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Analysis of gravity beneficiation options for obtaining ilmenite-rich titanium preconcentrates and ilmenite-free vanadium preconcentrates for the Krzemianka ore deposit

ABSTRACT

This paper presents the results of gravity beneficiation studies aimed at obtaining ilmenite-rich titanium preconcentrates and ilmenite-free vanadium preconcentrates for the Krzemianka ore deposit. Beneficiation tests on ores with selected particle size compositions from the Krzemianka deposit, were carried out in a jig and on a concentrating table. The research was conducted as part of the HORIZON-CL4-2023-RESILIENCE-01-02 research project entitled "Sustainable, decarbonized co-extraction of vanadium and titanium from Europe's low-grade vanadium-bearing titanomagnetite deposits" - [AVANTIS]. The project aims to develop an innovative method for obtaining ilmenite-rich titanium preconcentrates and ilmenite-free vanadium preconcentrates. The project involves the use of state-of-the-art technologies to significantly reduce energy and water consumption during ore extraction and processing. This technology can be applied to unexploited V-bearing titanomagnetite deposits found in Finland, Sweden, Greenland, Norway, Poland, and Ukraine, among others. These deposits often contain significant amounts of vanadium, but due to their mineral composition and form of occurrence, its recovery is economically unviable with currently used technologies.

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