



Design and  
Construction  
Office

» **IVITAS has focused on designing technological systems for capital investments since its founding in 1996, particularly for power generation and technology installations**

## Services Provided

### Boilers

In the area of design of once-through boilers and drum boilers we offer:

- preparation of detailed and workshop documentation
- comprehensive assessment of impacts resulting from a change in the fuel base on the parameters achieved by the existing equipment,
- comprehensive assessment of the impact of the boiler plant on the parameters achieved by the existing equipment,
- identification of the remaining life of the individual components of the boiler pressure system (the drum, the heat exchanging surface),
- fine-tuning and optimization of operation,
- preparation of technological and balancing diagrams.

Design calculations of boilers and their accessories within the following range:

- thermal and balancing calculations
- strength calculations of the boiler pressure parts as per ČSN EN 12 952,
- aerodynamic calculations,
- hydraulic calculations,
- calculations of wall temperatures,
- calculation of boiler efficiency,
- CFD modeling.

### Combustion

In the area of combustion we offer:

- analysis of the existing combustion system with respect to the emission limits effective from 2016 (deadline relevant for the Czech Republic),
- design of primary measures for reducing NO<sub>x</sub> emissions and preparation of background data for design of SNCR,
- assessment of the impact of the proposed measures on the parameters achieved by the equipment,
- design of powder-fed vortex burners and jet burners,

- fine-tuning and optimization of burning.

### Heat exchangers

We offer design, thermal and hydraulic design calculation, including preparation of workshop documentation for:

- pipe-type flue gas exchangers particularly with regards to reducing the final temperature of flue gases after the boiler,
- pipe-type water heaters,
- steam air heaters,
- pipe-type exchangers water-water, water-gas, gas-steam.

### Piping lines

- preparation of detailed and workshop documentation (strength calculation as per ČSN EN 13 480, piping dimensions design, dilatation calculation, design of suspension and compensation),
- assessment of the current condition of suspension.

## » We work according to our own know-how for domestic and foreign companies

### References

#### Boilers and Combustion

- A detailed design of a once-trough boiler for the 200 MWe unit in the Tušimice II Power Plant (VÍTKOVICE POWER ENGINEERING a.s., 2007)
- Design of measures for reduction of NOx emissions on boilers K3, K4, K5 in the Třebovice Power Plant (Dalkia Česká republika, a.s., 2010)
- A feasibility assessment for burning of Polish fuel in boilers ET II in the Třebovice Power Plant (Dalkia Česká republika, a.s., 2008)
- A feasibility study of replacing the lignite-fired powder boilers PG 655 in the Chvaletice Power Plant with black coal supplied from Poland (ČEZ, a.s., 2007)
- An assessment of impacts of the boiler plant operating mode on boiler PG 650 in the Dětmárovice Power Plant (ČEZ, a.s., 2010)
- A thermal calculation of a boiler in order to assess the possibility of putting block B6 in the Tisová Power Plant into a full boiler plant operation (ČEZ, a.s., 2011)
- A check calculation of a fluidized bed boiler in the Strakonice Boiler Plant (TENZA, a.s., 2011)
- An assessment of the condition of the boiler body of the grate-type boiler K3 in the ArcelorMittal Frýdek-Místek Boiler Plant (ArcelorMittal Frýdek-Místek a.s., 2012)
- Detailed and workshop documentation for an overhaul of K7 in DEZA Valašské Meziříčí (Technomont Frýdek-Místek s.r.o., 2009)
- Optimization of suspension of high-pressure steam piping for boiler K10 in the Vítkovice Boiler Plant (ČEZ, a.s., 2011)

#### Heat Exchangers

- Thermal, hydraulic and strength calculation of a heat exchanger of the water-gas type (Siemens, s.r.o., 2012)
- Thermal, hydraulic and strength calculation of a condensation heat exchanger (Danstoker A/S, 2011)
- Thermal, hydraulic and strength calculation of a heat exchanger of the fluegas-water type (MERKO CZ, a.s., 2010)

#### Piping Lines

- Strength and dilatation calculation of external connecting piping in the Ledvice Power Plant (VÍTKOVICE POWER ENGINEERING a.s., 2011)

#### Technological Constructions

- Demolition and realigning of piping lines and steel structures in the Lower Area of Vítkovice – 3D visualization and laser scanning (VÍTKOVICE POWER ENGINEERING a.s., 2010)
- Administration building of a line for manufacturing of membrane walls, documentation for building permit and detailed documentation (BKB Metal, a.s., 2008)
- Overhaul and modernization of ISSM in Steel Shop I of VÍTKOVICE STEEL a.s. – Steam Source for ISSM – Detailed Construction Documentation (VÍTKOVICE POWER ENGINEERING a.s., 2005)
- A design for adaptation of boiler system K2 – OXYVIT (EVRAZ VÍTKOVICE STEEL, a.s., 2003)
- De-freezing tunnel – Dětmárovice Power Plant – Detailed design (ČEZ, a.s., 2003)

