

Dr. Daniel L. Cluff, P.Eng., P.Phys., C.Eng.



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Vice President of Innovation
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Soteria Company, LLC
2021 - Present

EDUCATION

- Doctorate Mining Engineering, University of Exeter, Camborne School of Mines, UK
- Masters Natural Resource Engineering, Laurentian University, Sudbury, Ontario
- Masters Applied Physics, Laurentian University, Sudbury, Ontario
- Honours Bachelors Science Applied Physics, Laurentian University, Sudbury, Ontario
- Bachelors Arts Economics/Mathematics, Laurentian University, Sudbury, Ontario
- Graduate Certificate Particulate Matter, Institute of Fineparticle Science and Technology, Sudbury, Ontario

AREAS OF EXPERTISE

- Design and implementation of cryogenic operations in innovative applications for industry
- Methane abatement
- Combustion dynamics
- Environmental assessments
- Mine thermodynamic CFD modelling

YEARS OF EXPERIENCE

32 Years

PROFESSIONAL DESIGNATIONS

- Professional Engineers, Ontario PEO, Ontario
- Canadian Association of Physicists, Jurisdiction: Canada
- Institute of Materials Minerals and Mining, Jurisdiction: United Kingdom

TECHNICAL EXPERIENCE

Daniel began his career as a physicist working on the SNO experiment, where he built the underground clean room, supervised the gamma spectroscopy laboratory and supervised the concrete research lab to develop a neutron shielding material. Subsequently he retrained in engineering and worked on projects such as the frozen backfill for permafrost mining (patent pending), various government positions in environmental abatement, the European Union LOWCARB project to reduce methane emissions in coal mining, which lead to his dissertation on low methane concentration combustion dynamics. Currently he has been promoting the use of cryogenics for chilling, which converts heat to electricity and provides compressed air along with heat removal (patent pending).

Dr. Cluff has a substantial academic career with training in physics, economics, mathematics and mining engineering. His patent pending technology in cryogenics systems for mining operations is of particular interest. His abilities in business development bring these new innovations to market through prototyping and onsite testing. His enthusiasm and unique ability to communicate difficult technical concepts to his clients consistently sets his new technologies apart and poised for successful adoption in multiple sectors.

Dr. Cluff well published with over 40 conference papers, reports and 2 patents. He is a true problem solver and innovator of new technologies, He is know for his clear vision on how they can be commercialized. His Professional Associations and Memberships include the Cornish Institute of Engineers, Master of Camborne School of Mines, Canadian Institute of Mining and Petroleum, Canadian Association of Physicists, Professional Engineers Ontario, Canadian Land Reclamation Association, The Institute of Materials Minerals and Mining and European Commission Expert Panel.

RELEVANT AND RELATED EXPERIENCE

- CanMIND Associates – in partnership with CEMI, a unique feasibility study was completed that demonstrated the advantages of incorporating cryogenic chilling technology as an alternate to bulk air chilling. The unique technology provides the benefits of electricity co-generation, energy storage and is ideally suited to solve mine chilling problems in remote communities.
- University of Exeter – developed the VamTurBurner for the LOWCARB to eliminate low concentration methane emissions from coal mining ventilation.
- Ontario Ministry of Northern Development and Mines – provided the leadership needed to assess, improve and develop long term action plans for mines in Northern Ontario. Success in the role required high levels of experience as a safety inspector, respect by the mining community and excellent abilities with negotiation and technical writing.
- Center for Environmental Monitoring – was responsible for a technical team that improved the environmental performance a mine in Northern Ontario. Computer modelling was used to evaluate a natural heat exchange ventilation system prior to its demonstration over summer months. A project to remediate a site using technologies that produced biodiesel and/or ethanol by using algae in conjunction with tailings.
- Department of Science and Technology – lectured and developed course material in mining engineering, mine design, ventilation, power machines, civil engineering, statistics, geotechnical analysis, electronic engineering, AC/DC theory, SPICE design, calculus, medical radiation and safety, MRI, CAT, PET, X-rays, ionizing and non-ionizing radiation in humans, computer science, networking, Ethernet and TCP/IP.
- Sudbury Neutrino Observatory – designed and constructed the research clean room on the 4600 level, where he commissioned and subsequently supervised the operations of the gamma spectroscopy laboratory. Developed a neutron shielding glass for use in normal concrete, installed and monitored controls and alarm systems, responsible for the quality control of shotcrete and Faraday cage installation.