of the environment and human health will be carried out based on the targeted studies in the next stage of the assessment – *EIA Report for the impacts of the proposed activity on the environment*.

The estimated scope of studies is shown in the following overview:

- analysis of the human health;
- assessment of health risks and public health impact;
- assessment of impacts on the air, on the climate, of noise;
- assessment of impacts of discharges into the air and streams;
- assessment of the state and development of the radiation situation in groundwater, groundwater flow in the area and impact on groundwater;
- assessment of radiological consequences of a representative project accident and severer accident;
- assessment of water supply;
- assessment of impact of discharged waste waters
- biological survey and assessment, assessment of impacts on the landscape.

The potential cross-border impacts will be taken into the account in these studies, if needed.

PARTICIPANTS IN THE PROCESS



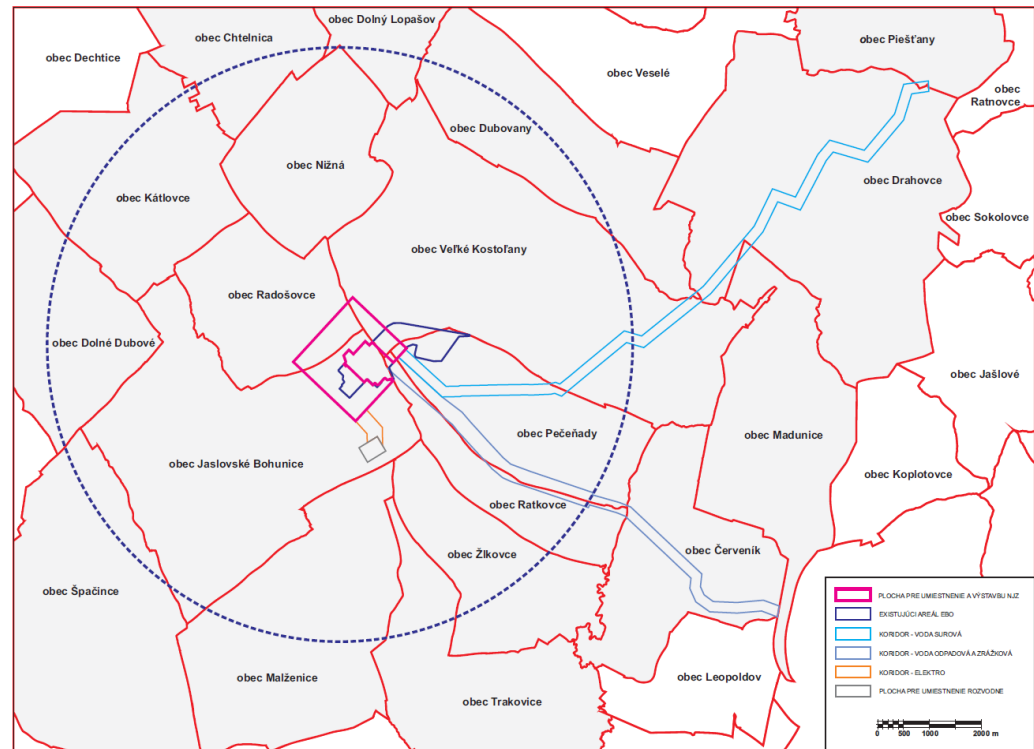
- **The Competent authority** is the government body that carries out the legal obligations of the environmental impact assessment (manages and organizes the whole assessment process and in cooperation with the health authorities prepares the Final statement). It is the **Ministry of Environment of the Slovak Republic**, the district office at the county hall (the District Office);
- **Client** is a individual or legal entity intending to carry out activities (JESS);
- **Deparmental authority** is a government body, having jurisdiction over the proposed activity (Ministry of Economy SR);
- **The authorizing authority** is the municipality or government department concerned with issuing a decision on the authorization of the proposed activity under special regulations (District office at Trnava, Nuclear Regulatory Office Slovakia, the Public Health Authority);
- **The Concerned authority** is a public body whose consent, opinion, expression or binding judgment is issued under special regulations required for the granting of approval to the proposed activity;
- **Concerned municipality** is the municipality in which the proposed activity is to be implemented and municipality whose territory the impact of the proposed action affects;
- **Public** is one or more individuals or legal entities, their associations, organizations or groups;
 - **The interested public** is a public entity that is interested or may be interested in the environmental decision-making process (civic initiative, civic associations, NGOs);
 - **A professionally qualified person** is an individual or legal entity registered in the list of qualified persons for the assessment of environmental impact;
 - **Other participants** are experts from different fields of science, technology and practice.

CONCERNED MUNICIPALITIES

- **Municipalities**, within the area where facilities of NNPP (area for the location and construction of NPP including corridors and associated infrastructure) are located;
- **Municipalities**, whose location is within 5 km from the boundary of the NNPP sitting.

PUBLIC x EIA NOTICE

- ❑ *Concerned municipalities will receive the EIA Notice of NNPP from MoE SR in printed and electronic version.*
- ❑ *Concerned municipalities have the right to send comments and statements;*
- ❑ *Concerned municipalities have an obligation to inform public about the EIA Notice and enable access of public to the printed version.*



CONCERNED MUNICIPALITIES



Region	District	Municipality	Siting & construction of NNPP	Corridor – raw water	Corridor – waste water and rain waer	Corridor – power line	5 km area from the NNPP site
Trnava	Trnava	Jaslovské Bohunice	•			•	•
		Malženice					•
		Radošovce	•				•
		Dolné Dubové					•
		Kátlovce					•
		Špačince					•
	Hlohovec	Ratkovce	•		•		•
		Žlkovce					•
		Červeník			•		
		Trakovice					•
		Madunice		•	•		
	Piešťany	Nižná					•
		Pečeňady	•	•	•		•
		Veľké Kostoľany	•	•			•
		Dubovany		•			•
		Drahovce		•			
		Dolný Lopašov					•
		Chtelnica					•
		Piešťany		•			

PUBLIC INVOLVEMENT

***The Public is informed at the stage of EIA Notice submission to MoE.
Public hearings and direct communication – after the EIA Report submission.***

EIA STEPS

PUBLIC INVOLVEMENT

EIA Notice

***Comment
procedure***

EIA Notice published on the Ministry of the Environment Information System. Information is provided to the concerned authorities and municipalities. Concerned municipalities have an obligation to inform the public - citizens about the EIA Notice and allow access to the printed version.

***Decision on the scope
of the assessment
and the time table***

Published on the information system of MoE; information is provided to the concerned authorities and municipalities. Client and the concerned municipalities have an obligation to inform the public - citizens and allow them to comment.

EIA Report

***Comment procedure
and public hearing***

*Report is published on the Ministry of the Environment Information System. Information is provided to the concerned authorities and municipalities. The municipality with Client inform the public and will carry out the public hearing. The record from the public hearing is delivered to the competent authority/
International public hearings*

Expert review

Final statement of MoE

EXAMPLES FROM OTHER PROJECTS

- EIA FOR Temelin 1,2
- EIA for storages for spent nuclear fuel at the site EDU and ETE
- EIA for New Nuclear power plant Temelín (3,4) including the power output to the power station Kočín
- Change in the treatment of liquid radioactive concentrates in NPP Mochovce (NPP EMO 1,2) and in NPP – V2 Bohunice (NPP EBO V2)



IMPORTANT INSIGHTS FROM OTHER PROJECTS

- Issues and questions beyond the EIA scope are always being raised during the processes of EIAs for nuclear installations (such as severe accident, seismicity, aircraft, terrorist attack, war ...). But the EIA is not a safety report. Boundaries must be set and not crossed during discussions.
- Preparation has to be made for both highly professional and less professional issues;
- Careful record keeping and detailed answers of all questions and comments are needed;
- The protests and obstructions of professional opponents are expected - especially in the terms of access to information, the right to submit comments and receive responses / explanations, access to documents, language;
- Impacts on human health are one of the main areas of questions - the presence of an expert on human health is important in all meetings with the public;
- Long meetings.

COMMUNICATION ACTIVITIES BEYOND LEGAL OBLIGATIONS



Communication and awareness is a key element in the EIA process.

- ❑ Strict compliance with all requirements of the EIA Act on information and a little extra;
- ❑ Sufficiently detailed information about the project, time schedule, frequently asked questions on the Client/Investor website;
- ❑ Publication and easy accessibility of EIA documents on the website of the Client/Investor;
- ❑ Communication with the mayors of the concerned municipalities is of primary importance;
- ❑ The mayors of the concerned municipalities are provided by the Client/Investor with leaflets for citizens with basic information about the project and the EIA process;
- ❑ The public will be informed through press releases and interviews, organized by Client/Investor;

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THANK YOU

Ing. Petr Vymazal

AMEC s.r.o.

Křenová 58, 602 00 Brno, Czech Republic

tel office: CZ (+420) 543 428 312

GSM: CZ (+420) 725 607 970

e-mail: vymazal@amec.cz

[http: www.amec.cz](http://www.amec.cz)