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Sustainable and secure molybdenum supply for the European tool steel industry

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Increasing physical demands on tool steels are directly reflected in a higher molybdenum alloy content. Depending on their application, tool steels are classified into:
• Cold-work tool steels (Mo ≤1.8%)
• Hot-work tool steels (Mo ≤3.0%)
• High-speed tool steels (Mo ≥5%)
Molybdenum additions to tool steels increase both hardness and wear resistance while providing acceptable toughness. By reducing the critical cooling rate for martensite transformation, molybdenum allows promoting the formation of an optimal martensitic matrix, even in massive and intricate molds that cannot be cooled rapidly without distorting or cracking. Considering this prominent role of molybdenum as an alloying element to high-performance tool steels, aspects of sustainability and strategic supply security necessarily come into focus. This contribution details the mining and supply scenario for molybdenum starting from geological survey data and scrutinizes it against the evolution on the demand side. The main contributions to carbon footprint along the molybdenum processing chain and practicable efforts to lower these will be discussed. Since the closure of Norway's Knaben molybdenum mine in 1973, Europe entirely relies on overseas supplies of molybdenum concentrate. The ongoing development of the Malmbjerg mining project in Greenland can reinstate a fully EU-based supply chain. The cornerstones and status of this strategically important project will be presented.

Speaker Country

Belgium

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