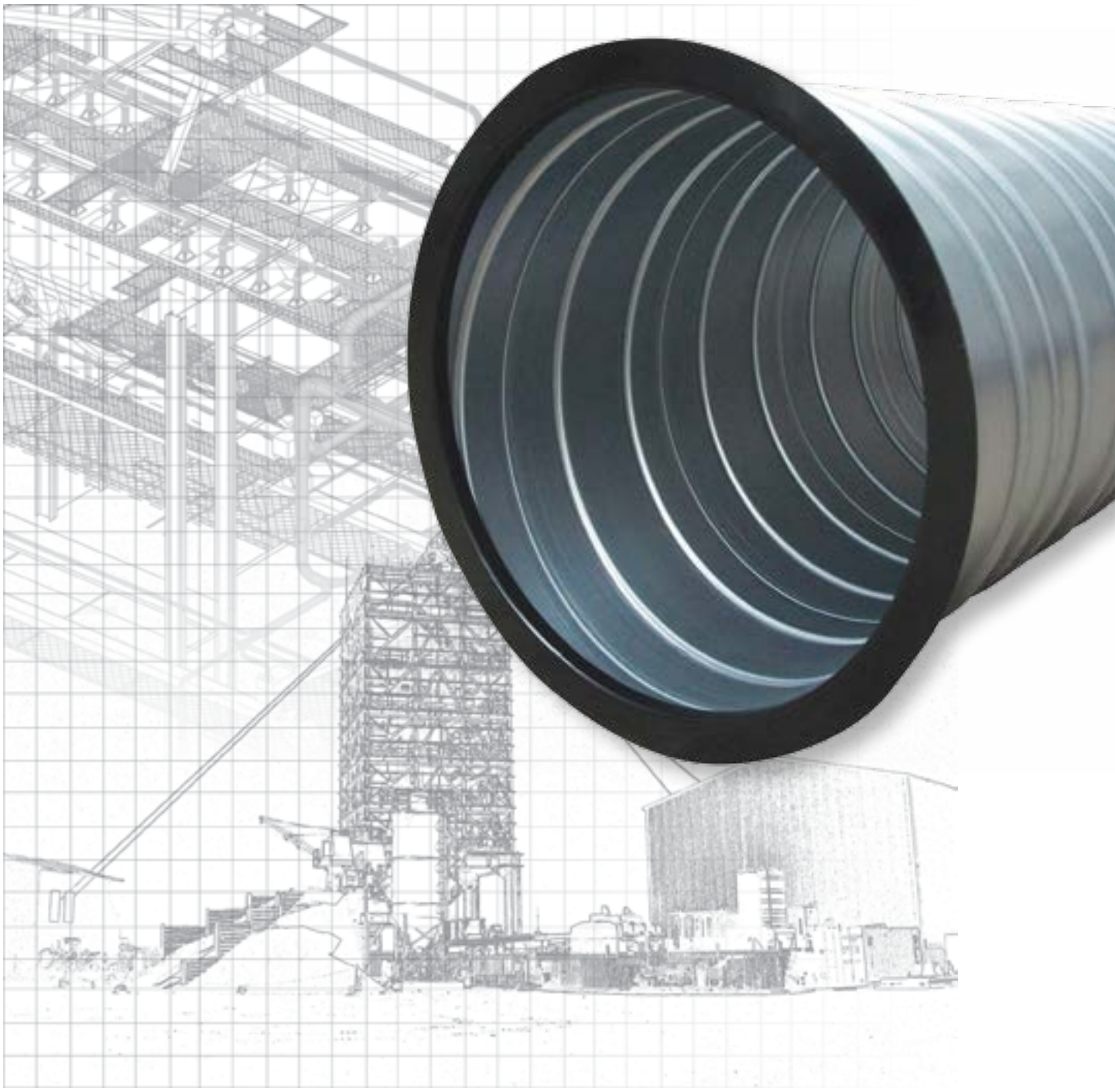
UVSS

UNIQUE VENTILATION & SUPPORT SYSTEMS

COMPANY PROFILE & PRODUCT CATALOGUE



CONTENTS

"CLEAN SWEET AIR ON THE FACE & SUPPORT IN ALL FORMS"

Vision

To become the market leader in Africa for the design, fabrication, supply and project / contract management of total integrated mining and industrial related ventilation systems, underground support and ancillary equipment through strategic co-operation with proven market leaders of sub-systems.

Mission

To supply quality products and services that exceed the expectations of our customers in a time period and at a price that is beneficial to all stakeholders without any negative environmental consequences.

Company Description & Background

Unique Ventilation and Support Systems (Pty) Ltd was formed through the merger of the following companies:

Unique Clamps Engineering & Ventilation (UCEV)
– Hennenman, Free State

Ventilation & Support Africa (VSA)
– Rustenburg, North West

BroKrew Industrial (Pty) Ltd
– Krugersdorp, Rustenburg, Steelpoort

The merger resulted in the establishment of the largest ventilation manufacturing company in Africa, with more than 85 years of experience in the mining ventilation industry.

UVSS also has extensive experience in the manufacture of underground support, PVC ducting and various other engineering products that serve the mining, engineering and construction sectors.

The business is well placed to serve its expanding client base, through its network of experienced, expert personnel, continuous innovation and improvement, and reliable source of raw materials by virtue of its association as a jointly held subsidiary of Macsteel Services Centres SA (Pty) Ltd.

Our vast client base both locally in South Africa as well as in Africa, including companies such as Anglo American, Goldfields (Sibanye Gold), Impala and Lonmin Platinum, many of whom have contracts in place with UVSS due to the reputation and reliability we have established as trusted suppliers in the industry.

UVSS maintains its high quality, professional standards as evidenced by its ISO 9001:2008 certification, Health and Safety policies and proud BBBEE status which includes significant Black Ownership and Enterprise Development initiatives.

Facilities

Gauteng

1 Resnick Street
Factoria
Krugersdorp

Freestate

Skoolplaats Factory
Hennenman

ENERDUCT

"A NEW CONCEPT IN VENTILATION DUCT DESIGN & MANUFACTURING: CONVENTIONAL SWAGED DUCT VS NEW SPIRAL SWAGED DUCT"

Innovative: Enerduct is a new concept in duct design and manufacturing. CFD Simulation and Analysis of Air Flow was conducted by the CSIR to determine the flow characteristics in the Enerduct pipe.

Energy & Cost Savings: Simulation and analysis research proved that the design of the spiral swage reduces the frictional pressure drop by between 8.80% and 13.04% at different volumetric flow rates. This translates into less fans required per ventilation column which will result in a cost saving to the mine.

Weight & Handling: Thinner material with a higher yield strength can be utilised to manufacture ventilation pipes which will be just as strong, if not stronger than conventional pipes with the same performance as the thicker material which had a lower yield strength.

Cost Savings – Manufacturing & Supply Lead Times: The manufacturing of the Enerduct pipe through its high-tech advanced processes, produces pipes much faster than the conventional method, assisting us in reducing lead times which in turn reduces costs as it allows for smaller on-site stock levels to be held, freeing up cash flow for the customer.

Rigidity & Strength: The spiral swage formed into the duct during the forming process will prevent the material from de-coiling. The duct will maintain its form and is a much stronger construction than conventional ventilation pipes.

Material on every lock-formed spiral joint is punched at regular intervals as an additional strengthening mechanism, securing the robust construction of the ventilation duct for underground mining conditions.

Background – Standard Conventional Duct: Conventional circumferential swaged ducting has been in use for decades in the mining industry and is manufactured using a flat sheet of galvanised material which is strengthened with swages and then formed into a socket (can) for each required diameter. Socket ends are then joined together longitudinally with a lock-form construction to the required duct length. Conventional ducting was supplied with circumferential swages formed into the material at ± 100 to 120mm intervals to increase rigidity and had a higher pressure loss coefficient compared to a smooth bore.

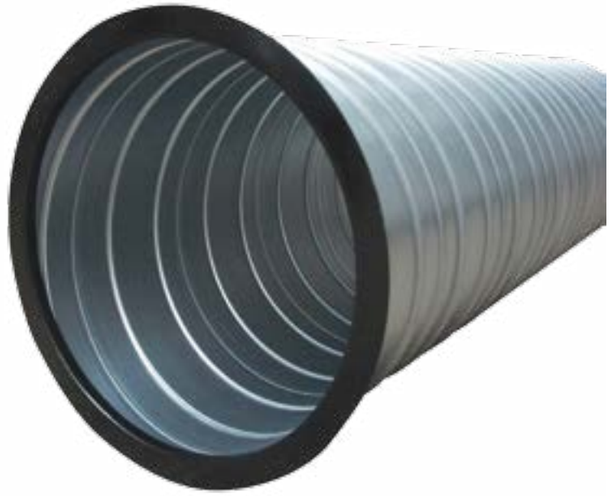
Introduction – New Spiral Swaged "ENERDUCT" ™: Air flows through the duct according to the pressure difference between the outlets and inlets, created by the fan. In designing the new ventilation duct, the main aim is to design the duct so that the pressure drop through the duct is minimized whilst keeping the size and cost of the ductwork to a minimum. The new design therefore required that design factors did not negatively affect the pressure drop and velocity in the duct, but improved the air flow dynamics and pressure loss coefficient on the air flow.

It is with this aim in mind that UVSS approached the **CSIR – Modelling and Digital Science (MDS)** division to formulate, calculate and conduct a **systematic aerodynamic CFD** simulation to determine the pressure loss coefficient of air flow of the new spiral swaged duct.

Methodology: Three types of ducting construction were used to compile the systematic aerodynamic CFD simulation results which were then compared to theoretical results (predicted using the Haaland equation, relevant to commercial pipes). Inlets and outlets were properly defined. Wall effects of air flow inside the duct as obstruction (forming of the different swage construction) and friction causing pressure drop were defined in the simulation defining all the boundary specifications.

PRIMARY VARIABLES DURING CFD:

- Flow rate
- Length of duct
- Pipe roughness
- Swag design
- Flange placement



Results and Conclusion: Tabulated results and plotted figures show a consistent prediction of lower frictional pressure loss for the spiral swaged duct when compared to the circumferential swaged duct. The spiral swaged duct had 3.5 % reduction in frictional pressure loss when compared to the circumferential swaged duct at a low air volume (m3/s) Reduction in frictional pressure drop improves between 8.8 % - 13.0 % for the spiral swaged duct at higher air volumes (m3/s). compared to standard swaged ventilation duct. Complete CSRI test reports are available and can be viewed on request.

Standard Galvanised Mine Ventilation Ducting

Ventilation Columns, Ducting and Pipes

Conventional

- Manufactured from 1.0 mm; 1.2 mm and 1.6 mm Z275 galvanised steel.
- Diameters: 305 Ø; 380 Ø; 405 Ø; 570 Ø; 760 Ø; 915 Ø; 1015 Ø; 1220 Ø & 1500 Ø.
- Ducting lengths manufactured to customer specifications and requirements.
- All flanges manufactured from rolled angle iron.

Rectangular Ducting

Rectangular ducting for Underground and Industrial applications. Manufactured from Z275 galvanised material in lock-form construction with angle iron flanges as joining method.

Underground Applications:

Ducting can be designed for areas with limited space available where conventional round ducting cannot be installed. Flanges can be supplied with clamp-hooks on top of flange which do not require bolts and nuts due to limited space during installation.

Industrial Applications:

Sub-station ventilation systems and plant ventilation systems.

Standard Sizes:

405 Ø (650 x 200); 570 Ø (1020 x 250); 760 Ø (1300 x 350); 915 Ø (1650 x 400); 1015 Ø (1620 x 500); 1220 Ø (1950 x 600).

Alternative sizes can be manufactured on request and as per client specification.

PRODUCTS

Standard Galvanised Mine Ventilation Ducting

Mining Ventilation Column Fittings

Bends

Inspection Doors

Silencers

Blank Off Plates

Laterals

T-pieces

Grid Protection Pieces

Low Pressure Self-Closing Doors

Venturis

Dampers / Regulators

Reducers

Water Blast / Brosprays

Wedges

Y-pieces

Compressed Air Silencers

PRODUCTS

Flexible Ducting and Curtains

PVC Ducting

Accessories

Exhaust Ducting

Fittings / Fan Adaptors

Force Ducting

Ventilation Curtains & Accessories

Polypropylene Curtains

Specification:
- SABS 1287 – NCB 245
- Density: 75-100gsm

PVC Strip Curtains

Duct Wrap

PRODUCTS

Special Ventilation Systems – Underground & Industrial

Dust Plants and Air Filtration Units

Shaft Ventilation Pipes

Underground Ventilation Doors

Emergency Refuge Bays

Special Round, Rectangular, Bends and Sections

Water Eliminators

Furnace Extraction Systems, Fan Casings, Dampers, Silencers and Screens

Supports, Walkways, Stairways and Supportive Structural Beam Work / Light Structures

Refuge Bay Door

Mining Fans

Surface Fan Drifts, Self Closing Doors (High, Low Pressure or Counterweight), Radial Vane Control Units, Dampers

Sound Attenuators

Tanks, Scrubber Systems, Hoppers, Chutes and Cyclones

Rotating Man Door

PRODUCTS

Underground Support

Lacing Clamps

Meshing & Lacing Clamps
- U-BOLT Lacing Clamps (Standard) – For use with 8-16mm Ø Steel Wire Rope.
- U-BOLT Lacing Clamps (Large) – For use with 16-20mm Ø Steel Wire Rope.
- HEWITT MK I – For use with 8-13mm Ø Steel Wire Rope.
- HEWITT MK II & III – For use with 12-16mm Ø Steel Wire Rope.

Foundation Bolts

- Diameter: Y40; Y32; Y25; Y20 mm Ø x any length, as required.
- Material: 450MPA Tensile.

L Bars

- Diameter: Y20; Y14.5; Y16; Y12; Y10 mm Ø x any length, as required.
- Material: 450MPA Tensile.

Pig Tail Eyebolts

- Diameter: M16 and M20.
- Inside diameter of eye: (64mm).

Pinch Bars

Material Specifications
- Aluminium Pipe 34.92mm outside diameter and 25.52mm inside diameter
- Hexagon bar quality 080A42, 22.4mm Ø

Sizes
- 1.0m - 3.0m
- Forged ends to specification

Underground Support Continued

Roof Bolts

Shepherd Crooks

Standard
- Material: Y12; Y14.5; Y16; T16 – 450 MPA TENSILE
- Length: From 1.2m to 3.2m
- Overlap: From 300mm to 600mm

Welded
- Material: Y14; Y16; T16
- Length: From 1.2m to 3.2m
- Overlap: 50mm Welded

Split Sets

Length
- From 0.6m to 3.0m increments of 0.3m

Winch Brackets

Normal & Heavy Duty

Krugersdorp Branch (Head Office)
1 Resnick Street, Factoria, Krugersdorp, 1739
PO Box 1601, Krugersdorp, 1740

Tel: +27 (0) 11 668 6300
Fax: +27 (0) 86 670 0456
Email: info.uvss@uvss.co.za

Sales Office
Tel: +27 (0) 11 668 6315
Email: sales.uvss@uvss.co.za

Free State Branch (Hennenman)
Tel: +27 (0) 57 573 1162
Fax: +27 (0) 57 573 1162

Website
www.uvss.co.za