Rivo is an international company focused on delivering sustainable engineering solutions in the mining sector.

Contact Us

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www.rivoconsultants.com

Multi-disciplinary Technical Expertise

Varied background and expertise in mining, mechanical, electrical, and environmental engineering.

International Experience

With extensive commodities experience and projects across several countries, our engineers bring value to the table.

100% Value Delivered

We are committed to delivering quality work and achieving customer satisfaction.

Focus on NPV and IRR

We focus on maximizing cash flow early in the project life to increase the project's returns.

Comprehensive Services

We support our customers across the complete life cycle of their assets from the conceptual stage to operations and closure.

Rivo is composed of a diverse team of skilled and experienced professionals. With offices in North America and South America, Rivo provides, multidisciplinary engineering and design services for underground mining projects across all stages of development.

We carry out due diligence studies, preliminary economic assessments, scoping, pre-feasibility, feasibility, detailed engineering studies and produce NI 43-101 reports.

Mine Planning

We are well versed with all mining methods and our experience includes bulk mining methods such as caving, and target mining methods such as stoping. We assist our clients in planning greenfield and brownfield operations, including mine expansions.

We offer

- Mining method trade-off studies.
- Optimum cut-off grade and production rate determination.
- Underground mine design using Vulcan, Deswik, PCSLC, and PCBC.
- Build cycle sheets for mining methods, and schedule mine development and production activities using Vulcan Gantt Scheduler, Deswik IS, MS Project, etc.
- Mobile and fixed equipment fleet selection and scheduling.
- Manpower, backfill, fuel, dewatering, electricity, compressed air calculations.
- Ground support system design for mine airways and mass excavations.
- Design drill and blast layouts for development and production activities.
- Material handling trade-off studies, such as conveyors vs trucks.
- CAPEX and OPEX estimation, and financial modeling.
- Fixed facility design including underground shops, service bays, crushers, pump stations, and other mass excavations.

Operational Support

We provide

Client-specific offsite and onsite services ranging from engineering assistance to day to day operational support.

- Construction supervision.
- Engineering management including reviewing the work of sub-contractors.
- Off-site technical support services.
- On-site support as a project engineer for mine's long term and short term planning, drill and blast design, mine ventilation, etc.
- Act as the owner's representative and liaise between contractors.

Mine Ventilation

We design the ventilation system to meet the specific requirements of your proposed or existing underground mine. We use a wide range of modeling software to establish safe and efficient underground ventilation and air condition systems.

We provide

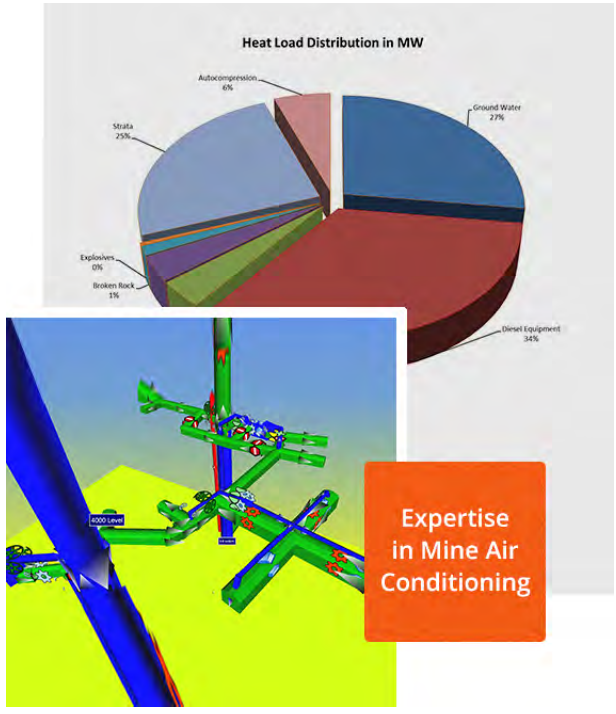
- Ventilation demand estimate based on diesel equipment and crew activities, as per local legislation such as CANMET, MSHA, etc.
- Design for the life of mine including development, production ramp-up, and peak production stages.
- Ventilation modeling using Ventsim, VnetPC, and VUMA, including Critical path analysis and economic analysis.
- Ventilation surveys for underground mines.
- Selection and optimizing the location of surface and underground ventilation infrastructure.
- Mine fire modeling to design escapeways.
- Cost tradeoff studies such as fixed speed drive fans Vs VFDs, diesel trucks Vs electrical trucks, etc.
- Capital and operating cost estimation for the life of mine.
- Design VOD systems and help reduce ventilation costs and mine emissions.
- Strategies to capture exhaust air condensate including demisters, sumps, splash pads, etc.
- Reduce dust in production areas, ore passes, and other transfer points.

Mine Air Heating & Refrigeration

We provide

Based on the historical climate data at the mine site, we recommend mine air heating systems and mine cooling systems through detailed analyses using software such as Ventsim, Climsim, etc. Whether it is arctic weather conditions or complex subsurface heating issues – We solve them for you.

- Assessment of heating requirements and size surface air heating systems for mines in colder climates.
- Trade-off studies on various heating systems.
- Assessment of cooling requirements for mines in hot climates, and design refrigeration and cooling systems.
- Optimize the location of cooling/refrigeration systems, including bulk air coolers, surface refrigeration plants, water chillers, etc



Mine Services

We provide

We design mine services including mine dewatering, compressed air, backfill, electrical, and mine communication systems.

- Design underground mine dewatering systems.
- Sump sizing and pump selection for development activities and production areas for LOM.
- Trade-off studies between dirty water and clear water pumping system, mechanical separation Vs settlers, etc.
- Design compressed air system for mine development and production activities for the life of mine.
- Surface and underground electrical system design and power distribution through electrical load list calculations.
- Backfill plant sizing and distribution system.
- Mine communication systems, pipes, ducts, cables, pipe hanging systems, and other miscellaneous services.
- Process flow diagrams and piping & instrumentation diagrams.
- Material take-offs, equipment data sheets, technical and commercial bid evaluations.

Mineral Processing

We provide

Through our global experts, we provide metallurgical and mineral processing services to our mining clients across the world.

- Process flow-sheet design and trade-off studies.
- Comminution and leach studies.
- Hydro-metallurgical process training & metallurgical study management.
- Simulation and modelling for crushing plants.
- Metallurgical study management.
- Mineral processing (Gold, Copper, Zinc, Silver, and others).
- Guidance in site selection and designing of facility layouts.
- Perform site audits, identify potential problems, correct existing issues, and prevent downtime.
- Pre -commissioning, commissioning, start-up and operational support.
- Implement best operational practices on site.

Mine Environmental

We collaborate with our clients through environmental studies, site environmental monitoring, social and environmental management, and procurement of project development permits. We offer mine closure and reclamation support.

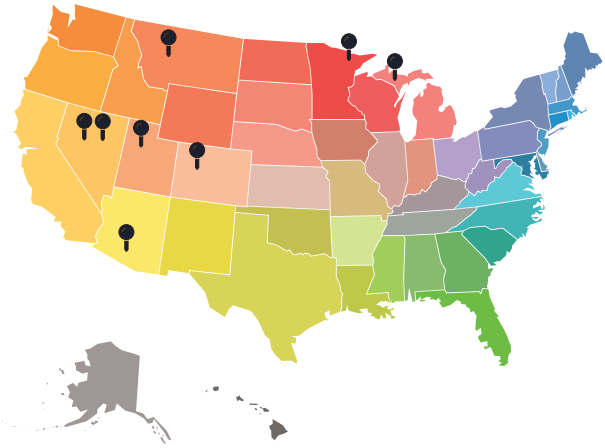
We offer

- Phase I Environmental site assessment reporting.
- Environmental monitoring consultation.
- Developing environmental monitoring procedures and schedules.
- Environmental compliance reporting and document control.
- Environmental economic studies, trade-off studies, cost estimates.
- Training and preparation of internal environmental training documents.
- National Pollutant Emissions Inventory (NPRI) and Greenhouse Gas (GHG) Reporting.
- Tailings facility development planning and design.
- Tailings operation and maintenance consulting, and procedure development.
- Quality supervision and quality assurance in tailings dam construction.
- Preparation of closure plans, asset decommissioning and demolition.
- Site reclamation management.

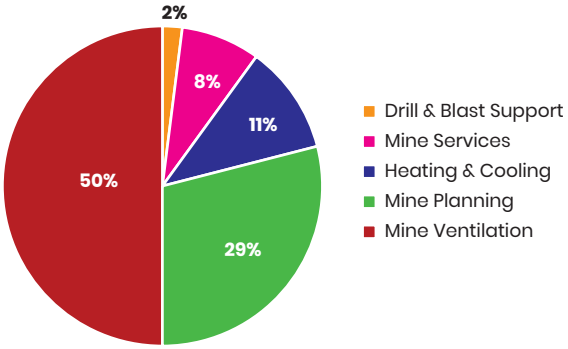
Our Experience

Our experience includes small and large underground mining projects covering various mining methods such as **narrow vein drift and fill, room and pillar, cut and fill, transverse and longitudinal stoping, block caving, sublevel caving, and inclined caving**.

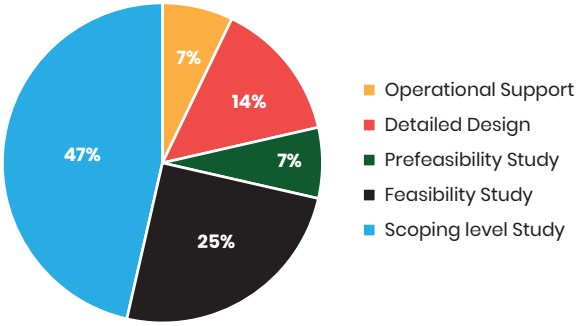
Project Distribution by Geography



Project Distribution by Services Provided



Project Distribution by Level of Study



Project Distribution by Commodity