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Physics in Mining, a Career Perspective.

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The mining industry is often viewed as comprised of rough and tough characters, but in the rapidly changing environment of modern mining such innovations robotics and the advent of other highly technological solutions are revolutionising the industry and consequently the demand for highly qualified staff such as physicists. In this communication three career physicists outline their experiences with Physics in Mining.

Daniel Cluff will discuss his work at SNO such as the construction of an underground clean room at Creighton mine to perform gamma spectroscopy and other experimental work in support of the development on the 6800' L. He also provided thermodynamics support on the Frozen backfill project with Glencore. As a member of the LOWCARB project in the UK he developed the VamTurBurner[®] to mitigate methane at operating coal mines. He is currently working on the physics of cooling and energy storage for deep mines.

Steffon Luoma has designed technologies that have been used for sensor, control and communications systems for telerobotics. The basis of these technologies span from inertial navigation systems for geolocation in the GPS denied underground environment of mining to vision and LIDAR systems for 3D asbuilt representation. In addition he has devised algorithms for semiautonomous driving of mining robots. Currently Mr. Luoma is developing wearable technology to both monitor and augment the body's natural thermoregulation for miners working in the high heat of ultra-deep mines.

Naeem Ahmed will discuss some of the industrial projects he has been involved in including development of through-air and underwater telecommunication systems, LiDAR based scanning and mapping systems for underground mines and convergence monitoring system for underground mine openings. Naeem currently runs a Sudbury-based company, Clickmox Solutions, that provides consultancy services and works on development of cutting-edge technologies for the mining sector in the areas of 3D laser scanning and mapping, controls and automation.

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