

OUTSTANDING INNOVATOR David George

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The inductee for our prestigious Outstanding Innovator category in 2013 is David George, who is General Manager - Processing, Technology & Innovation (T&I) at Rio Tinto. While he has been involved in many mining technology projects, he is cited here for his contribution to the double-flash copper smelting technology. This technology has revolutionised copper smelting; setting the standard for sulphur dioxide capture, improving safety by eliminating molten matte transfer, and reducing the labour required to produce copper. This technology is recognised by the US Environmental Protection Agency as the Best Available Current Technology (BACT) in copper smelting. The technology was developed by combining Outotec's well proven flash-smelting with the Kennecott Utah Copper (KUC)

flash-converting intellectual property, to which David was an instrumental contributor.

In the mid-1980s, what was then Outokumpu (now Outotec) and KUC were jointly developing a new copper converting process based on Outotec's flash smelting furnace technology. The key step, the solidification of molten copper matte followed by oxygen smelting, was seemingly against logic but it allowed a single, continuously operated and tightly sealed flash converting furnace to replace multiple conventional copper converters. The original patented process was named solid matte oxygen converting which was renamed Kennecott-Outokumpu (Kennecott-Outotec) Flash Converting. Many of the lessons Outokumpu had learned from development of the then new Outokumpu Direct-to-Blister process could be used because of the metallurgical similarity of the two processes.

In 1992 KUC made the decision to expand their smelter by using flash smelting and flash converting ('double flash'), as the previous Noranda reactors were not able to meet environmental standards and did not have capacity for the expanded Bingham Canyon mine. The new smelter was started up in 1995 with a capacity of 280,000 t/y of copper. The smelter startup was difficult at first but soon achieved the design capacity and now operates at rates in excess of 150% of design. In recent years, the KUC smelter team has been actively engaged in an intensive technical development program to further improve performance, which has led to sustained continuous improvements in safety, production and environmental performance.



David George is therefore recognised for his contribution to Kennecott's Intellectual Property which has, in association with Outotec, been instrumental in bringing this technology to China to groups such as Yanggu Xianguang Copper, Tongling Non-Ferrous Metals Group and most recently to the Guangxi Jinchuan Non-ferrous Metals Co. It is in

China where most of the smelting growth is expected to occur in the future. This state-of-the-art smelting technology will make significant inroads to environmental improvements for copper smelting in China. George has built credibility and respect with the Chinese copper producers and has been instrumental in the licensing and implementation of the technology there.

He was described in his nomination as a ‘forever student’ and ‘one of a kind’: “He loves to learn and he has a contagious enthusiasm for technology which he willingly shares with colleagues and graduates.” His long term role with KUC and Rio Tinto assures a greater understanding of the wider group and industry technology needs so that precious institutional knowledge is retained in the business. George is the inventor on no less than 15 US patents associated with downstream copper processing technology and has valuable insight into the value of IP to Rio Tinto.

