Syama Underground: The world’s, first purpose built, fully automated sub-level cave gold mine

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Biography of Presenting Author

Ian Bignell is an experienced Mine Engineer with both technical and operating experience in the design and management of underground cave operations.

ABSTRACT

In the last five years the mining industry has begun to witness the wide-scale implementation of underground mobile fleet automation. Other than a few large-scale operations such as the Northparkes E48 block cave, most of these installations have consisted of single LHD systems used in open stoping and multiple LHD systems used in sub-level caves and block caves. These systems have been installed in mines that were designed for, and previously run as manual operations. In terms of truck automation, other than the large-scale haulage loop at Finsch Mine in South Africa, there have been few underground installations and certainly none that have automated the underground to surface haulage function.

Resolute Mining Limited’s Syama operation in Mali, West Africa is about to change this, with a sub level cave mine that has been designed from the outset for automation and
incorporates automated: production drilling, draw point loading and truck haulage from underground direct to the surface Run of Mine pad.

Resolute has a history of technical achievement and success in sub-level caving from its Mount Wright operation at Ravenswood in Queensland and has taken the next step by partnering with internationally recognised development contractors, underground equipment and automation suppliers to design, build and operate its flagship mine at Syama.

This paper discusses the key elements of the Syama Underground Project: covering design, planning, automation integration, project execution and management through to operations readiness to deliver a large-scale fully automated underground sub-level cave operation in just three years.