

On the sustainable design of polymetallic flotation circuits

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This paper investigates the circuit design of polymetallic minerals, including desulfurization. The circuit designs are analyzed from the point of view of the effect of stage recovery uncertainty; the impact of the design type on costs, energy use, and environmental effects; and the influence of the design strategy applied. Additionally, the design of Cu–Ni and Cu-Zn-Pb plants are employed to deepen the research. The manuscript contributions are: the most widely used separation sequence strategy in practice is the least efficient from the environmental and economic point of view; the uncertainty in the recovery at each stage does not play a vital role in the selection of the separation sequence; a new separation strategy is proposed which delivers better results than traditional sequences; a design procedure for polymetallic flotation circuit is presented, and desulfurization is considered an integral part of the design.