

# Evraz

## Highveld Steel and Vanadium

Steel Industry



**Customer Profile:** Highveld Steel and Vanadium Corporation is a leading producer of flat products, structural steel and vanadium slag in South Africa. It is a subsidiary of the Evras international group of companies which is based in Luxembourg. Highveld mines the iron ore used at its steel works itself. The steel works produce about a million tons of steel blocks annually, which are then used to manufacture several products, including structural sections, engineering rounds and rails, plates, coiled plates and sheets

**Challenge:** The challenge was to simulate the exhaust gas system of one of Highveld's manufacturing plants in Flownex and benchmark the results against measured data. Furthermore, it had to be determined whether the proposed system or control changes will have the desired effect of keeping the system's filter temperature within the required range.

### Benefits:

- Thermal capacitance was calculated for each component.
- Heat conduction was simulated in 2D, radial and axial conduction.
- Various changes that were proposed could be tested on the model, and not on the system itself.

**Solution:** An optimum solution to keep the bag filter temperature within its specified range was found which only required changes to the control philosophy. The risk of damage to the bag filter was minimized and the plant's availability was greatly increased.

*"To analyze the controllability and stability of the overall system, the Flownex transient model was used to satisfy the client's needs and to provide workable answers."*

*Waldimar Cieslakewiz – Compusim SA*