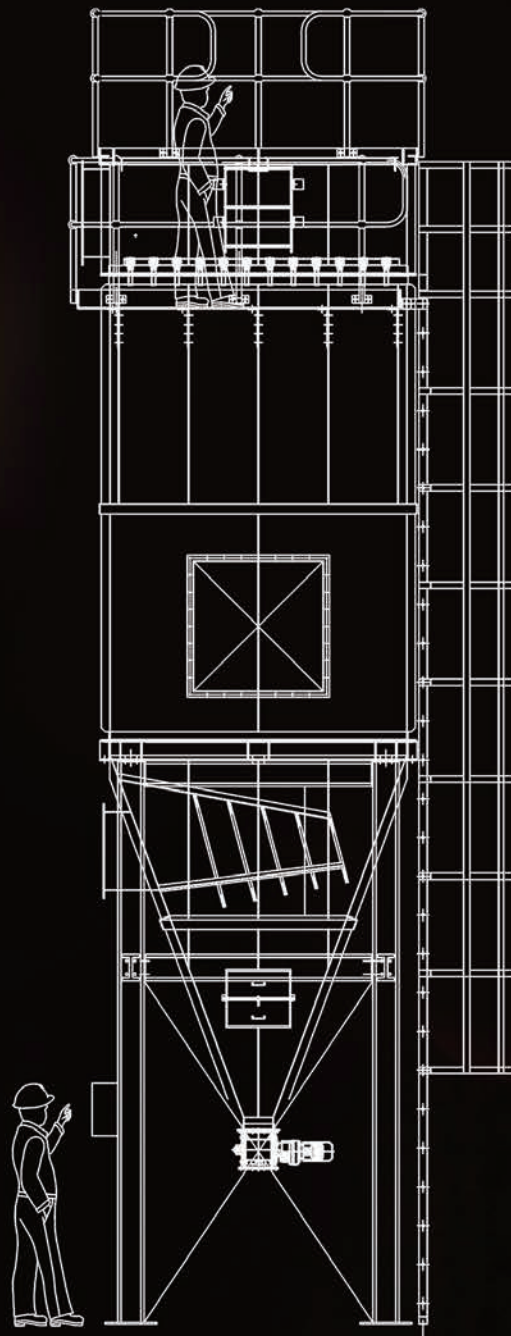




dust control systems



OUR COMPANY

In 2013 **MIP PROCESS TECHNOLOGIES (PTY) LTD** acquired all the rights and technology to the products of Alliance Dust Control Services (ADCS). ADCS has more than 30 years experience in providing dust and fume extraction solutions to a diverse range of industries.

MIP PROCESS TECHNOLOGIES (PTY) LIMITED is a South African Process Equipment sales and manufacturing company, which offers customised and innovative process solutions for the Mining, Minerals Processing and related industries. The 100% black-owned and black-managed company was established in 2007. MIP Process is accredited with Level 2 BEE status. We pride ourselves on being truly customer-centric, with unsurpassed levels of customer service.

Our technical staff is well equipped to provide the most extensive and latest recommendations in agitation, attritioning, clarification & thickening, dust & fume extraction, flocculation, mixing, sampling and pumping processes.

Our mission is to be the preferred supplier of process and dust extraction equipment with an offering that is underpinned by:

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

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

ADCS BACKGROUND

ADCS operated from 1984 as BM Industrial Services. The name has since changed to identify with the products and market they served.

BACKGROUND TO DUST EXTRACTION

Dust extraction improves breathable air quality and safety. The particulate matter is removed from the air and the environment and protects machinery. Firstly the dust is captured and then conveyed by means of ducting to a bagfilter and/or scrubber. Incorrectly designed ducting can lead to settlement of material. Finally the dust is collected, or returned to the system, by means of a screw conveyor and rotary valve.

REFERENCE LIST OF INSTALLATIONS

We have an extensive installations list of customers including:

- | | |
|---------------------------|----------------------------|
| • Algorax P.E. | • Kleinzee Diamond Mine |
| • Alpha Cement Ulco | • Mc Kechnie |
| • Anglo Platinum | • Metso |
| • AutoCast | • M.F.C. |
| • BCL Botswana | • Middleburg Ferro Chrome |
| • Boksburg Foundry | • Nkana Smelter |
| • B&S (mobile unit) | • Non-Ferrous Metal Durban |
| • Cadbury's Schweppes | • Omnia |
| • Vesuvius Refractory | • Orapa Mine |
| • De Beers Koffiefontein | • P.F.G. |
| • De Beers Kimberley Mine | • P.M.I. Germiston |
| • De Beers Finsch Mine | • P.P.C. Lime Acres |
| • Dimbasa Foundry | • Premier Diamond Mine |
| • DRA Mineral Projects | • Richards Bay Minerals |
| • Drytech | • Silicon Smelters |
| • Eveready P.E. | • Vametco Minerals Corp |
| • Fer-min-ore | • Vaal Reefs |
| • Foskor | • Vereeniging Refractories |
| • Holcim | • Xstrata Rhovan |
| • Idwala Lime | • Zinchem Benoni |
| • Iscor Grootegeluk | • Zinc Corp Springs |
| • IMP | • Zimballo Benoni |

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

•• DUST CONTROL PRODUCTS & SERVICES

MIP PROCESS/ADCS strives to design and manufacture process equipment that is technically advanced, reliable and more customised than any other supplier.

Our product range includes:

- Bag filters-reverse pulse
- Cartridge filters-reverse pulse
- Cyclones
- Wet & dry scrubbers
- Insertable filters
- Tubular type bag filters
- Fans
- Ducting
- Bags and cages
- Cartridges
- Servicing of existing filters and scrubbers
- Screen covers
- Mobile units
- Isokenitic testing capability environmental audits (through partners - Certified reports)

•• APPLICATIONS

The air pollution systems have successfully been installed in the following markets:

- Cement plants
- Chemicals and Plastics
- Foundries
- Galvanisers
- Glass fabrication
- Metal fabrication works
- Mining
- Petro chemical
- Power generation industry
- Smelters
- Woodworking facilities

•• THE WAY WE WORK

We provide comprehensive on-site evaluation. Our lifetime service programmes are customised to meet your needs and our customers' success.

•• EQUIPMENT DESIGN

MIP/ADCS equipment is designed to operate continuously for 24 hours per day. Process selections are based on our vast experience, coupled with testwork in the field of dust extraction. It is our belief that equipment should not be designed on the limit since operations are dynamic.

We believe that no two applications are the same. Conditions such as application, particle size, output requirements vary from one operation to another. Instead of 'one solution fits all', we ensure that equipment is designed to suit your application. Safety is considered a prime objective. All design, supply and installation of equipment complies with recognised international practices and standards.



Pollution Control



Bag Filter installation



Wet scrubber installation



Transportation to site

•• BENEFITS

A range of benefits are available to our business partners when purchasing Dust Extraction equipment from us.

ENGINEERING STANDARDS

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

DELIVERY PERIOD:

Drawings of a variety of bag filters, scrubbers and cyclone sizes have been completed and we are able to start almost immediately with the manufacturing portion of a project. This shortens delivery period as drawings can be issued immediately for approval by customer.

LOW INVESTMENT:

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

AFTER-SALES SERVICE:

All MIP/ADCS 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 buying risk 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 dust extraction, coupled with skills in a variety of markets. Field service technicians provide further support.

PROJECT MANAGEMENT:

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

We boast strong support elements that ensure the quality and successful delivery of each project timeously. Our services include our in-house quality management and inspection that requires minimal supervision from clients.



Dust Extraction Plant



Ducting

BAG FILTERS

PRINCIPLE OF OPERATION:

Throughout the entire field of product collection and dust control, the Reverse Jet principle is still the leader in its field by virtue of the number of installations.

Bag filters use fabric bags to filter particles from gas streams. A variety of filters in the form of sheets, cartridges or bags, are available. A bag filter operates under suction (generated by a fan), with the negative pressure drawing fume gas through the fabric filter. This leaves the dust particles on the surface of the fabric.

The self-cleaning feature of the Reverse Jet design is one of the most advanced in dust collection. It consists, primarily, of a series of cylindrical filter elements enclosed in a dust-proof housing. Dust laden air is admitted to the housing, and clean air is withdrawn through the filter cylinders. As dust particles accumulate on the filter elements, periodic cleaning is achieved by the introduction of a momentary jet of compressed air, through a specially designed venturi mounted above each filter cylinder. This primary compressed air jet pumps secondary air by the jet method, producing a reverse flow sufficient to clean the filter cylinders. Since only a small proportion of the total filter area is cleaned at one time, continuous flow through the collector is maintained. Diaphragm valves, activated by solenoid pilot valves and a solid-state timer, control the jets.

They have no internal moving parts – which eliminates mechanical maintenance and extends bag life. Units are characterized by high air capacity in a relatively small floor space. Their applications range from the recovery of valuable products from process operations to removing particulate matter from contaminated gas streams. Filter elements are available in a variety of materials and grades. High temperature elements can handle dust streams up to 220°C. Chemically resistant elements in 'DuPont Teflon' can also be supplied.

CONSTRUCTION:

- The casing and plenum is manufactured from a minimum of 3mm material.
- The tube sheet is manufactured from a minimum of 5mm-stiffened mild steel or stainless steel. This means that distortion will not take place when the plate is walked on and therefore leakage will not occur between dirty and clean air side of the filter.
- Hinged access and inspection doors are supplied; the swing bolts are manufactured from mild steel.
- The solenoid valves are mounted directly onto the right angle valves.
- A pressure gauge is fitted to one end of the compressed air header pipe (also valves)
- A water trap is fitted prior to the compressed air header pipe.
- A Sequential Timer with two (DP) set points is supplied to read the pressure drop across the Bag filters

Our new E.M.C. (Energy Minimizing Concept), ensures the most economical operation is achieved since:

- Bags are only pulsed when set pressure is reached, thereby saving on the bag life by virtue of less mechanical action on the filter bags
- Less compressed air is used
- Lower power consumption
- With the offline cleaning the dust is not re-entrained onto the bags



Bag filter Installation



Bag filter air pipes



Bag filter air outlet



Fabrication of baghouse

INLET DIFFUSER

The inlet diffuser evenly distributes the incoming gas flow into the collector by uniformly diverting a portion of the gas at each of a number of successive plates. The results achieved:

1. Longer bag life
2. Low pressure drop
3. Virtually no dust re-entrainment and gas flow capacity is significantly increased

Laboratory studies and actual field installations show that an inlet diffuser improves filter performance in all areas by 10 to 15%.

VENTURI SCRUBBERS

Scrubbers use absorption as the primary mechanism to remove air pollutants. They are divided into three main groups, namely dry-, semi dry- and wet-scrubbers depending on the usage of scrubbing solution.

Dry scrubber designs make use of sorbent material and the flue gas is blown through the material or the sorbent is blown into the flue gas. Semi dry scrubbing uses a small amount of moisture in the removal of pollutants and Wet scrubbers use either water or slurry with a sorbent (e.g. Lime) added to the water.

Venturi Scrubbers are a very simple type of scrubber, comprising a convergent inlet section which leads into a venturi throat.

The scrubbing liquid is fed into the inlet section tangentially through a number of pipes and ensures that the whole surface area of the section is flooded with the scrubbing liquid. This ensures that there is no dry/wet transitional zone which could lead to a build-up of a crust of solids, which could interfere with the operation of the scrubber.

The dust laden gas enters the scrubber from the top and immediately comes in contact with the film of scrubbing solution, where some separation takes place. The gas then enters the venturi throat which has an annular shape. This ensures that the highest possible volume of water is absorbed up by the gas, which becomes saturated in the area.

At the narrowest cross section of the throat there is a sharp "tear off" edge where because of the sudden change in gas speed, the scrubbing water is atomized into tiny droplets. Due to the relative speed between the gas/dust mixture and the droplets, the dust particles strike the droplets at high speed and are entrained by them. The droplets carry on through the throat and coalesce into bigger droplets and are carried on by the air stream and out of the venturi scrubber.

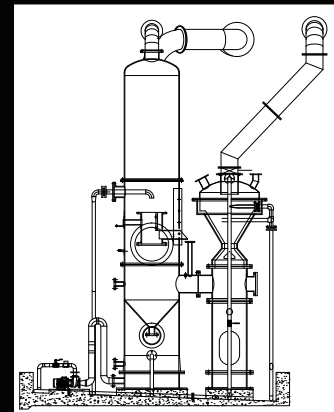
The venturi scrubber would normally be followed by a centrifugal droplet separator, where the water droplets are removed from the gas stream by high centrifugal forces. An apex cone at the bottom of the separator ensures that droplets are not re-entrained and the liquid is discharged from the bottom of the cone. The clean gas leaves the top part of the droplet separator.

The MIP/ADCS Venturi scrubber is very suitable for use with hot and corrosive gasses and similar demanding applications. The materials of construction would be chosen to suit the various parameters and may require a special lining of ceramic tiles or other hard wearing materials to ensure long life. The final choice of material would depend on such factors as temperature, abrasion, corrosion and chemical attack.

MIP Clarifiers are used to recover / clarify water from wet or semi dry scrubbers. The water can then be re-used in the process.



Venturi



Wet Scrubber depiction



Wet Scrubber Installation



15m Ø Clarifier in operation

•• CYCLONES

Pollution abatement technologies are limited with typical constraints being temperature and pollutant load. Thus, pre-treatment might be required to reduce the load of the selected end technology. Cyclones are perfectly suited to first treat the pollutant laden gas stream.

The dust laden gas enters the upper cylindrical section of the cyclone tangentially and moves down the cyclone into the conical section in a spiral shaped path. Dust particles move to the outer shell by centrifugal forces and are slowed down by friction and at the bottom of the cone, drop out of the air stream into a drop-out box. This is fitted with an apex cone to ensure that particles are not re-entrained into the exit vortex which carries the clean gas back up through the cyclone and vertically out of the outlet.

The cyclones are used in all types of industry and service not only as a dust separator but also in the recovery of products from an air stream.

MULTIPLE CYCLONES:

With larger volumes of gas and in order to achieve better operating efficiencies, two stage or four stage cyclones with a common collecting hopper can be utilised. The exhaust pipes of the cyclones are designed to achieve the operating efficiencies required and the pressure drops available.

COUNTER FLOW SEPARATOR:

This equipment operates with a secondary air current used to augment the main air flow. This way, extremely high degrees of separation are attained, which remain unaffected even with varying gas volumes.



Cyclone



Lined Cyclone

•• SCREEN COVERS

Screen covers can be supplied to suppress dust.

•• MIP PROCESS PRODUCTS & SERVICES

MIP PROCESS TECHNOLOGIES / ADCS products are 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 plants
- Horizontal Linear screens
- Lime Plants
- Moyno® Progressive Cavity Pumps
- Reagent Make-up Plants
- Slurry Samplers
- Thickeners



Screen covers

•• MIP/ADCS VALUE PROPOSITION

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



• CONTACT US

Physical Address: MIP House
4A Coombe Place
Rivonia
2128

Postal Address: P.O. Box 677
Kelvin
2054

Telephone Number: +27 (0) 11 234 1007

Fax Number: +27 (0) 86 682 2394

Emergency Numbers: +27 (0) 82 893 2294 / +27 (0) 83 609 9072

E-Mail: sales@mipprocess.com

Website: www.mipprocess.com

• DIRECTIONS

