

COMPANY PROFILE



Wacel Enterprises Limited

Maintenance Repair and Overhauling (MRO), Fire Suppression Systems, Electrical Maintenance
Consistency & Beyond

Plot 4145 Government Rd
Industrial Area
Kitwe, Zambia





Our Expertise

Our expertise include the, supply installation and maintenance of
Dust suppression systems, automatic fire detection and suppression systems,
Insulator blocks, metal detectors and Stainless Steel Cathode refurbishment

Introduction

Wacel Enterprises Limited is an innovative company committed to delivering excellence in all areas of our business. We pride ourselves on the knowledge, skills and expertise of our employees who work together as a team delivering successful projects. Valuing the importance of relationships, we have a collaborative approach that is flexible and can respond quickly to the needs of our clients.

Established in 2001, and with over 17 years of experience in professional engineering services, and industrial operations, we have built on our strengths to become a very successful Zambian privately owned company. Through constant innovation, we have managed to stay ahead of our competitors both in service and product offering.

Our core business of Electrical and Instrumentation and automatic fire detection and suppression systems allows us to undertake a broad range of projects.

Our skills, knowledge and experience, combined with our pre- qualifications and OEM partners allow us to offer our clients a comprehensive suite of related field services. Professional analysis, design and engineering services are provided in conjunction with Team-size guarantees quick reaction time to the various customer demands and provide solutions that provide performance longevity and excellent return on investment.

About us

Wacel recognises the utmost importance of skills and experience

Established in 2001, our company has since shown significant growth and we have either directly or as subcontractors delivered components and field services to some of Zambia's foremost companies, including Mopani Copper Mines Plc, Konkola Copper Mines Plc (KCM), Copperbelt Energy Corporation Plc, Chambeshi Metals, Kariba North Bank Extension Power Corporation Ltd, Mabiza Resources Ltd and Sable Zinc Kabwe Ltd.

All installation activities and field services are governed by and executed in line with international standards and best practices.

MANAGEMENT TEAM

Bruce Kaluba	Managing Director
Florence Lewa	Director Admin
Kalunda Chibalange	Consultant Projects
Stella Kalasa	Safety Consultant
Jack Chilufya	Finance Manager

COMPANY DETAILS

COMPANY NAME	WACEL EENTERPRISES LIMITED
COMPANY REGISTRATION NO.	120010048655
VAT REG NUMBER	1001799434
TPIN	1001799434
PHYSICAL ADDRESS	Plot 4145 Government Rd Industrial Area Kitwe Zambia
POSTAL ADDRESS	P.O. BOX 22399 KITWE
TELEPHONE NUMBER	+26 097 776 0036
EMAIL	wacelenterprisesltd@gmail.com
BANK	Bank Name: First National Bank Zambia Account Name: Wacel Enterprises Ltd Account No.: 62365772857 ZMK 62563005852 US\$ Branch Name: Kitwe Address: City Gate Cnr Independence City: Kitwe Country: Zambia Branch Code: 260212 Swift Code: FIRNZMLX

Products & Services

OUR GOAL

Customer satisfaction is our ultimate goal.

OUR MISSION

To procure projects at competitive pricing, provide safe working conditions and deliver quality work within reasonable time frame.

OUR VISION

To be the most preferred and trusted resource for products and services that enhance our clients business. Delivering beyond expectations, always.

OUR PRODUCT OFFERING

Whether electrical, mechanical or structural, any system once installed starts to deteriorate in quality and performance to the point where it requires maintenance, upgrade or replacement. This time frame (life span of the system) can be substantially extended by applying proper service and maintenance practices that have been put in place in consideration of equipment, legislative and operational requirements.

Wacel, with its years of experience in maintenance systems, processes and procedures is ideally positioned to add substantial value to the operations of supplied or installed assets. By utilizing our experience in this environment together with our strategic alliances, we are able to offer the full suite of systems and processes required for service and maintenance.

As a supplier of high quality electrical electronic and instrumentation solutions, Wacel provides complete project, service and maintenance solutions to a wide spectrum of clients in the industrial and mining sectors.

PRODUCTS

- Miners cap lamps charging racks
- Electrical and Instrumentation
- Dust Suppression Systems
- Metal Detectors Systems
- Fire fighting equipment and detection
- Capping Boards/Insulator Blocks
- Cathode Mother Blanks and Hanger Bars

SERVICES

- Proximity Detection Systems (PDS)
- Automatic Fire Detection and Suppression Systems
- Dust Suppression Systems
- Cathode Plate Repair
- Electrical maintenance services
- Global Sourcing

Our customers can expect high performance and reliability, from all products supplied ensuring they experience a reduction in running costs and the peace of mind that all services provided will be of the highest standard and quality.

OEM REPRESENTATIVE

Wacel has structured itself to offer a comprehensive suite of services to complement our principals and benefit the customers.

Our services are complimented by our ability to provide project management and site supervision services as and when required by our clients.

Authorised and Sole agents for

- CSI
- TJL
- Taligenix
- Sybotec
- Speedmark Polymers

HEALTH, SAFETY AND ENVIRONMENT

Wacel subscribes to the highest health, safety and environment standards. All Wacel personnel are adequately trained in proper techniques to ensure adherence to recognised industrial standards. We take safety very seriously and are constantly improving our policies and procedures to ensure a safe work environment.

At every level, our workforce is making zero harm safety our main objective. Our commitment is to provide a safe work environment for our employees and for everyone who visits our work sites.

SAFETY STRATEGIES

- Ongoing supervision and training
- Incident reporting and investigation
- Daily Site Safety Toolbox Meetings

ENVIRONMENTAL EXCELLENCE

We recognise that caring for our environment is vital and we are committed to the principles of environmental excellence and sustainable development.

GALLERY



VEHICLE FIRE SUPPRESSION SYSTEM

Heavy Equipment System

The Heavy Equipment System (HES) has increased cylinder capacity for longer discharge. Commonly used in mining, the Suppression System offers excellent asset management in the most demanding environments. With its high quality stainless steel, cylinders, cylinder mounts, fittings and nozzles, Taligenix offers a high level of protection for high cost assets.

The HES has been designed to allow configurations to suit applications in a range of industries including:

- Surface and underground mining equipment including draglines, haul trucks, dozers, shovels and shuttle cars
- Construction equipment including bulldozers, excavators and graders
- Large forestry and agricultural equipment including loggers, loaders, harvesters and tractors
- Industrial equipment
- Large fixed mobile power generators and compressors
- Boats and heavy marine equipment
- Railway equipment and locomotives



Dump Truck



Mining Shovel



Forest Vehicle



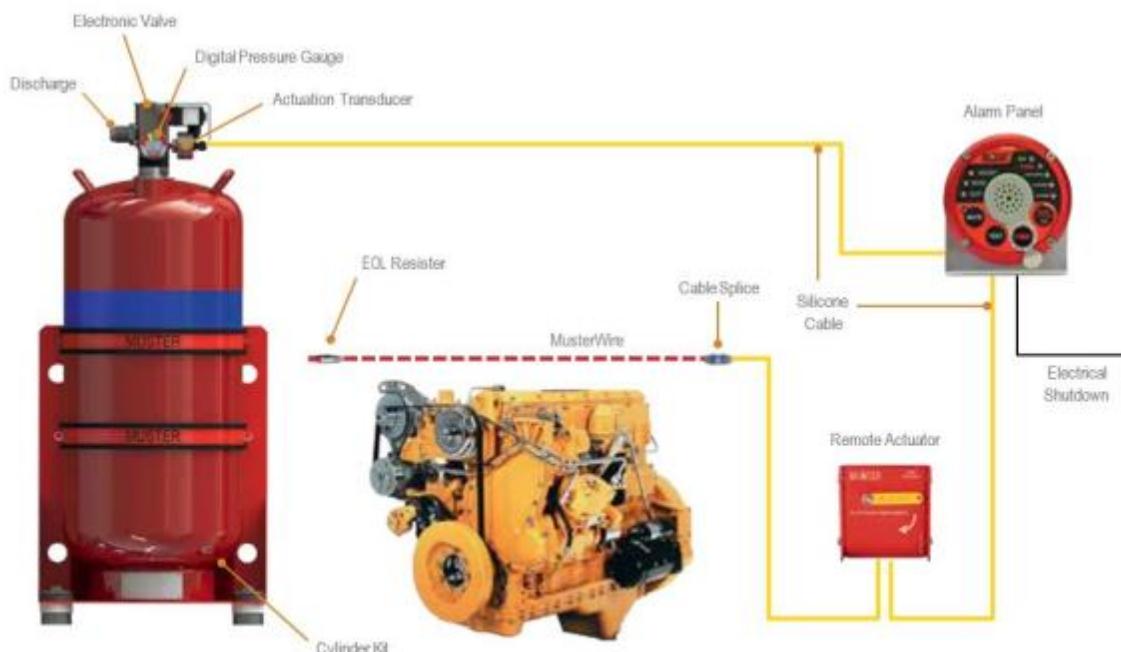
Digger

Detection Types:

1. Linear Heat Detection (LHD)

Taligenix uses Linear Heat Detection for fire sensing. The electrical wire can run throughout the engine bay, gear box, cable harness and other areas of high risk. It ensures a reliable fire suppression system by monitoring and reacting when exposed to high heat. The cable activates at 180°C, when the outer layer is subjected to heat it causes the twin steel conductors cores of the cable to touch, sending a signal directly back to the Alarm Panel. Detection is instant, giving the operator precious time to react.

- 24/7 sensing cylinder actuator monitoring
- 24/7 fire sensing monitoring
- Fully monitored by the Alarm Panel
- Reduces false discharge
- Fast signal reaction time
- Reliability
- Uses its own power source
- Low cost to install due to easier installation process
- Electrical actuation circuit
- Digital pressure gauge



Detection Types:

2. Loss of Pressure Detection (LOP)

Utilizing a state of the art LOP pressure sensor transducer, the system updates the Alarm Panel with information every second. Pressurized tubing is strategically positioned above areas identified in the risk assessment. When the tubing is exposed to fire the rapid elevation in temperature causes the material to rupture. The resulting sudden release of pressure opens the actuation valve and releases the foam solution. The pressure drop in the system will then set off the fire alarm.

24/7 sensing cylinder actuator monitoring

24/7 fire sensing monitoring

Is fully monitored by the alarm panel

Utilises state of the art pressure transducers

Reliability

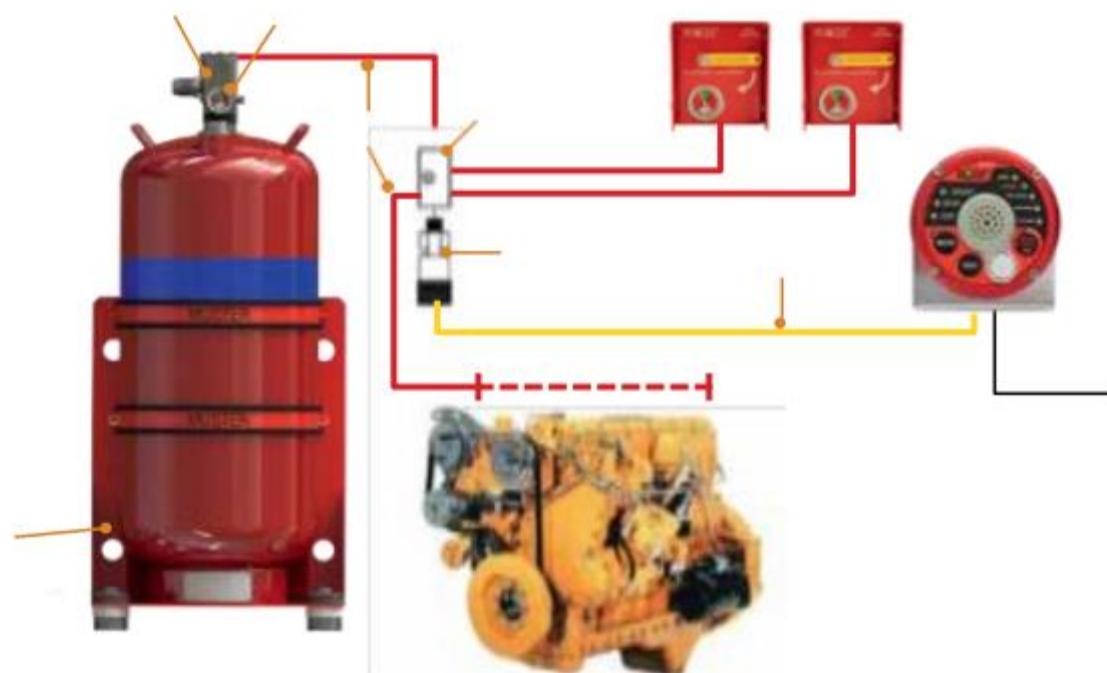
Fast manual actuation

Uses its own power source

Designed to reduce false discharge and alarm

High-quality stainless-steel components

Mechanical pressure gauge



Wacel has successfully installed as well as carried out maintenance of Firematic automatic fire detection and suppression systems on mobile equipment at Mopani Copper Mines Mindola SV - Trident Locomotives T43 at 4440 Level and GM05 at 5270 Level

Redpath Rig Resources CAT 1600G and Redpath Rig Resources SANDVIK Dump Trucks

INSTALLATION OF AUTOMATIC FIRE SUPPRESSION AND DETECTION SYSTEM ON CAT 1600G AND SANDVIK DUMP TRUCKS AT REDPATH



Installation of Firematic automatic fire detection and suppression systems on mobile equipment at Mopani Copper Mines Mindola SV - Trident Locomotives T43 at 4440 Level and GM05 at 5270 Level

Redpath Rid Resources CAT 1600G and REDPATH RIG RESOURCES Sandvik Dump Trucks



Fire Marshal Detection System



- The Fire Marshal detection system was specifically designed with industrial and mining applications in mind
- Configurable for use as a controller in a Fire Detection System
- Configurable for use as a controller in a Fire Suppression System
- Caters for all type of industry standard sensor inputs thus handling whichever application is required

The Fire Marshal control panel was custom designed for implementation on underground environments where harsh conditions are present. This controller can operate as a standalone fire suppression system where no communication infrastructure is available or form part of a vast environmental and protection monitoring system underground that can be displayed on a custom designed SCADA application. Since the system uses an industry standard MODBUS TCP/IP protocol, it can also be incorporated into any existing SCADA system.

The controller is also capable of handling most analog instrumentation inputs and thus enabling the end-user to add additional existing sensors to the system. The unit interfaces with existing underground communication backbone which is typically fiber.

Additional battery management and battery backup is also available for the Fire Marshal panel that can be controlled and monitored from the surface SCADA application thus ensuring adequate operation of battery backup during power failures. Application specific cabling is also installed with the system to ensure optimal performance when the system needs to operate under extreme situations.

Fire Marshal Universal Controller



With the flexibility of the Universal Controller, it can be custom configured to deploy a vast array of environmental monitoring sensors. This includes toxic- and flammable gasses, smoke, air velocity, temperature, vibration, pressure, humidity etc. To put this in a nutshell, the Universal Controller can handle almost any fixed installation sensor that is required. Localized alarming* and indication* is also possible and can be configured according to requirements. Additional digital monitoring* and control* is also possible. This is all communicated on industry standard protocols and can be incorporated into an existing SCADA system.

Technical Specifications

Communication: 10/100 Base-T Ethernet

Supports Protocols: Modbus TCP/IP, TCP/IP, UDP, HTTP, Modbus RTU

Inputs: 8 x Analog Inputs (differential)*

- Current (0-20mA, 4-20mA)
- Voltage ($\pm 150\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$)

7 x Bearing sensors*

- PT100, PT1000, Balco 500, Ni 518

6 x Digital Inputs*

- Dry Contacts-Logic 0: Close to Ground, Logic 1: Open
- Wet Contacts-Logic 0:0~3VDC. Logic 1: 10-30VDC

6 x Relay Outputs*

- AC Rating 120V @ 0.5A
- DC Rating 30V @ 1A

RTD Wire Burn-out Detection

Accuracy: +/- 0.1% or better

Resolution: 16-bit

Audible and Visual local alarm indication*

Isolation Protection: 2000VDC

Power Input: Unregulated 10-30VDC

Power Reversal Protection

Operating Humidity 20-95%RH (non-condensing)

Operating Temperature: -10-70 Degree Celsius

Enclosure Rating IP65

* Expandable and dependent on configuring requirements

Fire Detection Application



With the flexibility of the Fire Marshal control panel, it can be custom configured to deploy a vast array of environmental monitoring sensors. This includes toxic- and flammable gasses, smoke, air velocity, temperature, humidity etc. To put this in a nutshell, the Fire Marshal can handle almost any fixed installation sensor that is required. Localized alarming and indication is also possible and can be configured according to requirements. Additional ventilation door monitoring is also possible. Where long distances are required, the system can be retro-fitted to handle industrial rated RS-485 communication that can allow for the addition of Fire Marshal panels where there is not any Ethernet infrastructure available. Once again, this is all communicated on industry standard protocols and can be incorporated into existing SCADA system as well as for part of the Fire Marshal Detection System.

Technical Specifications

Communication: 10/100 Base-T Ethernet, RS-485

Supports Protocols: Modbus TCP/IP, TCP/IP, UDP, HTTP, Modbus RTU

Inputs/Outputs:

8 x Analog Inputs (differential)*

- Current (0-20mA, 4-20mA)
- Voltage ($\pm 150\text{mV}$, $\pm 500\text{mV}$, $\pm 1\text{V}$, $\pm 5\text{V}$, $\pm 10\text{V}$)

6 x Digital Inputs*

- Dry Contacts-Logic 0: Close to Ground, Logic 1: Open
- Wet Contacts-Logic 0: 0~3VDC, Logic 1: 10-30VDC

6 x Relay Outputs*

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Accuracy: +/- 0.1% or better

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Audible and Visual local alarm indication*

Isolation Protection: 2000VDC

Power Input: Unregulated 10-30VDC

Power Reversal Protection

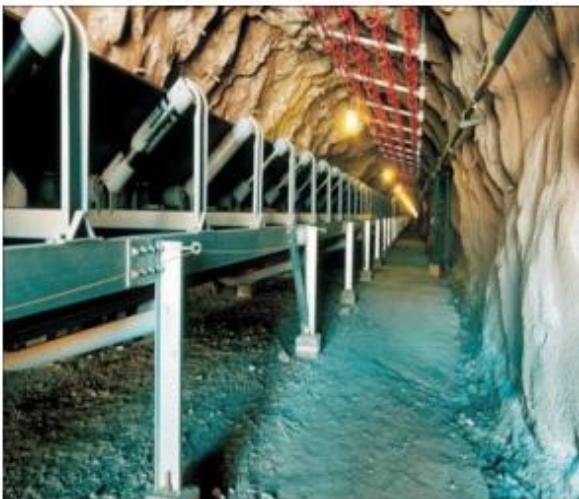
Operating Humidity: 20-95%RH (non-condensing)

Operating Temperature: -10-70 Degree Celsius

Enclosure Rating: IP65

*Expandable and dependant on configuration requirements

Fire Suppression Application



Configured for a Fire Suppression system, the controller caters for 2 Flame detectors (UV/IR or IR3), 2 Carbon Monoxide (or Smoke) sensors, 2 Temperature scanners for belt surface monitoring as well as 6 additional bearing temperature sensors. It also has the capability to monitor a linear heat cable installation. Since the controller is Ethernet based, it is also capable of adding an IP camera which will enable live video feeds on surface. Local audio and visual indications are also present on the controller as well as an emergency activation switch which is installed in a safe area and can be manually activated in the case of an emergency. A maintenance key switch is available to prevent accidental activation of the sprinkler system whilst maintenance work is being carried out in close proximity. The sprinkler activation period of the controller is configurable ensuring adequate extinguishing application.

Technical Specifications

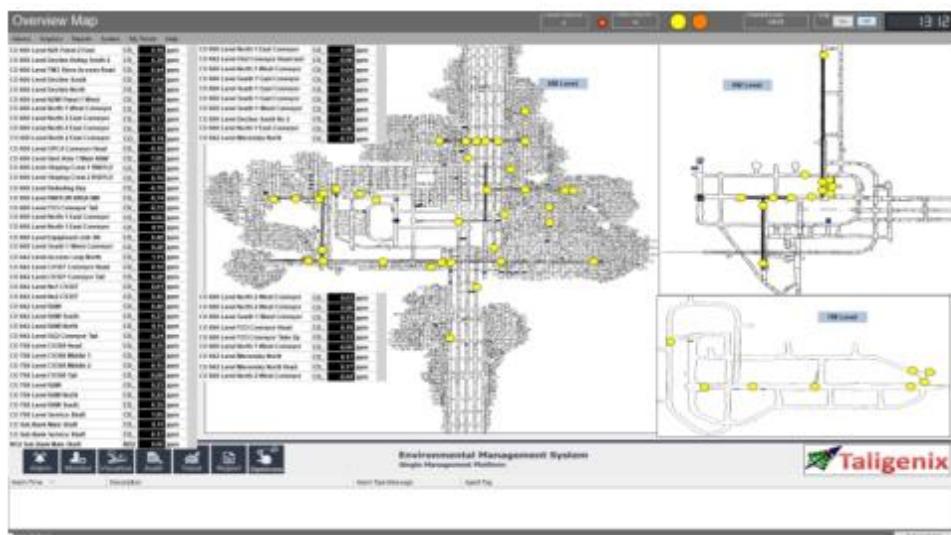
- Communication: 10/100 Base-T Ethernet
- Supports Protocols: Modbus TCP/IP, TCP/IP, UDP, HTTP
- Sensor Inputs:
 - 2 x Flame Detectors (UV/IR, IR3)*
 - 2 x Carbon Monoxide / Smoke sensors*
 - 2 x Temperature Scanners (13:1, -20-500 Deg)
 - 6 x Bearing sensors (PT100, PT1000, Balco 500)
 - 1 x Linear Heat cable monitoring
 - 1 x Manual Activation Point
- Accuracy: +/-0.1% or better
- Resolution: 16-bit
- RTD Wire Burn-out Detection
- Audible and Visual local alarm indication
- Output for Suppression Control Valve activation and Belt Tr
- Local display: Power, Fire, Fault, Battery Maintenance, Syst
- Isolation Protection: 2000VDC
- Power Input: Unregulated 10-30VDC
- Power Reversal Protection
- Operating Humidity: 20-95%RH (non-condensing)
- Operating Temperature: -10-70 Degree Celsius
- Enclosing Rating: IP65

*Expandable and dependent on configuration requirements

Customized SCADA

CONTROL ROOM SCADA VIEW

MOBILE SCADA VIEW



CUSTOMIZED SCADA

The SCADA (Supervisory Control and Data Acquisition) forms an integral part of any monitoring or control system since it enables the control room operator to see an overview of current system conditions and status.

The system can be customized to suit the individual's requirements while standard features like trending, alarming and live viewing from your mobile device is already available. This enables the user to make the correct decisions as well as to guide him/her in the correct procedure to follow.

With the addition of a camera to the system, critical fan-status monitoring and automatic stop-start application from the control room, it even further enhances the critical decisions that needs to be made when danger is imminent and with life's at stake.



HANDHELD GAS MONITORING INSTRUMENTS

Taligenix currently has three types of handheld instruments that can be configured to the end-user's needs.

E1000 - Single Gas Instrument

E4000 - Four Gas Instrument

E6000 - Six Gas Instrument



WD2200 Fixed Gas Monitor



Features

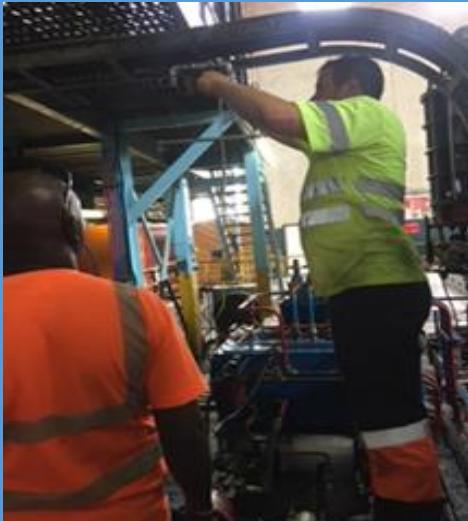
- New design
- SMT technology
- Intelligent modular sensor
- Easy installation
- Localized audible and visual alarming
- LCD display

Technical Specifications

- **Sensor type:** Catalytic sensor, electrochemical sensor
- **Gas sampling :** Natural diffusion
- **Accuracy:** < ±3% F.S.
- **Response Time:** <30s
- **Working Temperature:** Flammable gas: -40 °C
- **Toxic Gas:** -20°C~ 50°C
- **Ingress protection :** IP65
- **Explosion-proof grade:** Ex d IIC T6
- **Power supply:** DC24V ±25%
- **Power consumption :** <5W
- **Signal output:** 4-20mA (3 wire) RS485 (4 wire)
- **Alarms:** Audible and visual alarm signals
- **Screw size:** G1/2" and G3/4"
- **Model Numbers:**
 - WD1200-No screen display; 4-20mA output
 - WD1210-No screen display; RS485 output
 - WD2200-Screen display; 4-20mA output
 - WD2210-Screen display; RS485 output

INSTALLATION OF AUTOMATIC FIRE DETECTION AND SUPPRESSION SYSTEMS AT MOPANI SOB WINDER HOUSE

Wacel has successfully installed Automatic fire detection and suppression systems at Mopani SOB Winder House, 1340ml TOROSHOP refuelling bay, Smelter Casting HFO Pump Room, Smelter MCC AND MV Substation, Mufulira Concentrator (Engineering) Sync North 3360 refuelling bay and oil Storage.





STAINLESS STEEL CATHODE PLATE REPAIR WORKS

WACEL ENTERPRISES CARRIED OUT MINOR AND MAJOR REFURBISHMENT WORKS OF CATHODE PLATES FOR MOPANI COPPER MINES

Refurbishment included:

- A) Replacement of Copper Clad Stainless Hanger Bars
- B) Stainless Steel Flattening. Manual repair of cathode plates to recover sheets to acceptable verticality and stiffness



Before



After



Deformed Cathode Plates



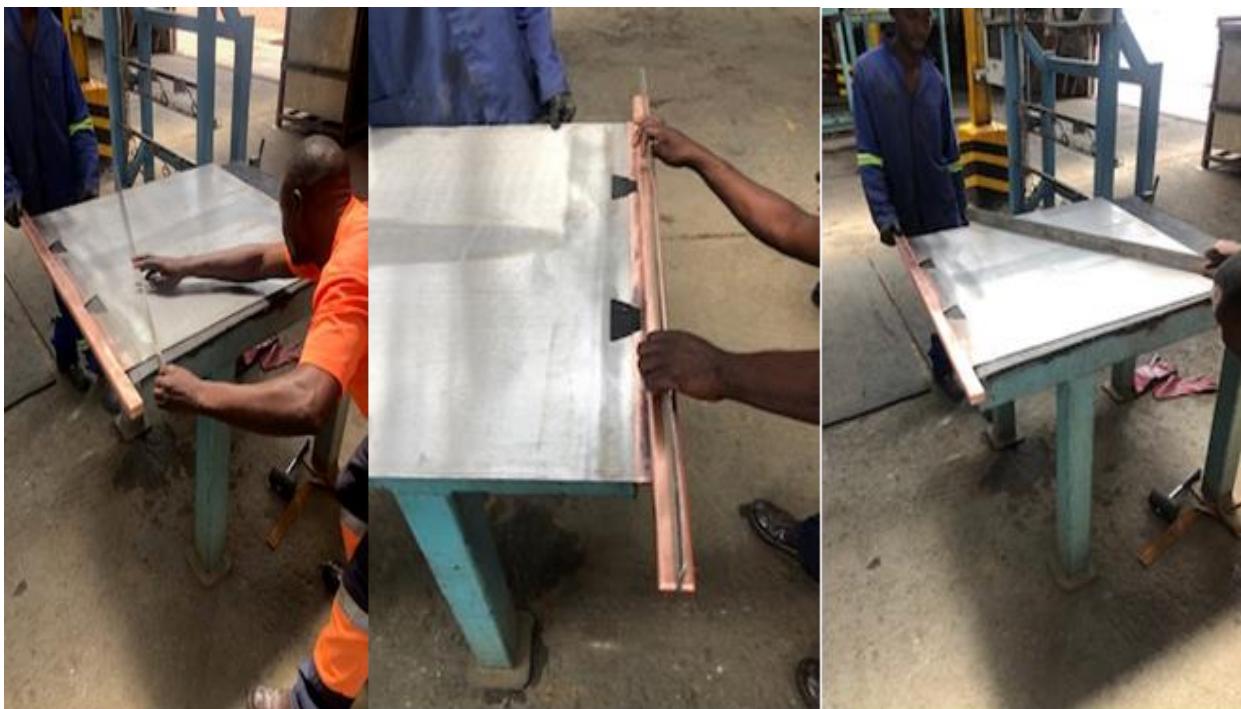
Edge Strip Removal and Surface Preparation



Straightening of Deformed Plate



Hanger Bar Replacement



Performing vertical checks

INSULATOR BLOCKS



Insulator/Spacer Blocks Supplied to
TLP SX & EW KCM Smelter Co
Limited Konkola Copper Mines Plc

feature and benefits

Accurate spacing of electrodes in cells, reduced risk of electrodes shorting out against each other.

Efficient placement and removal of electrodes in and out of the cells during harvesting cycles.

Decreased power loss over the electro-winning circuit.

Easy plug and play design.

CSI has developed a world class innovative Insulator block called the CSI PMC Insulator Block. These blocks are commonly known as Spacer Blocks or Capping Blocks. The CSI PMC insulator Block is an acid resistant spacing block that comes in a number of designs, tailored to our customers specific needs. The blocks are designed for the seating & spacing of Electrodes (Cathode & Anodes) in an acid bath, allowing for better, copper, nickel, zinc, cobalt and manganese electro-winning efficiencies.

INSTALLED INSULATOR BLOCKS AT TLP SX & EW KCM Smelter Co



Feature and benefits

Accurate spacing of electrodes in cells, reduced risk of electrodes shorting out against each other

TRAMP METAL DETECTOR

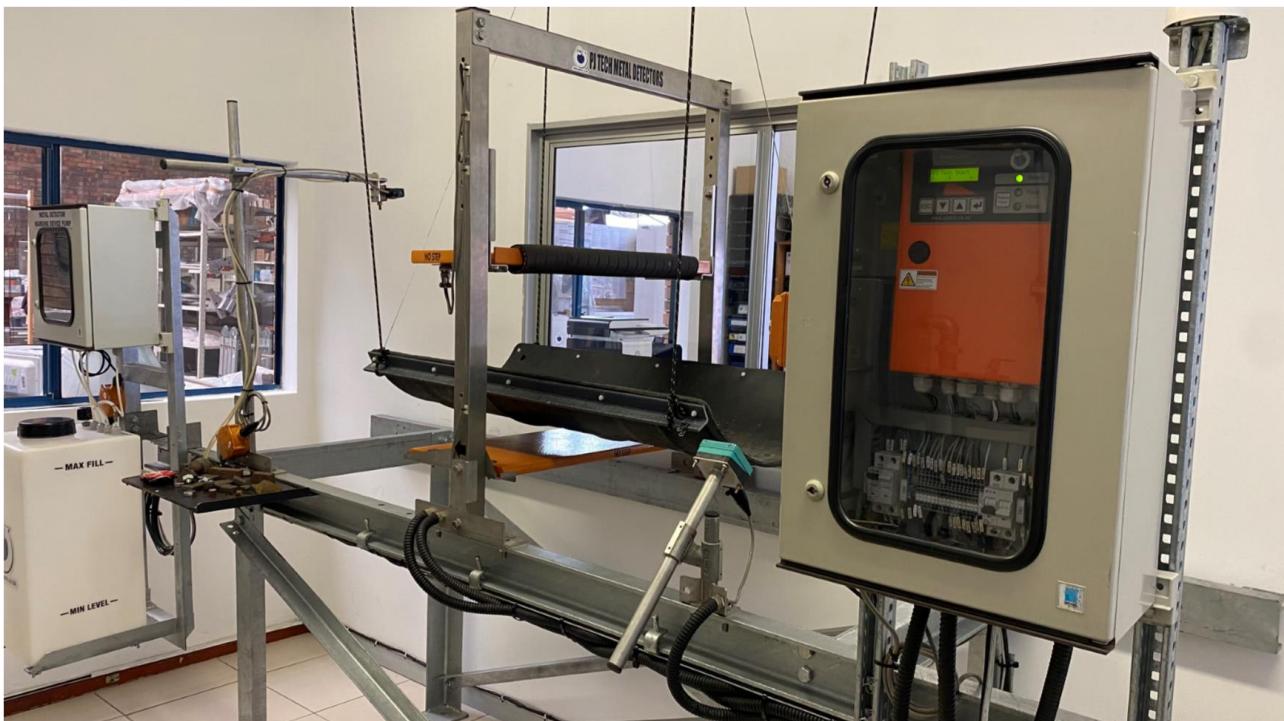
Tramp Metal Detector consisting of:

- a) Electronics/Control Unit
- b) Antena Search Frame Assembly
- c) Marking Device
- d) Clip Detector

TRAMP METAL DETECTOR SMART-100

RELIABLE - SUPERIOR PERFORMANCE

SMART-100 tramp metal detector is designed to operate in very wide and difficult range of applications. It can detect MAGNETIC & NON-MAGNETIC metals while ignoring VERY CONDUCTIVE & EVEN MAGNETIC MATERIALS. It is even compatible with steel corded belts as well as the belts where steel clips are used for splicing



Complete with Protection Enclosure



Control Unit Inside Protection Enclosure



Inside Control Unit

The system will consist of SMART-100 tramp metal detection system. This system has the capability of ignoring highly conductive and even magnetic ore while detecting tramp metal pieces. The system is also suitable to operate on steel-corded belts.



Complete Marking Device
with 50L Tank



Enclosure with Pump &
Accumulator



Adjustable Spray Nozzle
Frame





Watteredge LLC
567 Miller Road
Avon Lake, OH 44012
Phone: (440) 933-6110
Fax: (440) 933-8248
www.watteredge.com

February 2, 2023

Good Day,

This letter serves to state that we Watteredge, LLC will be giving our full support to Wacel Enterprises for all current and future needs of 35kA switches. Additionally, Watteredge, LLC will continue to offer our full services that Wacel Enterprises may need such as design verifications and technical support.

This support by Watteredge, LLC will extend from this current project requiring (10) 35kA switches and through any upcoming plant expansions where additional switches will be required.

Should anyone need to verify this they can contact me directly.

Kind Regards,

Christopher Makselan
1-440-930-6920
Chris.makselan@watteredge.com



Sybotec Pty (Ltd)

Manufactures of Mining and Industrial charging equipment

Web: www.sybotec.co.za

Phone: (012) 253 8036 / 081 505 8888

E-Mail: sales@sybotec.co.za / services@sybotec.co.za

Vat No : 9840615646

2th March, 2024

To Whom It May Concern

This letter serves as an official appointment of the following company;

This serves to confirm that Sybotec Pty (Ltd) has appointed Wacel Enterprises Limited of Plot No. 4145 Government Road, Industrial area, Kitwe as a sole retail agent of Sybotec Pty (Ltd) products.

Wacel Enterprises Limited is an authorized sole agent in Zambia for Sybotec products.

Furthermore, we will give Wacel Enterprises Limited full support to maintain and upkeep the high standard of Sybotec products.

Wacel Enterprises Limited personnel are dully trained to maintain and service Sybotec products.

This authority cancels all previous authorities and that this appointment is effective 2 March, 2024.

Marcel Bashoff
General Manager
Sybotec PTY Limited



March 20, 2024

Mopani Copper Mines PLC
P.O. Box 22000
Kitwe, Zambia

Dear Representative, Mopani Copper Mines PLC:

As the original registered Original Equipment Manufacturers (OEM) of TJL Solutions Ltd. Pty. Luna cap lamps have appointed Wacel Enterprises Limited, 4145 Government Road Industrial Area P.O. Box 22399 Kitwe, Zambia: Responsible party, Bruce Kaluba, as our sole agent for our product range with Mopani Copper Mines PLC.

Wacel Enterprises Limited is authorised and supported to distribute our products, and have the full factory back up and support. This is vital to maintain the high quality and service that is necessary to conform to the high standard that is a trademark of the TJL product range. TJL provides ongoing training of the technical staff of Wacel Enterprises Ltd. in Zambia and the required training certifications.

Furthermore, authentic TJL miner cap lamps are tested and certified for compatibility and use on the Sybotec system of charging racks; forward and reverse compatible with older and the latest specifications of modern charging racks.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Patrick Chew'.

Patrick Chew
Managing Director

