

Dimitrios Filippou: IRON CONTROL IN THE TITANIUM INDUSTRY

Titanium and iron are closely related in nature. Therefore, for both environmental and economic reasons, the fate of iron may be very crucial for the titanium extraction industry. Smelting of ilmenite to produce titania slag allows for the recovery of iron as high purity pig iron. However, in the production of synthetic rutile from ilmenite sands, iron is returned to the mine site as a fine oxide/hydroxide residue. In the titanium dioxide (TiO₂) pigment industry, iron is deported as sulfate or chloride salt, which is usually neutralized and rejected at a considerable cost. By-products ferrous sulphate heptahydrate (or copperas) and iron chloride have found a few applications, but the demand for these salts is not enough to cover the production volumes. This review clearly shows that iron recovery is essential for the long-term viability of any ilmenite upgrading or TiO₂ pigment production process.