

## PRYSM CAPABILITY STATEMENT

PRYSM was specifically established to supply specialised ventilation and cooling services as well as industrial ventilation design services to the International mining and associated fraternities pertaining to:

- 1) Underground Ventilation and Refrigeration Planning.
- 2) Mine Ventilation Planning and Optimisation.
- 3) Due Diligence Studies.
- 4) Ventilation Technical Reviews.
- 5) Expert Mine Ventilation, Refrigeration and Fire Modelling using Vuma™, VentSim™, or VentFire™ ventilation engineering packages.
- 6) Project Management.
- 7) Disaster Management and Underground Escape Strategies.
- 8) Ventilation and Refrigeration Engineering.
- 9) Energy Efficiency and Fit-For-Purpose Designs.
- 10) Industrial ventilation and air cleaning designs.
- 11) Turnkey procurement, fabrication, supply, and installation of related ventilation, air cleaning, refrigeration equipment, and systems.

Riaan Swart is currently the Managing Director, who ensures that only “hand-picked” highly technically qualified persons are part of the team and used as consultants. This team has the requisite practical experience. Their specialities relate to the ventilation engineering environment, and they have held very senior positions in the mining industry. In addition, all work is reviewed by the Team, thus ensuring that the collective mental and practical competencies are used to provide fit-for-purpose designs and reports. This strategic philosophy ensures that skilled and highly technical yet practical experience is incorporated into all project work. This ensures that the Client is always assured of having competent ventilation consultants working and interacting with their project teams.

PRYSM offers superior ventilation engineering expertise at competitive pricing over the full spectrum of ventilation and refrigeration engineering, including project design and build.

Following are some of the projects we have been involved in, which underpin our National and International experience and demand for expert services.

In terms of refrigeration plant design and build, our project team have in the past been responsible for:

- 1) Conceptual planning of refrigeration and ventilation systems for mines.
- 2) Pre-Feasibility and Feasibility Studies.
- 3) Designs of mechanical refrigeration systems.
- 4) Budget estimates and schedules.

- 5) Detail designs of the mechanical systems for refrigeration, water reticulation and ventilation systems. The compilation of Works Information and Specifications based on NEC 3 contracts.
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- 8) Refrigeration plant audits.
- 9) Desktop studies | Design reviews | HAZOP studies.
- 10) Project Execution comprising:
 

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
- 11) Project commissioning with the contractors and clients.
- 12) Project handover and closeout.

Specific projects which were undertaken, which were brought in on time, to specification, and with added value engineering are:

- 1) **Siphumelele Shaft** (Anglo Platinum): Cluster development and expansion of existing mining activities. Project management for the refrigeration and ventilation portion of this project 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.
- 2) **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.
- 3) **Townlands Underground Refrigeration Plant:** Project management | Process design | Procurement | Cost Control | Project Engineering.
- 4) **Amandelbult 1# Refrigeration plant extension** (Anglo Platinum): Pre-Feasibility | Feasibility studies.
- 5) **Refrigeration Plant Operations and Maintenance Services** to the Lonmin K4 Shaft.
- 6) Team members successfully project managed the complete design, procurement, construction, commissioning, training and handover of various refrigeration plant projects within the Anglo Platinum Group:
  - a) **Turffontein:** High-pressure piping installation | Surface refrigeration plant extension [7 MW (R)].
  - b) **Amandelbult 1# and 2#:** Surface refrigeration plants [35 MW (R)]
  - c) **Frank Shaft & Union Section:** Surface refrigeration plant extension [2 x 7 MW (R)].

## **NATIONAL PRE - FEASIBILITY AND FEASIBILITY STUDIES**

- 1) Siyanda Resources Platinum Mines - Various ventilation designs
- 2) Uitkomst Colliery
- 3) Nkomati Nickel
- 4) Black Rock / ASSMANG - Gloria, Nchwaning 2 and Nchwaning
- 5) Styldrift / BRPM - Ventilation design review and calibration

- 6) Glencore, Zambia - BFS design - Mindola, Mufulira and Synchlinorium Projects
- 7) Bokoni - Brakfontein & Middelpunt Hill Mine
- 8) Buffalo Mining - Aviemore and Balgray Collieries
- 9) Impala, Leeukop, review
- 10) Impala, 1 Shaft / 16 Shaft integrated design
- 11) Mponeng, Mine Deepening Project

## **INTERNATIONAL PRE-FEASIBILITY AND FEASIBILITY STUDIES**

- 1) Vedanta - India - Zawar mine, Balaria and Mochia Mines
- 2) Vedanta - India - SKM mine
- 3) Darwendale, Zimbabwe
- 4) Al Amar Zinc, Iran
- 5) Barrick Gold, Pascu Lama, Argentina/Chile
- 6) Koksay, Kazakhstan
- 7) Obuasi, AGA, Ghana
- 8) Zimplats, Zimbabwe (Ngezi P4 | Ngezi P6 | Ngezi P10 | Bihma | Marula)
- 9) Karowe, Diamonds
- 10) Glencore, Zambia (Mindola | Mufulira | Synchlinorium Project)
- 11) Debswana, Jwaneng mine, Botswana
- 12) De Beers, Snaplake, Canada
- 13) Norilsk, Russia
- 14) Cucaru Peki, Serbia
- 15) Nkomati Nickel
- 16) Prieska Copper-Zinc Mine, Orion Minerals

## **FIRE MODELLING AND FIRE RISK STUDIES**

- 1) Impala 14# post-event modelling
- 2) Zimplats, Ngezi Mines
- 3) Sibanye Kloof 4# study
- 4) De Beers, Venetia mine

## **OTHER**

- 1) Zimplats, Ngezi Platinum Mines Concentrator Plant - dust & slurry management systems
- 2) Dundee Precious Metals Tsumeb Smelters - Emissions management system upgrade project, design
- 3) Langkloof Bricks, Vertical Stack Brick Kiln ventilation design
- 4) Kekanda East Hydro Project, water and slurry handling system design, PumpSim™ modelling and design

## **OTHER NATIONAL AND INTERNATIONAL WORK**

- 1) Evander 7 Shaft Egoli, Refrigeration Assessment
- 2) Sibanye Group - Mine of the Future Conceptual Studies

- 3) Lubumbe Decline Project - Decline Ventilation system
- 4) Mirny Diamond Mine, Russia - Ventilation design review
- 5) Alrosa Potash - Russia - Ventilation design review
- 6) Jaguar Mines Brazil - Ventilation review
- 7) Orion Prieska Copper - Mine vent design and Occupational Hygiene monitoring
- 8) Bisie Tin project (Alphamin Resources), DRC
- 9) Kipushi Corporation SPRL project, DRC
- 10) Rosh Pinah Zinc Corporation (RPZC), Namibia
- 11) Kalana Gold Mine, Mali
- 12) Samancor Group environmental noise surveys
- 13) AngloGold Ashanti's Mine Waste Solutions project's occupational hygiene program with control over confined spaces in cyanide environments
- 14) Herculite Ferrochrome with smelter plant Occupational Hygiene and confined spaces control

## **SAFETY ACHIEVEMENT**

The team has a proud safety record on projects they were leading. Eight projects were successfully executed over eight 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.

## **TECHNICAL TEAM**

The core technical team comprises the following members:

- 1) **Riaan Swart Pr. Eng. | Managing Director:** B.Eng. Mining Engineering. Riaan is a mining professional with over 20 years of experience in the mining industry. This experience was gained in the operational, managerial, consulting, technical, corporate and project environments. He has been involved with a wide range of underground and surface mining methods in mineral deposits containing Diamonds, Gold, PGMs, Coal, Copper, Titanium, Manganese, Chrome, and Zink. His primary focus and experience have been gained in vertical shaft access underground mining.
- 2) **Velile Nhlapo | Director - New Business and Corporate Affairs:** ND and NHD Metalliferous Mining, B.Tech Mining Engineering, EMP. Velile brings over 20 years of mining experience and knowledge through growth within the ranks in the mining field. His model for success blends technical expertise with excellent people/stakeholder engagement, financial and general management skills, and timeous decision-making. He was appointed as Non-Executive Director of Zimplats (Pvt), Impala Platinum Limited and chairperson of the Social and Ethics committee.
- 3) **Dion Marais | Director - Technical | Specialist Consultant:** MSc Eng., Grad Dipl Eng., COM Certificates in Environmental (Ventilation) Control, Colliery Ventilation, Asbestos Analysis and Technical Training. He holds Environmental Management, Law and Auditing certificates and is a Queensland University and the University of the Witwatersrand accredited lecturer in Mining Risk Management systems. He has over 45 years of experience covering mine ventilation, occupational health, industrial ventilation, refrigeration and risk management.

- 4) **Dave Stanton | Director - Business Development | Specialist Consultant:** COM Certificate in Mine Environmental (Ventilation) Control, MDP, APM, MBA, MSc (Mech Eng.). Advanced Proto Certificate, External Examiner with Potchefstroom University. He has over 40 years of experience in senior management positions pertaining to all facets of Ventilation and Refrigeration Engineering. He focused on specialist consultancy pertaining to Mine Ventilation and Cooling, Design optimisation, Fires and explosions, Methane Gas, Efficacy planning and Due Diligence studies.
- 5) **Jaco Venter | Core Services & Projects | Senior Consultant:** Jaco has thirty years of professional and practical experience in mine ventilation and refrigeration engineering at operation and corporate levels. He is also well experienced in all primary mining methods and layouts. He has extended knowledge of occupational hygiene in the mining industry. His current main technical involvement is in mine ventilation and cooling system consulting, design, simulation, and training.
- 6) **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) & Environmental Management certificates from Potchefstroom University. He specialises in Occupational Hygiene Management, Industrial and Mining environments; correction of neglected and deteriorated ventilation systems; Safety, risk and hygiene audits, MicroScan analysis on airborne pollutants, Gas monitoring; Isokinetic stack sampling; Bag house filtration system measurement and monitoring; etc. He also specialises in the use of deep mine planning and modelling methods.
- 7) **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. He has 39 years of mine ventilation, cooling, occupational hygiene, emergency response and project study experience. His work history covers shallow to deep hot mines in South Africa, Ghana, Zambia and Tanzania, ranging over different commodities, mining methods and full business spectrum from sinking to full production.

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.

Prysm Ventilation Services is expanding its footprint into Botswana, where collaboration agreements have been established to establish a fully functional branch.

Trusting that the information supplied clearly represents the experience and technical skill that underpins the professional capability offered.

**END**