

Development and Introduction of Slotted Anodes Technology at Talum Smelter

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Abstract

Talum is the only primary aluminium producer in Slovenia since 1954, when production in Soderberg potline with capacity of 20 000 t/year was started. In 1987, Talum's aluminium production was modernized with reconstruction of existing Soderberg potline to prebaked technology and start-up of the new prebake AP18 potline of 80 cells. Since then, Talum has established one of the most efficient productions of primary aluminium worldwide in energy consumption, carbon consumption and pot life [1]. Anodes used in the AP18 technology are among the biggest anodes (1530 mm x 1010 mm) used for aluminium production. Since the beginning Talum was facing two phenomena in the AP18 process: Significant number of horizontal cracks caused by thermal shock and relatively high electrical resistance and instability caused by gas bubbles below the big surface of anodes. Talum's response to these specific problems was slotted anode development. Talum started with industrial trials in 2001 when the potline was extended to 160 cells. At the end of 2003, slotted anodes were integrated in the process. In 2013, Talum developed technology to erect the third top-downward slot with additional positive effects on potline performance. The paper provides Talum's slotted anodes technology development in production of green anodes, deployment of slotted anodes into the electrolytic process and overall results.

Keywords: Talum; innovation; AP 18 technology; slotted anode; top-downward anode slot.