

VANADIUM

CAPABILITIES

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www.vanadiumgroup.com.au

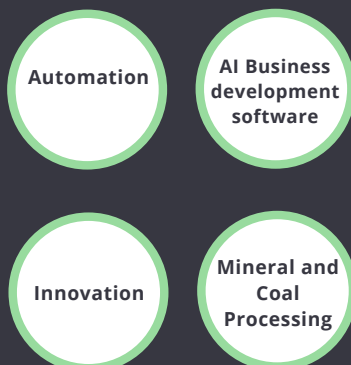
WHAT WE DO

We are a small EPC company, focusing on projects where we can demonstrate our unique model of providing innovative solutions using our own or partner technologies. We solve our clients' toughest problems by leveraging our unique blend of process expertise, operational understanding and project delivery excellence. We manage all aspects of your project from Engineering and Design, through to Construction and Maintenance. Asset Management Services and Equipment Life Cycle services for all our partner and OEM equipment provided and installed by us. Tailings re-treatment and waste to energy form part of our strategic growth plan. Having like minded innovative companies to partner with, allows us to find the best solutions for all applications.

OUR TIMELINE



EXPERTISE



OUR TEAM

GERALD VAN NIEKERK
Managing Director,
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KYLE VAN NIEKERK
Sales & Marketing Manager
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FIELDS OF INTEREST





ENGINEER, PROCURE, CONSTRUCT

Partnering with leaders in processing and preparation plant design, we offer our clients an integrated service from concept through to commissioning. Our team brings extensive expertise across coal, mineral sands, iron ore, gold, zinc, lead, copper and lithium processing plant design, including technology selection, processing optimisation and yield improvements. Our process design team works with clients from the evaluation of data, development of models, detailed design, equipment selection through to operational readiness and commissioning. Our project development services include , project scoping, conceptual design and engineering. Converting ideas into reality through sound engineering practises and proven technologies.

Skills

Chemical/Processing
Mechanical
Electrical
Structural
Civil



Services

EPC - Engineer, Procure,
Construct
Project finance
Concept Design
Project Delivery



LIFE CYCLE MANAGEMENT SERVICES

Vanadium Maintenance Engineering (VME) provides clients with the technical support required to develop, implement and sustain successful maintenance systems and practices on projects we engineer and construct. VME's continuous improvement philosophy, and routine evaluations of the maintenance effort, drives proactive maintenance and reliability practices, systems and technology aimed at optimising plant performance.

Maintenance

As part of our EPC offering Subcontractor Management
Operation and/or Maintenance
Asset Life Extension
Provision of Specialty Maintenance Services
Technical Training Increasing Average Throughput
Plant Modifications/Improvement
Asset Optimisation Ensuring compliance to Equipment Safety standards



COAL TAILINGS RE-TREATMENT & WASTE TO ENERGY

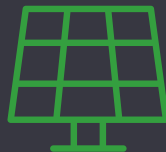
The technology process is an advanced conversion technology that has the ability to produce a clean, high calorific value gas from a wide variety of waste and biomass streams. The hydrocarbon content of the waste is converted into a gas, which is suitable for utilization in either gas engines, with associated electricity generation, or in boiler applications without the need for flue gas treatment. This process is capable of treating many different solid hydrocarbon based wastes whilst producing a clean fuel gas with a high calorific value. This gas will typically have a calorific value of 19 – 30 MJ/m³ depending on the waste material being processed.

Opportunity

We convert waste into an energy source that's in desperate, rapidly increasing demand. With constantly increasing cost and with limited availability, Electricity is derived from energy fraction within the waste, making sustainability possible with massive carbon foot print reduction.

What we do

Technical Due Diligence
Coal Discard Verification
Phased Approach
Planning Commercial Offering
Manage Regulatory Requirements
Design, Construct, Commission, Operate, Maintain



Challenges

Limited space to continually manage waste
New dams are costly and have licensing challenges
Increasing cost of disposal/management
Volume of waste is so great that it's impossible to consume it all

Our Offering

One stop Shop
Detail, Execution
BOOT, BOO, finance models
Operations support
Cost saving





ORE SORTING

Along with our partners we deliver innovative sorting solutions and sophisticated processing equipment for demanding industrial applications. The sorting equipment can be applied for separation of various materials, based on differences in physical properties. After significant efforts in R&D projects, we can provide the latest state-of-the-art equipment together with the know-how for full scale industrial solutions. Typical applications include: Pre-concentration of metal ores (iron, zinc and lead, tungsten, copper, gold, nickel, chrome, etc.) and other minerals. Implementation of sorting in traditional processing plants, Reprocessing of ore waste material, Coal enrichment, Recycling of different materials, Quality control and material inspection in production systems.

Opportunity

Eco-Friendly Sorting Technologies for the Mining Industry
Operating in dry mode, it does not require any use of water.

Our value proposition

Robust sensor based sorting systems, used for the analysis, identification and sorting of particles based on different physical properties.



SPIRAL AUTOMATION

Spiral circuits tend to be neglected operationally. The sheer number of spirals and the manual nature of the splitter adjustment mean that operators are slow to respond to changes in feed quality. To ensure product quality is consistently met, operators acknowledge they opt to reduce the dense medium cyclone density in the coarse circuit – simply because it can be done from the control room by the press of a button. The major benefit the Spiral Galaxy is that it automates the spiral splitters allowing the spiral circuit to be controlled online to respond to changes in feed quality in step with the other circuits.

Challenges

Spiral circuit is currently a black box
(no output, no ability to control remotely)

Benefits

Splitter setting can be viewed and set from anywhere
Operators can manipulate splitter positions from SCADA
Very fine splitter positioning
Real time reporting



PAST PROJECTS

Solid Bowl Centrifuge Process Modification

| Vanadium Pty Ltd | 2018 |

Moranbah, Qld (capital \$4.5M) Carborough Downs Coal Management Pty Ltd (CDC) operates the Carborough Downs Coal underground mine and Coal Handling and Preparation Plant (CHPP) located approximately 30 km east of the township of Moranbah in the Bowen Basin. Vanadium provided EPCM services to our Fitzroy Pty Ltd including detailed design, procurement and fabrication, construction management and commissioning, of a brownfield modification to add two new solid bowl centrifuges and associated equipment to the CHPP. This fast-tracked project allowed CDC to increase recovery of coal fines down to 45 micron to provide additional 5-8 product tonnes per hour, with a moisture content of less than 30 percent. This project represents a significant return on investment for CDC with compelling economics and is a game-changing proof-of-concept for fines recovery projects in the Bowen Basin.



Spiral Automation

| Vanadium Pty Ltd | 2019 |

Glenden, Qld Newlands Coal Management Pty Ltd (NCM) operates the Glencore Newlands mine and Coal Handling and Preparation Plant (CHPP) located approximately 30 km east of the township of Glenden in the Bowen Basin. Vanadium provided a design, manufacture, installation and commissioning, of a Spirals Automation and Spectroscopy analysis system for the CHPP. This project allowed Newlands to increase recovery of coal fines on thier spirals. The project represents a significant return on investment for Newlands with compelling economics and is a game-changing proof-of-concept for spiral control in the Bowen Basin.



PARTNER / OEM EQUIPMENT

Solid Bowl Centrifuge
Ore Sorter technologies
De-watering
Spectrometer / Analyser