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DEVELOPMENT OF A NEW TYPE OF VACUUM ARC COLD HEARTH SKULL MELTING FURNACE & PROCESS

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This paper describes the development of a new type of Vacuum Arc Cold Hearth Skull Melting & Casting (VA CH SM) process and design concept which is based on the well-established Skull Melting & Casting process and industrial proven cold hearth technologies.
Driven by the current challenges on the titanium and raw materials market and in line with the global target of reducing carbon emissions, the trend for titanium producers to increase the recycling rates in their production processes is on the rise. Following this demand of the industry, INTECO has developed a new plant design concept which allows the semi-continuous feeding of scrap or other raw material (e.g., compacted chips, Master alloys, Titanium sponge) into the melting and casting process without breaking the vacuum between the melting and casting cycles. Two different casting techniques (static and dynamic casting) can be applied, allowing highest flexibility in production.
With this new concept, recycling rates of up to 100% can be achieved as the process is able to produce its own melting electrode out of scrap, thus providing its own melting feedstock.
The new INTECO VA CH SM plant which has been developed with one of the leading titanium producers is currently in hot commissioning phase and first insights and promising results are presented.
An outlook and extended functionality of the new VA CH SM design is presented.

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