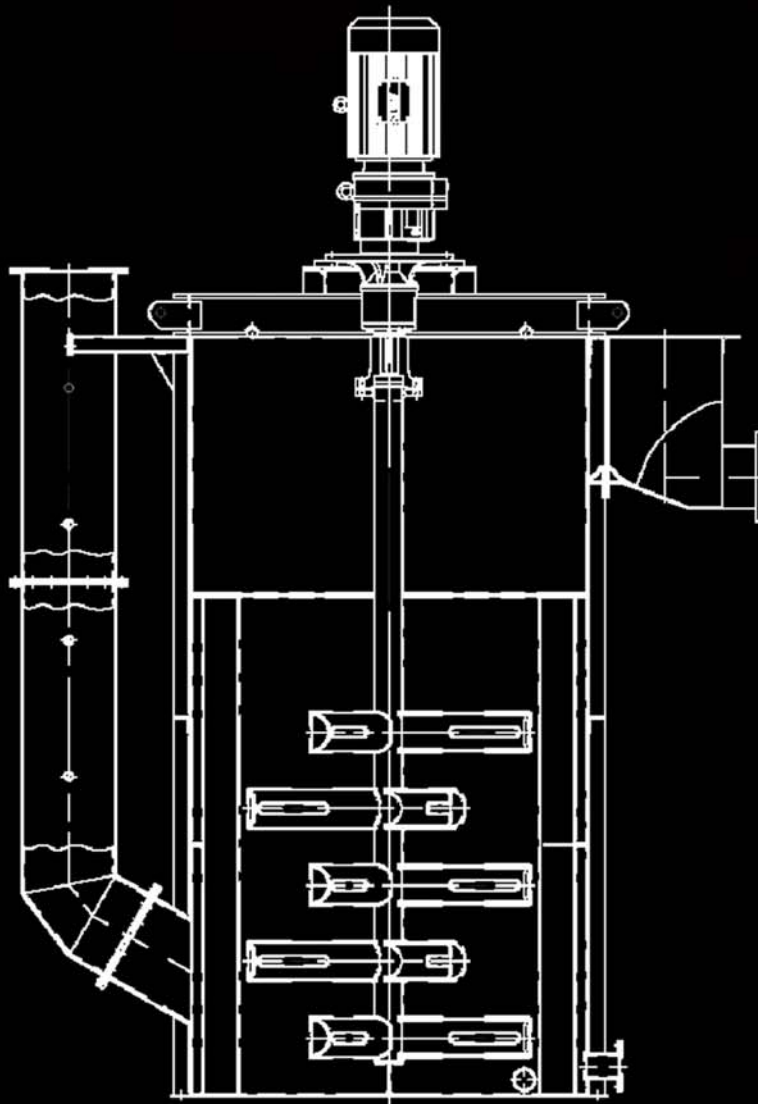


# attrition scrubbers



## OUR COMPANY

MIP Process Technologies (Pty) Limited is a South African Process Equipment sales and manufacturing company, which offers customized and innovative process solutions for the Mining, Minerals Processing and related industries. It is a 51% black-owned and 100% black-managed company, established in 2007. We pride ourselves on being truly customer-centric, with unsurpassed levels of customer service.

MIP Process Technologies (Pty) Ltd's mission is to be the preferred supplier of process equipment with an offering that is underpinned by:

- . customer focus
- . reliability
- . innovation
- . continuous improvement

We specialise in the supply of Process Equipment, but have the capability to assist with plant design around the Company's core technologies.

## BACKGROUND TO ATTRITION SCRUBBERS

Attrition scrubbing is not a new concept – it has been used in the glass industry for numerous years to remove surface contaminants. The surface impurities are abraded and thus cleaned as inter-particle collisions take place.

## APPLICATIONS

MIP Attrition scrubbers can be supplied for a variety of applications from mineral processing to water treatment. Some of industries where attritioning has proved successful include:

- Platinum
- Coal Fines
- Base Metals and Minerals
- Heavy Minerals and Beach Sands
- Silica Sand
- Lime slaking
- Industrial Minerals

## ATTRITION SCRUBBER TYPES AND SIZES

Pilot scale units start at the laboratory scale 5 liter unit to the pilot scale 200 litre one. Full scale standard sizes include; 0.5m<sup>3</sup>, 1m<sup>3</sup>, 2m<sup>3</sup>, 5m<sup>3</sup>, 10m<sup>3</sup> and 20m<sup>3</sup>. As each unit is independent, we can provide for any configuration.

A retrofit service is offered to enhance performance of existing attrition scrubbers.

## ENGINEERING STANDARDS

All engineering, design and construction is based on sound internationally approved engineering principles as well as practical applications.

Creating value  
through innovative  
superior designs and  
building of strong  
supply capabilities



## AFTER-SALES SERVICE

MIP Process Technologies (Pty) Limited's products have been designed to ensure minimal maintenance with easily replaceable parts for minimum downtime.

All our products carry an eighteen (18) month warranty. This decreases the risk of buying for customers, as most products are large capital investments. We offer an after-sales service and our Technical and Service departmental staff is available on a continuous seven (7) days a week basis to offer assistance. A team of process and mechanical engineers are available who have experience in Coal, Base Metals, Platinum and Gold markets. Field service technicians provide further support.

## BENEFITS

A range of benefits is available to business partners when purchasing equipment from MIP Process.

The MIP Attrition Scrubber operates on the principle of creating more attritioning zones within the unit. Features and benefits of our attrition scrubbers include:

Feature	Benefits
Design Specific	Minimal Risk
Different Tank designs	Optimised Offering
Identical drive and tank	Reduced maintenance cost
By pass facilities	On plant flexibility
Low power consumption	Lower operating cost
Minimal wear	Longer life
Ease of operation	Maintenance friendly
Inspection manholes	Continuous monitoring
Multiple blades	No velocity degradation
Cost effective	Reduced capital cost
No scale-up risk	Recoveries achieved

Each attrition cell is fully rubber lined in accordance with wear resistance requirements. The units are designed with replaceable polyurethane in the high wear areas for ease of maintenance.

## EQUIPMENT COMPONENTS

The main components of the Attrition scrubbers are the Tank and the Mechanism.

### Tank

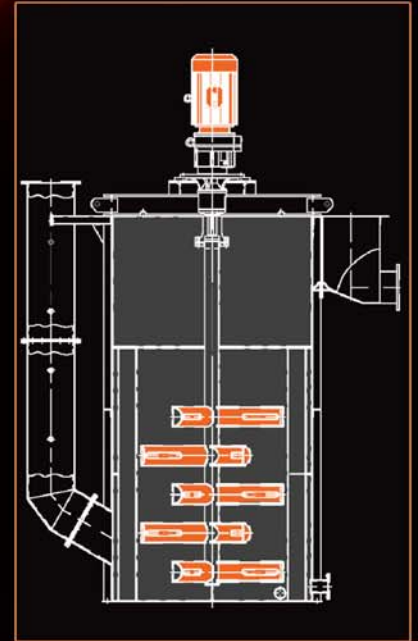
The tanks can be constructed from a variety of materials, the most common being carbon steel. Designs in stainless steel and exotic materials can be accommodated.

The tank designs can be either:

- Square, built around an angle iron skeleton, or
- Round with a supported base

The tank inlet and discharge boxes are of bolted construction and are removable for easy installation and maintenance.

Tanks are rubber covered with dual colour rubber. Replaceable polyurethane pads are installed in high wear areas.



Side view of internals



Pilot scale attrition scrubber





Chemineer HT Agitator



8m Thickeners in operation



Skid mounted Flocculant Plant



1m<sup>3</sup> Attrition Scrubber

#### Mechanism

The mechanism consists of multiple attrition zones that ensures every particle is exposed to the scrubbing action.

This is achieved through multiple blades that ensures the distance between the impellers is not less than 10mm. Velocity degradation is minimized. Conventional machines have a larger gap between impellers resulting in particles passing through without any scrubbing.

This design utilizes all power for scrubbing which means lower power consumption than conventional scrubbers.

Since the gap between the impellers on the laboratory scale and full scale are similar, the risk of scale-up is minimized with the MIP design.

#### Project Management

Owing to the high level of importance that MIP Process Technologies (Pty) Limited places on the delivery of each project, we ensure that each project has a world-class project management team. This is coupled with the resources of highly experienced subcontractors, for the different aspects of each project.

#### Low Investment:

Our equipment design is robust to ensure it is still in operation many years from now. We realise that process conditions can change and make allowances for this.

#### Test Facility

A comprehensive test facility is available to our customers. Preliminary sizing can be done using our extensive database.

#### MIP Value Proposition

The MIP designs consider not only the customer's process data, but also the long-term mechanical performance, maximum circuit efficiency, availability and minimised operating

## PRODUCTS & SERVICES

MIP PROCESS TECHNOLOGIES strives to design and manufacture process equipment that is technically advanced, reliable and customised for each application. We believe that each ore body is different and fit for all is not necessarily the best way.

Our designs are simple yet robust and reliable. Our philosophy is to minimise the customer's total operating costs, thus minimising expenditure. The full product range includes:

- Attrition Scrubbers
- Clarifiers
- Chemineer range of Mixers and Agitators
- Flocculant and Depressant Make-up Plants
- Horizontal Linear Screens
- Thickeners

## CONTACT DETAILS

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