



BRIEF HISTORY

The Company was formed in 2002 by four partners who believed there was a business opportunity available in the contract metallurgical arena. This was bolstered by a fifth partner joining in early 2004.

MRD have extensive knowledge in the metallurgical arena and have a sound reputation with many clients, including a number of the larger companies.

MRD provides an outsourced solution to both large existing companies as well as new developing BEE junior companies.

Combined experience in the following arenas is over 75 years:

- Gold
- Platinum
- Diamonds
- Coal
- Chrome
- Vanadium
- Heavy Minerals
- Dump Reclamation

Notwithstanding this, MRD has also been involved in other minerals and will approach these where appropriate and where it believes it can add value.

MRD's Capabilities:

- Contract Metallurgical Operations
- Process design
- Feasibility studies, due diligence, HAZOP studies, etc
- Plant and Project Optimization / Modifications
- Project Management
- Construction management
- Plant Commissioning

EXCELLENCE IN METALLURGICAL SOLUTIONS

We add value to all our clients' business.

MRD's Vision:

We will be the customers' first choice for all his Metallurgical concerns. We will apply the vision, experience and energy of a strong team to the pursuit of a profitable growth.

MRD's Mission:

We will develop innovative, cost effective solutions for our customers by applying our experience base and new technology where required.

MRD's Values:

Customers

- Our Customers are our “partners” in all projects and we value gaining the preferred status by delivering the projects and services that will fulfil customer requirements

People

- MRD values its people.
- Working in partnership to find solutions and to deliver expected results
- Attract and retain quality employees
- Communicate effectively at all levels

Responsibilities

- Generate profits and create shareholders value through outstanding service
- Health and safety of employees and their communities.
- Preserving the environment for future generations

BUSINESS PHILOSOPHY

1.1. Client Relations

- Outsourcing of an Operation that produces a product for a client is an act of faith.
- Notwithstanding other drivers such as economics, scarce resources, etc. it is an act of faith whereby the client puts his production and reputation in the hands of a contractor.

- The team at MRD takes this very seriously and believes that to successfully manage an Operation on behalf of a Client requires more than good technical, operational and project skills.
- What sets us apart is our willingness and ability to develop an open and trusting relationship, resulting in the role of the “contractor” changing to one of “partner”.
- In long-term relationships, a joint willingness to produce a successful project, and to continuously work through problems to solutions, is the only recipe for sustainability.

Despite being the contractor, we believe that we can only be successful by knowing and understanding the business of our Client and all the problems he is faced with.

Through this broader context we are able to assist our Clients in developing sensible, cost effective solutions, both on the initial installation and for any future expansions / changes to product specification / etc.

1.2. Business Environment

The business environment in which we find ourselves is filled with opportunity, as well as challenges. To be sustainable, a business must approach both areas with a long-term view. The opportunities are naturally important, and fairly self-explanatory. The challenges include:

- The changing mining and environmental arenas.
- The need for meaningful and effective empowerment.
- Affirmative action.
- The lack of competent personnel in a number of important areas.

MRD has been active in addressing these areas, and is confident it will be able to meet these challenges.

MRD is also in negotiations with a leading Engineering House to acquire a strategic partner to boost the overall in-house Capabilities in all future ventures. This pending Relationship will also boost MRD's BEE scorecard with at least 26% BEE ownership.

1.3 Areas of Expertise

MRD's prime business objective and focus is to operate metallurgical plant on contract to clients, or within its own projects. The team has a large experience base in BOOT, BOO, BO, and O&M in South Africa. However, where appropriate, MRD also has the experience to provide services in the areas of:

- Feasibility studies
- Plant / project optimizations
- Plant modifications / additions

The management team has a combined experience of ca 75 years in the metallurgical operations arena, including ca 44 years in the contract metallurgical operations arena.

This experience is utilized by the team during the design phase, whether in-house or in conjunction with a process design company, to produce cost-effective, safe, maintenance and operator "friendly" plants.

This provides improvements in both production throughput, and operating costs.

Where necessary the broad, overall experience base allows MRD to be involved in projects from conceptual stages, working in conjunction with other disciplines / companies. This broad involvement allows value to be added by incorporating the "cause and effect" aspect to all areas of the project.

To expand its own capabilities and technical expertise, MRD has entered into association with a number of strategic technology suppliers.

MRD believes that technological advances must be exploited to be competitive, and we are progressive in the application of such new technology where it believes a benefit will accrue.

A further market which MRD has targeted is industrial effluents, with specific reference to assisting clients in developing cost-effective and sensible solutions that improve the bottom line, as well as our environment.

MRD has associated with a specialist in this field and will provide operational and other experience to the association. Again, the primary objective is to operate these plants on behalf of the clients.

1.4 Operating procedures

MRD's experience in the application of procedures is extensive, be this in operational management, safety and health, environmental, etc.

Where the client provides the procedures to which MRD must adhere, this is done without complication and where these are lacking, MRD will provide the necessary procedures existing within our company.

This experience extends to operating within the client EMPR requirements, and the response of the client is often to hand over the management of such issues to MRD directly, where they apply to the operation/plant environments.

1.5 Safety

It is clearly understood by the MRD management team that Safety is a non-negotiable issue. To this end all staff are required to comply with all procedures and if this is not adhered to firm disciplinary action is taken to maintain the high safety levels.

Maintaining a high standard of safety is one of the prime functions of the senior management team and their Heads of Department / Business Unit Managers.

The MRD team has experience in ensuring high safety ratings are obtained and have, in their experience, obtained a number of 4 and 5 Star NOSA ratings on their first rating by NOSA.

2.0 THE VIEW AHEAD

We believe that the changes taking place in the mineral beneficiation arena will require companies that are able to provide skills to support these changes.

The ability to successfully operate and manage projects on behalf of Mining Houses, and to do so cost effectively, will stand MRD in good stead as this market grows.

The contract metallurgical operations arena has also gained acceptance over the past years, even within a number of large companies. This, accompanied by a growing incidence of "partnering", will ensure that many more people will be able to access the minerals market.

The experience within the MRD team, in this arena, will allow MRD to successfully operate and expand this business opportunities, providing service that will result in mutual benefit and long-term relationships for the Clients and MRD.

MRD CAPABILITIES

Contract Metallurgical Operations

This is the core function and focus of the Company. The team has extensive experience in the evaluation of such projects, from greenfields to plant construction, and has a wealth of experience in the operational management of such projects, including maintenance, forecasting, SHE aspects, client liaison, optimisation of the project, etc.

Process design

The team have all had experience in design work in various spheres in the industry. When the practical experience and knowledge of the team is combined with this design experience, then practical, cost-effective plant is the result. The plants also cater for the problems faced by the operator, and allow for ease of maintenance.

Feasibility studies, due diligence, etc

The team has carried out a number of these on behalf of various clients, and often included testwork, utilising the available metallurgical laboratories, as appropriate. The team is able to provide both the technical and the operational knowledge into the report. This operational knowledge is often lacking in many of the companies which concentrate on such work.

Plant and project optimisation

Again the depth of the operational experience vested within the company allows efficient evaluation of a client plant and practical, effective recommendations can be made.

Project & Construction management / plant modifications

MRD can project manage the complete design and/or construction of small, medium or large projects and plant modifications. The types of Contracts can vary from EPCM (Engineer, Procure, Construction Management) right through to BOOT (Build, Own, Operate & Transfer). The operational experience within MRD is also utilised to ensure that the plant operator will have a practical plant that is operator and maintenance friendly

PROJECTS UNDERTAKEN BY MRD

Project description	STATUS	Contract type	Duration (months)
Process Design of a Chrome Beneficiation Plant at ASA Metals.	ONGOING	EPCM	14
Sampling of Uranium bearing evaporation ponds and storage dams at NECSA.	COMPLETE	Reimbursable	2
Design; Construct and Operation of a Uranium Leach Plant to treat the Uranium bearing material from NECSA	ONGOING	EPCM + O&M	36
Operations of a 100 000 ton per month Crushing and Screening Plant at New Vaal Colliery	ONGOING	Operate & Maintain	12
Ongoing Operations and Maintenance of a 28 tpm Vanadium Pentoxide recovery plant from an industrial effluent stream in Newcastle.	ONGOING	Operate & Maintain	60
Operational staffing and management of the 28,000 tpm metals from slag plant for a major Platinum Producer	ONGOING	Operational management	36-40
Design of a 1000 ton per month Copper metal Production Facility utilising revolutionary new Technology	COMPLETE	EPCM	12
Consulting on operations (including test work) and plant design for New Kleinfontein Gold Mine	COMPLETE	Reimbursable	8
Design of a 100,000 tpm Platinum Concentrator for Tailings Dump re-treatment	COMPLETE	Reimbursable	2
Design and 15% cost estimate for a 1.1 mtpm dump reclamation system and pumpstation for Konkola Copper mines. It included the mining methodology, mine planning, safety procedures, etc	COMPLETE	Lump sum	3
Re-design, upgrade, and modifications to a second-hand 6 ton gold elution plant and smelthouse. Included commissioning	COMPLETE	Lump sum	3
Process design and modifications to an operational gold plant to allow processing of harder ores, as well as increasing throughput by 25%. Included the installation of a tertiary crusher, second mill, and 3 further leach tanks.	COMPLETE	Lump sum	4
Process design and pilot plant design for a new, more cost-effective Titanium metal process.	COMPLETE	At risk (partnership)	4
Design, installation, and commissioning of a 120,000 tpm slime dam reclamation system and pumpstation	COMPLETE	Lump sum	4
Design of a 200,000 tpm sand dump reclamation system and pumpstation	COMPLETE	Lump sum	3
Design and construction management for a 180,000 tpm slime dam reclamation system and pumpstation supplying two plants	COMPLETE	Lump sum	5
Due diligence on a Bankable Feasibility study on a 180,000 tpm gold plant for a Canadian listed mining company	COMPLETE	Lump sum	1.5
Feasibility study on the re-opening of a gold mine and gold plant, including test work. In partnership with companies with geological and mining expertise.	COMPLETE	Lump sum	3
Due diligence on a West rand gold mining project for a London listed company	COMPLETE	Lump sum	2

Due diligence on a West Rand gold mining project for a local investment company	COMPLETE	Lump sum	3
Due diligence on a Bankable Feasibility study on a 100,000 tpm gold plant for a Canadian listed mining company	COMPLETE	Lump sum	1
Design, construct, and operations of a 40,000 tpm diamond DMS plant in Lesotho for a London listed company.	COMPLETE	EPCM	9
Design and construction of a 28 tpm Vanadium Pentoxide recovery plant from an industrial effluent stream.	COMPLETE	BOOT	65
Design and construction of a 28 000 tpm metals from slag recovery plant for a major Platinum producer.	COMPLETE	EPCM	8

ADDITIONAL CONTRACT EXPERIENCE OBTAINED BY THE TEAM

Notes	Project description	Contract type	Capital (Rm)	Duration (years)	Staff (ops+eng)
	150,000 tpa gold plant, from crushing to tailings deposition. (Inc. refurb.)	BOOT	4	4	45
	2,100,000 tpa sand dump reclamation station (6 km pipeline to plant)	BOOT	7	5	30
1	360,000 tpa dump reclamation and gold plant	BOOT	12	2.5	42
	1,200,000 tpa coal stockpile re-treatment plant (HM) at a power station	O&M		1.5	24
	900,000 tpa HM coal washing plant (export and local product)	O&M		6	31
1	360,000 tpa dump reclamation and gold plant	BOOT	19	6	44
1	800,000 tpa dump reclamation and gold plant	BOOT	25	5	56
	2,040,000 tpa sand dump reclamation and pumping station (two sites)	O&M		1.5	35
2	900,000 tpa hard rock and 900,000 tpa dump reclamation platinum concentrator	O&M		5	125
3	9,360,000 tpa heavy mineral dune reclamation, re-deposition, and rehabilitation.	BOOT	46	8	128
	192,000 tpa gold plant. (flotation and gravity)	O&M		2	30
	2,220,000 tpa sand and slime dump reclamation and treatment plant.	O&M		1	158
	Dump mining/reclamation study for the De Beers CTP project				

- **EPCM is Engineer, Procurement & Construction Management**
- **BOOT is Build, Own, Operate, Transfer**
- **O&M is Operate and Maintain**

- 1 These projects were based on receiving income only from the gold produced, and involved the team being responsible for sampling, test work, design, EMPR input, and O&M of the project from commissioning to completion. These were all environmentally sensitive areas involving removing dumps from river banks and mountain slopes.
- 2 This plant was refurbished by a large process design company after being mothballed for circa 8 years. The team was responsible for the O&M of the project.
- 3 The team was involved with the client, from conceptualization through design, (including on-site test work), of the methodology and process to be used to recover the dune. The team then took responsibility for the mining, re-deposition, and dune rehabilitation aspects of the client project on a BOOT basis.

SUMMARY OF THE SURFACE RECLAMATION EXPERIENCE VESTED WITHIN MRD

The senior team members collectively have in excess of 56 years experience in the reclamation of surface reserves, and have been involved in the following projects:

Anglo American ERGO project

- Reclamation of old slimes dams to a 2,5 million tonnes per month Carbon In Leach gold recovery plant
- Reclamation stations in the order of 24 000 to 33 000 tonnes per day, with one station doing 50 000 tonnes per day
- Experience gained on the best methods of reclamation and maintenance.
- Involved in the design, construction and commissioning of various pump stations.

Ticor SA Hillendale Heavy Minerals project

- Reclamation of an inland dune in the Richards Bay area, which is then pumped to the Primary Wet Plant where the heavy minerals are extracted.
- Reclamation stations feeding the PWP are designed for 26 000 tonnes per day.

- First time ever that a dune has been hydraulically monitored in the world successfully long-term.
- Experience gained in methods of reserve blending. (Required due to the variations in slimes and heavy minerals content.)
- Involved in the design, construction and commissioning of the pumping systems. This included the monitor gun water and reclamation stations.

Avgold Barberton Division

- Two CIL gold plants reclaiming 30 000 and 60 000 tonnes of old flotation tailings dams per month, by hydraulic methods.
- Experience with regard to blending coarse with finer material to ensure adequate viscosity in the CIL plant was maintained.
- Pioneered the down-slope reclamation method, resulting in less mechanical clean-up, improved density control, reduced costs, and lower susceptibility to rain water ingress.
- Were part of the overall design team, which included the various pumping systems and reclamation stations.

Harmony Gold Mining Company Ltd

- Responsible for the design and construction management of a reclamation and pumping station to process 160 000 tonnes of old tailings dams per month. The tailings was split between two separate gold plants, on tonnage control, and had to cater for the various tonnage scenarios thus generated.

SENIOR MANAGEMENT TEAM

Henk de Klerk (Managing Director)

Henk has joined Anglo American as a bursary student and has over twenty four years' experience in the extractive metallurgical field. Three years were spent in diamonds with De Beers, fifteen years with AngloGold where at ERGO all aspects of slimes reclamation, flotation, CIL , gold & acid plant and slimes re-deposition was covered. Expatriate work included two years in West Africa at Sadiola Gold mine in Mali and six years at SkorpionZinc in Namibia. Henk joined MRD in January 2012. Henk's experience includes resource evaluation, process management, operations management and six years senior management of large scale production environments.

Jacques Badenhorst (Director)

Jacques spent six years in production for a large mining company, involved in both production and metallurgical development arenas. He also gained valuable experience commissioning a large gold plant in Mali. Jacques then joined the contract operations arena as a Plant Manager on a coal plant and left the company, after four years, as an Operations Manager having been responsible, from inception through to production, for the mining portfolio of a Heavy Minerals project with a major client.

Harry Larkins (Operations Director)

Harry spent 7 years in a large mining company in the operational arena, gaining experience in various aspects of the gold mining industry, including dump reclamation and research facilities. Harry then moved into the contract operations as a Plant Manager on a coal plant, later becoming involved in the gold, platinum, and heavy minerals arenas. After four years, Harry left as Operations Manager responsible for the mining portfolio of a Heavy Minerals project with a major client.

Japie Grobler (Financial Director)

Japie completed his SAICA articles and spent nine years in the accounting and audit environment. He entered the commercial field in 2008 as financial manager at CDT Homes, which operates in the construction sector. During this time he helped guide the company through the recession by way of meticulous use of his knowledge and sound business practices. He left CDT in a sound financial situation with great optimism for the future. Japie joined MRD in June 2010.

Ian Graupner (Non – Executive Director)

Ian has over twenty two years experience in the extractive metallurgical field. Six years were spent in a production environment, one year as a Process Engineer and ten years with a large process design company establishing a Contract Metallurgical Operations capability. Ian left as Executive Director of this segment of the company. After establishing and working within MRD, for four years, Ian has decided to pursue new challenges in his life but remains a non-executive director, allowing his expertise to still contribute to the company.

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