



PRYSM
VENTILATION SERVICES

The logo for PRYSM Ventilation Services features a red circle with a white stylized 'P' shape inside. To the right of the circle, the word 'PRYSM' is written in a bold, green, sans-serif font, with 'VENTILATION SERVICES' in a smaller, green, sans-serif font below it.

Prysm Ventilation Services is a level 4 Black Empowered consultancy, engineering and manufacturing company, providing independent, strategic and pre-emptive advice and personalised ventilation and refrigeration professional services to exploration and mining companies, engineering firms, financial institutions and investors in mining and industrial ventilation as well as for occupational hygiene, in the form of personalised professional services.

Prysm Ventilation Services comprises a core team of highly qualified and experienced professionals with over 200 years of practical hands-on experience across all process and industrial plants, mining commodity types, mining methods, and services in senior corporate and consulting mining capacity. We provide theoretical and practical knowledge and expertise across various commodities and mining industrial processes. We also specifically concentrate on delivering high-quality, exceptional value add responses to our client's needs.

Prysm Ventilation Services builds and jealously safeguards relationships with our clients by committing ourselves to maintaining the highest possible service and confidentiality standards.

Vision

Prysm Ventilation Services strives to contribute to unlocking potential in the mining and resource sectors by delivering the best practical and cost-effective solutions to every client and project.

Prysm Ventilation Services strives to provide competitive, high-quality, and individualised customer service while encouraging employee creativity, motivation and teamwork in a continuously improving environment.

Prysm Ventilation Services strives to be a world-class company committed to the health and safety of all its employees, providing quality products and services to all our clients.

Prysm Ventilation Services endeavours to unlock and develop individual talent and capabilities in all its members and associates.

Mission

At Prysm Ventilation Services, we are committed to remaining at the forefront of our profession, offering improved value and innovation to our clients. We aim to create a sustainable future for all by:

- ✔ Providing services tailored to specific customer needs.
- ✔ Applying cost-effective fit-for-purpose ventilation engineering systems and sound financial planning.
- ✔ Introducing continuous process improvement strategies.
- ✔ Acting with integrity and living it through all our actions.
- ✔ Playing an active role in conserving the environment and the health and safety of all.
- ✔ Endeavouring to comply with and, if possible, exceed all relevant BBBEE requirements.

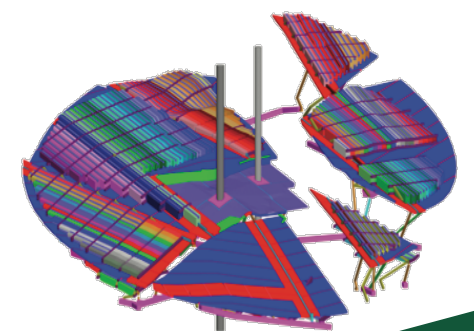
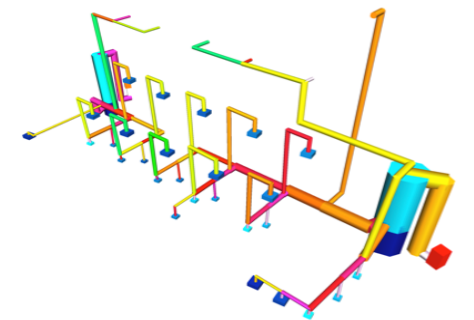
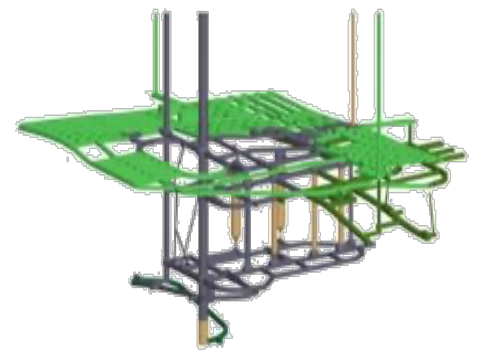
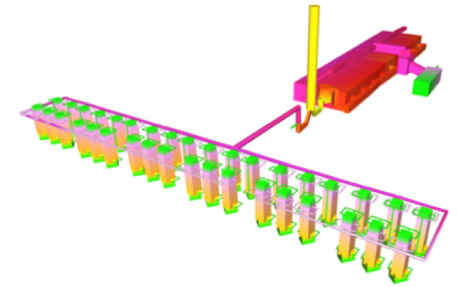
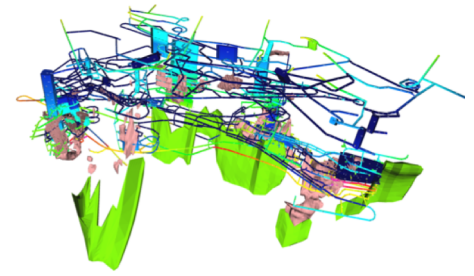
Desktop, Scoping, Pre-Feasibility and Definitive Feasibility Studies -

We have and continue to provide highly capable and efficient Desktop, Scoping, Pre-Feasibility and Feasibility technical ventilation and refrigeration engineering services and expertise for all possible project scope definitions. With extensive experience in project studies ranging from Concept to Feasibility study level, project execution and implementation, we can provide engineering designs related to ventilation and refrigeration to the level of detail required for all study phases. We pride ourselves in designing fit-for-purpose mine and industrial ventilation and refrigeration systems. We achieve this through applicable standards and industry best practices, thus ensuring a safe, healthy and productive work environment that meets the physical and mental health requirements of your most important asset, your people.

Mine Optimisation and Energy Efficiency - We provide practical, cost-effective mine ventilation and refrigeration optimisation services through trade-off studies, focusing on energy management as part of our mine design and scheduling solutions. This includes primary and secondary ventilation systems and associated fan and equipment selection. In addition, we provide fit-for-purpose optimal life-of-mine ventilation and refrigeration designs and requirements for new and brownfield operations, which are determined by applying first principles, experience and using mathematical modelling and simulation software.

Mine Design and Scheduling - Our staff are proficient in operating VentSim and Vuma ventilation network modelling and simulation packages. PRYSM's principal advantage is that simulations are conducted by specialist ventilation engineers with over 30 years of experience in mine ventilation planning, modelling and design. This assures accurate models based on practical experience and lessons learned. We offer service level agreements to construct mine ventilation network models and update simulation models periodically (e.g., monthly or quarterly etc.) Ventilation network modelling can be extended to include real-time simulations that can provide proactive and early warning when adverse ventilation conditions occur, thereby giving prior warning of impending danger.

Operational Services - PRYSM has the expert capability to provide practical mine ventilation skills to support mining operations with ventilation engineering-related services. The service includes short-term business plan reviews, alignment of ventilation systems to support mining activities, audit and gap analysis, updating and calibrating simulation models, assisting with the execution of ventilation control construction plans and timeline schedules, refrigeration plant measurements and performance audits, developing and implement monitoring systems as well as emergency preparedness and fire simulations.



In addition, our team provides occupational hygiene services, including the design of customised occupational hygiene management systems, development of Codes of Practice, Standard Operating Procedures and general operational protocols for underground and surface mining operations, mining processing and industrial plants, factories, and laboratories. Our offering includes occupational hygiene legal compliance audits, occupational health risk assessments to facilitate occupational health management strategy development, noise, illumination surveys, airborne pollutant and stack sampling and the development and review of mandatory and voluntary Codes of Practice and in-house operational procedures. PRYSM is also an accredited training services provider with the University of the Witwatersrand on the Safety Risk Management Process.

Mine Fires - Our team of highly experienced consulting ventilation engineers provide expertise in underground mine fires. With their involvement in several incident investigations related to conveyor belt fires and as ex Rescue Brigades men, PRYSM is one of the few ventilation consulting companies to offer unique fire modelling, prevention, detection and response capabilities. These capabilities include fire risk assessments, auditing, gap analysis, and fire detection and suppression systems design utilising VentSim or Vuma simulation packages.

Due Diligence Studies and Evaluations including Risk Modelling - Our team of highly specialised and experienced consulting ventilation engineers provide consulting services focused on mine ventilation, refrigeration, cooling, health and safety with our comprehensive service offering, including the review of:

- ✔ High-level due diligence-related investigations
- ✔ Customised occupational hygiene management systems and procedures for surface works, factories, laboratories and underground mining operations.
- ✔ Ventilation and occupational hygiene legal compliance audits based on the OHSAS18001 series.
- ✔ Occupational health risk assessments to facilitate occupational health management strategy development.
- ✔ Ventilation, noise, illumination, airborne pollutant sampling and ergonomic surveys.
- ✔ Environmental impact assessments for noise, dust, fibres, gases and associated contaminants.
- ✔ Modelling, designing, installing and commissioning industrial ventilation/pollutant control systems for surface works, factories and laboratories.
- ✔ Specialised investigative surveys on several aspects associated with exposure to hazardous chemical substances.
- ✔ Computational fluid flow dynamic simulations.



Refrigeration Plant Capabilities

Our project team have in the past been responsible for:

- ✔ Conceptual planning involved refrigeration and ventilation systems for mines.
- ✔ Pre-Feasibility and Feasibility Studies
- ✔ Preliminary designs of mechanical refrigeration systems
- ✔ Budget estimates | Preliminary schedules
- ✔ Detail designs of the mechanical systems for refrigeration, water reticulation and ventilation.
- ✔ The compilation of Works Information and Specifications based on NEC 3 contracts.

Our project team is competent and has concluded the following:

- ✔ Refrigeration plant audits
- ✔ Desktop studies | Design reviews | HAZOP studies
- ✔ Project Execution:
 - Project Integration Management | Scope Management | Schedule Management
 - Procurement Management | Contractor Management | Cost Control Management
 - Site & Construction Management | Staff Management | Quality Control Management
 - Risk Management | Change Management | Communications Management
- ✔ Project commissioning with the contractors and clients and project handover and closeout.
- ✔ Refrigeration plant and equipment maintenance and operations.
- ✔ The team has a proud safety record: 8 of our main projects were successfully executed over a period of 8 years with no loss of life or limb, equating to > 1 million LTI-free hours. To achieve such an impressive safety record, the team ensures the safe management of the design, procurement, manufacturing, construction, installation, commissioning and handing over of plants.

The value of the projects ranges between R 50 000 and R 200 mil, with the value of a number of the projects being above R 50 mil.

- ✔ **Siphumelele Shaft** (Anglo Platinum): Cluster development and expansion of existing mining activities. Project Manager for the refrigeration and ventilation portion of this project which included the rehabilitation of existing ventilation infrastructure, the design and installation of high-pressure chilled water cooling centres and the expansion of the existing surface refrigeration plant.
- ✔ **Thembelani 2# and Khuseleka** (Anglo Platinum): Refrigeration portions of the surface refrigeration plants which included the installation of an ice plant. Both these projects have been handed over successfully.
- ✔ **Townlands Underground Refrigeration Plant:** Project management | Process design | Procurement | Cost Control | Project Engineering.
- ✔ **Amandelbult 1# Refrigeration** plant extension (Anglo Platinum): Pre-Feasibility | Feasibility studies.
- ✔ **Refrigeration Plant Operations and Maintenance Services** to the Lonmin K4 Shaft.
- ✔ The team successfully project managed the complete design, procurement, construction, commissioning, training and handover of various refrigeration plant projects within the Anglo Platinum Group:
 - **Turffontein:** High-pressure piping installation | Surface refrigeration plant extension (7 MW (R)).
 - **Amandelbult 1# and 2#:** Surface refrigeration plants (35 MW (R))
 - **Frank Shaft & Union Section:** Surface refrigeration plant extension (2 x 7 MW (R))



Amandelbult Surface Cooling Plant



**Amandelbult Ammonia Refrigeration Machine -
21mW(R)**



**Amandelbult Ammonia Refrigeration Plant -
21mW(R)**



Siphumelele 1 Shaft Condenser Cooling Tower

Management Team

The core technical team comprises the following members:

Riaan Swart Pr.Eng. - Managing Director, B.Eng. Mining Engineering, B.Eng.(Hons) Technology Management.

Dion Marais - Director, Technical / Specialist Consultant: MSc Eng, Grad Dipl Eng, COM Certificates In Environmental (Ventilation) Control, Colliery Ventilation.

Velile Nhlapo - Director, New Business and Corporate Affairs: ND and NHD Metalliferous Mining, B.Tech Mining Engineering, EMP.

Dave Stanton - Director, Business Development and Technical Design / Specialist Consultant: COM Certificate in Mine Environmental (Ventilation) Control, MDP, APM, MBA, MSc (Mech Eng).

Jaco Venter - Core Services and Projects / Senior Consultant: MSc - Engineering (Wits) Enrolled. Certificate in Mine Env Control 1992, MDP (Wits), 1999, MAP (Wits), 2010.

Francois Graaff - Occupational Hygiene and Ventilation Services / Senior Consultant: COM Certificate in Mine Environmental Control, Certificates in Air Quality Analysis, Radiological Protection Screening, Fire Investigation, Advanced Fire Prevention (FPASA) and Environmental Management certificates from Potchefstroom University.

Leon du Toit - Ventilation Management Services / Senior Consultant: COM Mine Environmental Control Certificate and several certificates related to underground mine safety, risk, and fire and emergency management.

In addition to the preceding, PRYSM also has access via co-operative agreements to specialist commodity suppliers and designers in primary ventilation, refrigeration, industrial ventilation and fabrication services, thus ensuring that we can source, supply and provide turnkey project services in all areas of mine ventilation, refrigeration and industrial ventilation services.

Software Capability

PRYSM ventilation engineers and associates are familiar and highly experienced in the use of the software:

- ✔ Ventsim®
- ✔ Pumpsim®
- ✔ Vuma®
- ✔ Vent Fire®
- ✔ Flownex®



Clients



Service Offering List

- ✔ Independent ventilation engineering reviews
- ✔ Ventilation system optimisation studies
- ✔ Concept studies
- ✔ Pre-feasibility studies (PFS-A / PFS-B)
- ✔ Feasibility studies (Levels 1 through 3)
- ✔ Mining alternative studies
- ✔ Ventilation and cooling simulations
- ✔ Short term planning
- ✔ Life of Mine (LoM) planning
- ✔ Automation
- ✔ Strategic and tactical plans
- ✔ Trade-off studies
- ✔ Underground fire modelling
- ✔ Emergency preparedness and response (inclusive of escape strategies)
- ✔ Underground fire detection systems
- ✔ Underground environmental monitoring
- ✔ Ventilation on Demand (VoD)
- ✔ Lamp room (management, requirements, supply and setup)
- ✔ Early warning and gas detection instruments
- ✔ Mandatory Codes of Practice (develop and review)
- ✔ Ventilation and refrigeration design.
- ✔ Modelling of mine ventilation and refrigeration systems using VentSim and VUMA 3-D software.
- ✔ Design of customised occupational hygiene management systems and procedures for surface works, factories, laboratories and underground mining operations.
- ✔ Ventilation and occupational hygiene legal compliance audits based on the OHSAS 18001 series.
- ✔ Occupational health risk assessments to facilitate occupational health management strategy development.
- ✔ Ventilation, noise, illumination, airborne pollutant sampling and ergonomic surveys.
- ✔ Environmental impact assessments for noise, dust, fibres, gases and associated contaminants.
- ✔ Accredited training services provider with the University of the Witwatersrand on the Safety Risk Management Process.
- ✔ Modelling, designing, installing and commissioning industrial ventilation /pollutant control systems for surface works, factories and laboratories.
- ✔ Specialised investigative surveys on several aspects associated with exposure to hazardous chemical substances.
- ✔ Computational fluid flow dynamic (CFD)
- ✔ Auxiliary fan selection
- ✔ Main fan selection
- ✔ Refrigeration Plant selection
- ✔ Fallout dust management and sampling
- ✔ Isokinetic sampling of stacks

Contact Us

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