BULK HANDLING TECHNOLOGIES

SUBMISSION TO

MIDWEST VANADIUM PTY LTD

for

V_2O_3 PRODUCT SILO
DISCHARGE / SCREENING SYSTEM
41-BN-504

Project Reference
PLANT OPTIMISATION

Prepared by : Bulk Handling Technologies Pty Ltd

Date : October 2013

Ref : S23-01-P-01

Contact : Paul Ingleson

Phone : 0417 617 789

Email : paul.ingleson@bulkhandlingtechnologies.com.au

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Phone: 0417 617 789

Fax: (08) 9458 7606

Email: paul.ingleson@bulkhandlingtechnologies.com.au

22nd October 2013

Job Ref: S23-01

Midwest Vanadium Pty Ltd

Windimurra Mine Site

Via Mount Magnet WA 6638

Attention: Stephanie Penn

Re: V_2O_3 Product Silo Discharge & Screening System

Bulk Handling Technologies Pty Ltd acknowledges with thanks the opportunity to provide pricing for the above referenced system. Our key personnel have over 20 years' experience in the design and manufacture of bulk handling equipment (including screw feeders, rotary valves and pneumatic conveying systems) and we look forward to adding value to your project if given the opportunity.

Focusing on practical, engineered bulk handling solutions for mining and heavy industry, our goal is to deliver cost effective solutions by supplying a range of quality products and systems that meet expectations and provide reliable service.

For this application we have offered a customised solution to work within the site space constraints. We believe that this proposal provides a cost effective solution for feeding product from the reduction kiln product bin into the pneumatic conveying line, whilst scalping oversize (Nominally +20mm) material from the product stream. The solution also incorporates a higher specification, more wear resistant, 'zero clearance' rotary valve to feed the conveying line.

The equipment will be delivered to site pre-assembled as far as practical for unloading, final assembly and installation by others.

We trust that our offer is of interest and we look forward to the opportunity to further discuss this project.

Yours faithfully

PAUL INGLESON

Bulk Handling Technologies Pty Ltd

EXECUTIVE SUMMARY

V_2O_3 Product Silo Discharge and Screening System (41-BN-504)

The Reduction Kiln Product Bin (41-BN-504) receives cooled V_2O_3 and then feeds the product into a pneumatic conveying line via a rotary valve.

This project has been initiated to overcome the following operational problems:

1. Flow interruption and hang-up of materials in the reduction kiln product silo
2. Damage due to hard lumps in the product due to kiln upset or start-up conditions
3. High wear and maintenance costs (including downtime) of the existing discharge rotary valve

The existing system has a static mass flow hopper which bridges regularly above the 200mm square inlet rotary valve, requiring regular operator intervention to impact the hopper and encourage flow.

Whilst there is no flow property data available for this material, given the current design, it is highly likely that flow is affected by stable arch bridging of the material in the hopper above the rotary valve and that this is exacerbated by leakage air which creates pressure above the rotary valve and prevents flow down the hopper.

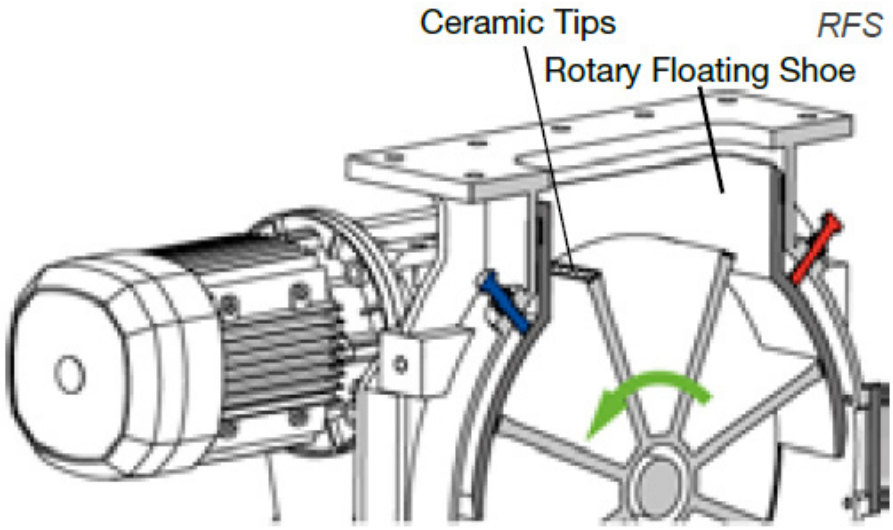
The distribution of lumps in the material has not been quantified however the current design would have a very high risk of the rotary valve jamming and sustaining damage when any hard lumps present at the rotor shear zone.

A key constraint for this project is the available space to install a solution. There is very little head room in the current system and there is a significant amount of structure around the product silo.

The solution proposed by Bulk Handling Technologies is a simple arrangement requiring minimal space that incorporates the following design improvements:

- A larger outlet diameter from the hopper (570mm) to reduce the risk of stable arches forming.
- A screw feeder to pre-feed a rotary valve / airlock, allowing the pocket fill to be controlled to significantly reduce the risk of hard lumps presenting at the shear zone.

- An integral rotary trommel, allowing discharge from the screw feeder to be screened and lumps above the screening size discharged out of the circuit. A double-dump valve is installed on the lump discharge outlet to keep the system air locked.
- A leakage air vent line, to exhaust pressurised leakage air to the hopper ABOVE the material via a vent hose, avoiding the need for leakage air to permeate through the product.
- A floating shoe type, ceramic embedded tip, rotary valve to reduce both air leakage and erosion caused by high velocity air with abrasive particles leaking past the vanes of a conventional rotary valve.



- A lugged, hand-wheel operated (gearbox assisted) dry bulk materials valve installed at the product silo outlet to allow isolation and safe removal of the screw feeder for maintenance.
- A flexible sleeve after the isolation valve to provide isolation for the load cells to ensure they continue to record the weight of the hopper contents. This allows the screw feeder to be firmly bolted to support steelwork.

BULK BAG RE-LOADING INLET

To allow spilled material to be returned to the system, the screw feeder has been extended to incorporate a bulk-bag feed hopper. This allows bags to be manually discharged into the screw feeder and any lumps removed before the product is fed into the pneumatic conveying line.

The proposed inlet has an opening of 600mm diameter and incorporates a 50 square welded mesh and a bolted lid for sealing when not in use.

2.0 COMMERCIAL

Important Notes

Bulk Handling Technologies has not been provided with specific Terms and Conditions for this Contract.

The following clauses would typically form the basis of general Terms and Conditions that Bulk Handling Technologies would seek to incorporate in new contracts of this nature.

The pricing submitted herein is based on these commercials terms.

2.1 Pricing

Our FIRM price for the V_2O_3 Product Silo Discharge and Screening System is as follows: (excl. GST)

ITEM	QTY	DESCRIPTION	UOM	Unit Price	Total Price
1	1	Engineering / Drafting / Project Management / VDDR	Lot	$ 35,600.00	$ 35,600.00
2	1	New Hopper assembly with gussets and stiffeners (Incl. Design & Detailing)	Lot	$ 14,520.00	$ 14,520.00
3	1	600NB Hand Wheel isolation gate	Each	$ 16,485.00	$ 16,485.00
4	1	Screw Feeder / Trommel c/w Bulk Bag Inlet	Each	$ 55,210.00	$ 55,210.00
5	1	Ancillaries: Support Steelwork, Hopper Outlet spool and flexible sleeve, vent hose / pipe and fittings, fabricated brackets and spool pieces, Entrainment Box, fasteners	Lot	$ 12,870.00	$ 12,870.00
6	1	Floating Shoe Rotary Valve	Each	$ 12,900.00	$ 12,900.00
7	1	Double Dump Valve	Each	$ 2,645.00	$ 2,645.00
8	1	Workshop Assembly and Test Run	Lot	$ 3,400.00	$ 3,400.00
9	1	Packing and Loading on to Transport	Lot	$ 800.00	$ 800.00
				TOTAL PRICE THIS PROPOSAL	**$ 154,430.00**

Order of Accuracy of Submission

The prices quoted herein are firm prices with an accuracy of +/- 0% as of the date of this submission.

Validity of Tender

The pricing is valid for a period of 60 days from the date of this tender.

Pricing Basis

All prices quoted are in Australian dollars and are based on the information currently available and the commercial and technical clarifications herein.

All prices quoted specifically exclude Goods and Services Tax which would be added and invoiced at the prevailing rate if applicable.

Point of Delivery

Our pricing is based on all equipment delivered ex-works Perth metro. A price for delivery to site can be provided if preferred.

2.2 Delivery Period

The estimated delivery, ex-works, for the V_2O_3 Product Silo Discharge and Screening System is 16 working weeks from receipt of the deposit.

2.3 Payment Terms

Bulk Handling Technologies would request progress payments linked to mutually agreed and verifiable contract milestones and would propose the following progress payment structure:

- 40% Deposit with Order
- 30% Week 8 (Receipt of Materials for Screw Feeder Manufacture)
- 30% Payable prior to despatch ex-works

Full payment is to be received prior to despatch.

Bulk Handling Technologies reserves the right to place the project on hold or delay delivery in the event payments are overdue and the client agrees that this would entitle Bulk Handling Technologies to an Extension of Time for Delivery.

2.4 Governing Terms and Conditions

Should a contract eventuate it would be carried out under AS/NZS 4911- 2003 - 'General conditions of Contract for the Supply of Equipment without installation' with agreed amendments.

Defects Liability Period

Bulk Handling Technologies Pty Ltd offers a Defects Liability Period of eighteen (18) months from the date of delivery or 12 months from commissioning and placement into service for all equipment supplied – whichever is the sooner.

It is a condition of the warranty that all equipment is Installed, Operated and Maintained in accordance with Bulk Handling Technologies technical guidelines and Installation, Operation and Maintenance Manuals.

Abrasive wear, neglect of maintenance requirements and wilful damage is not covered by warranty.

Insurances

Bulk Handling Technologies Pty Ltd currently holds all mandatory and professional insurances. Certificates of currency can be provided upon request after placement of order. Our professional indemnity policy has a limit of $5,000,000.00.

Ownership of Goods

All goods remain the property of Bulk Handling Technologies until payment is received in full. Risk passes to the purchaser on delivery.

3.0 APPLICATION AND BASIS OF DESIGN

3.1 Background

MidWest Vanadium Pty Ltd is experiencing regular hang-up and blockage in the V_2O_3 Product Silo resulting in disruption to operations and costly operator involvement. Additionally, lumps in the product are causing jamming and damage to the pneumatic conveying line feed rotary valve, increasing maintenance costs and reducing the overall availability of the system.

The V_2O_3 Product Silo receives material as it is discharged from the inclined cooling screw conveyors and provides intermediate storage and controlled discharge to the pneumatic conveying system.

The hopper has been designed as a gravity flow hopper without any activation and terminates at a 200mm square outlet. The outlet currently has a flood filled rotary valve which discharges into a pneumatic conveying line. There is no provision for venting leakage air and as a result, pressurised air which passes the rotary valve must permeate through the product, increasing the risk of bridging in the hopper.

3.2 Product Silo Discharge and Screening System Design Basis

The equipment offered has been designed for the following duty:

Design Duty

Material to be handled:	Vanadium (III) Oxide
Temperature:	80 deg C (max.)
Operation:	24 / 7
Design Feed Rate:	2.28 TPH
Discharge to:	Pneumatic Conveying Line (Fines)
	Collection Bunker (by others) (Lumps)

Lumps are considered as +19.05mm. The trommel screen uses a perforated steel plate with 19.05mm holes as the screening media.

Feed Material Characteristics

Design Bulk Density:	755 kg/m^3
Moisture:	Dry
Particle Size Distribution:	Not Provided
	(Assumed 80% minus 75 microns and 98% minus 20mm)
Angle of Repose:	Not Provided
Angle of Surcharge:	Not Provided

Material Flow Properties: Not Provided

Basis of Operation

The BHT Product Silo Discharge and Screening System incorporates the following main components:

- New Fabricated 8mm plate hopper (for site welding) – 60 degree included angle
- Manual Isolation Gate (600NB)
- Flexible Joint (600NB) with internal steel deflector
- Screw Feeder complete with:
    - Integral Discharge Trommel Screen
    - Additional Bulk Bag Inlet hopper
    - Fines and Lump Discharge chutes
    - Leakage Air vent
- Vent hose / piping to silo roof c/w fitting for welding into silo roof and brackets for welding to hopper wall for supporting vent pipe
- Support Legs
- 250mm Floating Shoe Rotary Valve with Ceramic embedded vane tips and adjustable Cast Iron wear shoe.
- 150mm double-dump valve for lump discharge
- New Pneumatic Conveying Line Entrainment Box for installing into conveying line, c/w matching slip-on flanges for welding to existing line.

Material is withdrawn from the new silo hopper by the screw feeder which is flood filled and includes a variation in feed zone pitch to promote draw-down across the full width of the hopper.

The Screw Feeder and rotary valve have been matched volumetrically to ensure that the pocket fill in the valve is less than 80%. (Actual fill to be confirmed during final design) Material which passes through the trommel screen (-19.05mm) will fall through the discharge chute into the rotary valve for feeding to the pneumatic conveying line. Lumps discharge out the end of the trommel and exit via the gravity double-dump valve.

Air which 'leaks' passed the valve is vented and exhausted above the material in the hopper rather than permeating through the material flowing from the hopper.

Bulk Bags of material can be re-fed into the system via the extra inlet on the screw feeder. To reduce air leakage, this should only be done WHEN THE HOPPER IS FILLED WITH MATERIAL. The material in the screw feeder will form a plug to minimise air leakage through the screw.

Safety

All equipment is designed and guarded to Australian Standards.

The following additional safety features will be designed into the plant:

- Inner steel sleeve at discharge sock to prevent uncontrolled discharge in the event of a discharge sleeve failure

Note: We have not provided any insulation of the equipment which is consistent with the current installation.

Equipment safety labels will be fitted to the equipment by BHT in accordance with Australian Standards.

Relevant plant safety signage will need to be installed by MVPL in accordance with site procedures and policies.

4.0 TECHNICAL

4.1 Important Design Features

The V_2O_3 Product Silo Discharge and Screening System incorporates equipment designs based on many years of experience in bulk materials handling.

We believe the system offered will offer the follow benefits to MVPL:

1. **Minimal Operator Intervention**

   BENEFITS

   a. Operators will no longer need to manually hit the hopper to promote flow of material, reducing time lost and reducing risks to operators.

2. **Minimal new equipment**

   BENEFITS

   a. By incorporating the screening as part of the screw feeder, this reduces the need for additional equipment to feed and collect material from a separate screening device.

   b. The screening feature can be incorporated with minimal additional head room and without encroaching on surrounding access ways.

3. **Floating Shoe Rotary Valve**

   BENEFITS

   a. Superior Air Lock Performance

   b. Increased wear life (Cast Iron Shoe and ceramic embedded rotor tips)

   c. Externally adjustable wear shoe to maintain minimum rotor tip clearance

4. **Safer method to re-introduce product into the circuit**

   BENEFITS

   a. The additional bag loading inlet allows operators the opportunity to lift a bulk bag and empty it safely into the screw feeder. This is far safer and quicker than lifting the bag on to the silo roof and removing the dust collector to dump the product into the silo

5. **Increased Discharge Rate (2.28 TPH)**

   BENEFITS

   a. The new system will operate at double the capacity of the existing system. This will allow the system to be operated in a batch mode between silo high and low level set points, reducing total running time.

4.2 Mechanical Equipment Description

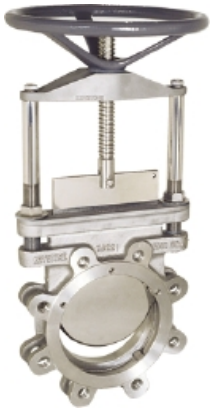
The BHT Product Silo Discharge and Screening System comprises of the following mechanical equipment:

1. Manual Isolation Gate Valve
2. Screw Feeder with Integral Trommel Screen
3. Floating Shoe Rotary Valve / Air Lock
4. Lump Discharge Gravity Double Dump Valve

4.2.1 General Specifications – Hand Wheel operated Knife Gate Valve

Our offer is based on the supply of one (1) Hand Wheel Operated dry bulk materials Knife Gate valve with the following specifications:

Model	:	Figure F952
Size	:	600 NB
Body Type	:	Lugged
Temperature Rating	:	150 deg Celcius
Materials of Construction	:	Body – 316 S/S
		Gate – 316 S/S
		Seat – 316 S/S
		Spindle – 304 S/S



Description

The valve offered is a Pentair design complete with internal chrome iron deflector cone to suit dry bulk material applications.

Operation

The valve is operated via hand wheel for manual isolation in the event of screw feeder maintenance. Due to the size of the valve, it is fitted with a gearbox to reduce the torque needed to open and close the valve manually.

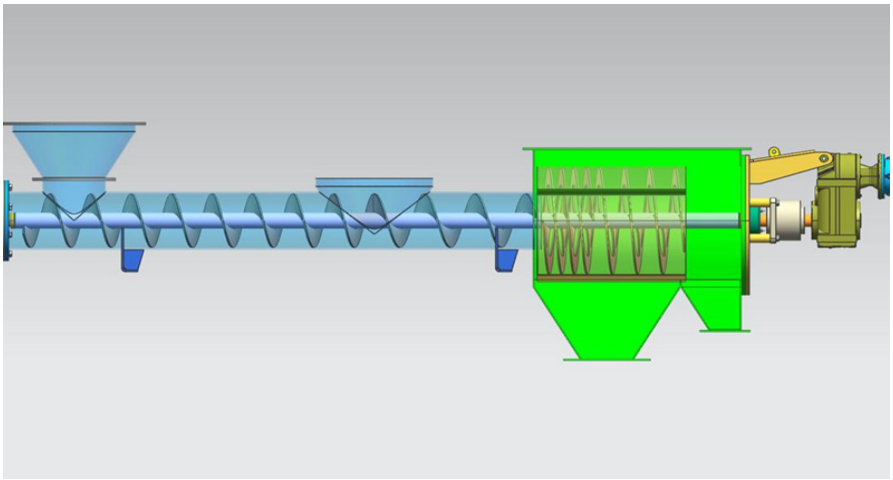
The valve is bolted directly to the new hopper outlet. A discharge spool is bolted to the downstream flange to allow fitting of the flexible connection for load cell isolation.

4.2.2 General Specifications – Screw Feeder / Trommel Screen

Our offer includes the supply of one (1) Screw Feeder with Integral Trommel Screen with the following specifications:

Model	:	SCT 300/600
Screw Diameter	:	300mm Casing

Trommel Diameter	:	600mm Internal Diameter
Main Inlet	:	600NB to suit hopper outlet
Secondary Inlet	:	Bulk Bag Unloading Inlet – 300NB
Feed Rate	:	Hopper Discharge – 2.28 TPH
	:	Bulk Bag Unloading – 1.8 TPH
Screen Size	:	Perforate plate with 19.05mm holes
Installed Power	:	3 kW
Installed Motor	:	TECO, IP66 Cast Iron Frame
Drive	:	Bonfiglioli A 80 4 UH80 383.5 P100 B3
Screw Rotation Speed	:	3.7 RPM (at 50 Hz)
Rotation Sensor	:	Yes – Shaft rotation proximity switch
Materials of Construction	:	Casing – Mild Steel
		Screw Flights – 10mm Bissalloy 400
		Trommel Flights – 8mm Mild Steel
		Trommel Screen - 3mm Mild Steel
		Main Flight Shaft – 80NB XS Pipe
Bearings	:	Outboard Mounted spherical roller bearings mounted in FCM style housings with taconite seals
Seals	:	Double Row packing gland with grease filled labyrinth
Blocked Chute Sensors	:	Two (2) Ramsey tilt switches are installed – 1 per discharge hopper.



Description

The screw feeder offered is a large volume, slow speed design, designed to feed and convey product with occasional large lumps from the Product Silo outlet to the trommel screen, where the lumps and fines are separated.

The screw will draw material from the 570mm nominal hopper outlet. There is a step in pitch as the screw shaft passes under the outlet to promote material flow across the full width of the outlet.

Due to the highly abrasive nature of the material to be handled, the screw flights will be manufactured from 10mm thick Bissalloy 400.

The drive is shaft mounted at the discharge end of the screw, with a torque arm bracket restrained back to the casing. Due to the incidence of abrasive dust, the gearbox will be fitted with abrasion resistant Viton seals. As a result of the expected high ambient conditions, the gearbox will be pre-filled with synthetic oil.

A rotation sensor, comprising a proximity switch and rotating flag, will detect rotation by sending a regular signal back to the control.

To allow spilled material collected in bulk-bags to be re-fed into the system, an additional inlet has been included by extending the screw to provide a 300NB inlet. This inlet is fitted with a small hopper with a 600mm opening. The hopper is fitted with a 50 square safety mesh and has a bolted cover for sealing when not in use.

The screw is supported from the ground by structural steel supports which connect to the support brackets on the conveying tube.

Operation

Based on the required feed rate of 2.28 TPH and the bulk density of 755 kg/m^3, the screw feeder will rotate at approx. 3.7 RPM.

This feed rate is double the current feed rate and should allow the system to operate in BATCH mode, turning off when the silo level is low and starting again at high level. This will reduce the total running hours of the equipment, reducing wear and increasing the life of the components.

The vent installed above the trommel casing is connected by hose and pipe to the hopper roof where it is vented into the void above the material and exhausted via the existing roof top mounted bin vent filter.

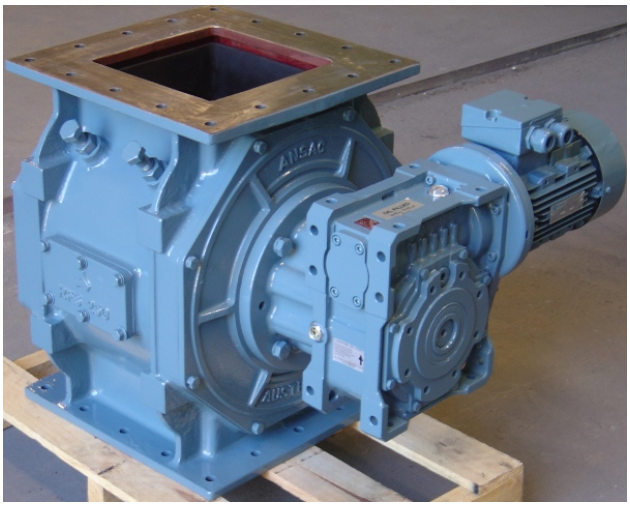
4.2.2 General Specifications – Floating Shoe Rotary Valve

Our offer includes the supply of one (1) Heavy Duty Rotary Floating Shoe Valve with the following specifications:

Model	:	RFS250DG1
Inlet / Outlet Flange	:	250mm Square
Housing Construction	:	Cast Iron

Rotor	:	Cast Iron with embedded ceramic tips
Seals	:	Grease Purged
Installed Power	:	0.55kW
Installed Motor	:	TECO
Drive	:	Bonfiglioli right-angled direct drive.
Filling Efficiency	:	80% max (60% nominal)

Description

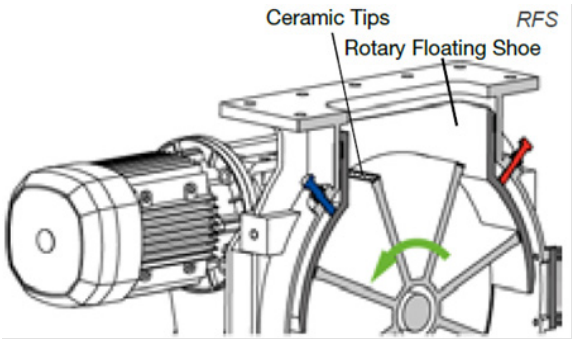


Rotary valves are simple, low power, feeding devices which allow material to pass at a rate controlled by the swept volume and rotational speed.

Due to the highly abrasive nature of the material to be handled, and the erosion caused by small particles in the high velocity leakage air, a heavy duty floating shoe style rotary valve has been offered.

The drive is directly mounted to the housing and rotor shaft.

A key feature of this valve is the sacrificial, hardened SG iron adjustable shoe. The shoe, which sits on the rotor, has up to 10mm of wear and can be adjusted externally during operation to maintain minimum clearance at all times.



Operation

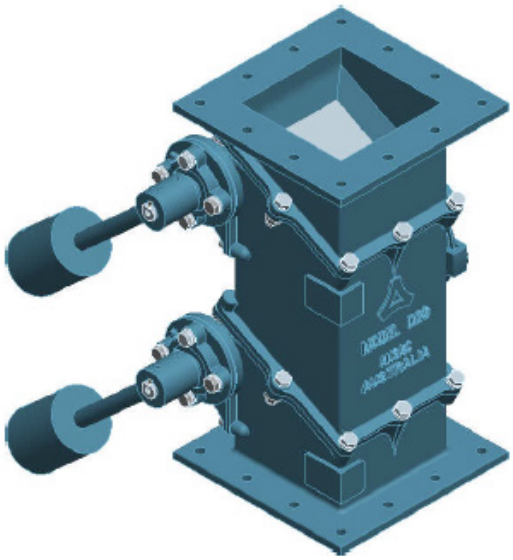
The rotary valve receives screened material which passes through the trommel screen. The feed rate is pre-determined by the screw feeder and it is intended that the valve is pre-fed so that the vane fill is between 60 and 80% to reduce the risk of hard lumps needing to be sheared.

As an added precaution, an inlet deflector plate will be fitted to the valve inlet flange to avoid product building up within the pinch points of the valve.

4.2.3 *General Specifications – Gravity Double-Dump Valve*

Our offer is based on the supply of one (1) 150mm square, gravity fed double dump valve with the following specifications:

Model	:	DH150G
Size	:	150mm
Housing Construction	:	Cast Iron
Drive	:	N/A - Gravity



Description

The double dump valve is designed to restrict the leakage of air from the system whilst allowing oversize material to be discharged.

The principle of operation of a double dump valve is based on two (2) flaps which operate in alternating fashion. When one flap is open, the other is closed. They are typically installed when total sealing and occasional or regular discharge of material is a requirement.

The unit offered is a very simple to maintain, with occasioning greasing of bearings the only necessary regular maintenance.

Operation

The double-dump valve self regulates its operation to suit the mass flow rate of material. As material builds up on the plate, the weight reaches a point where it will open the flap and allow material to discharge.

The frequency of discharge will depend on the amount of oversize material which is ejected from the trommel screen.

4.2.4 *Surface Treatment*

All fabricated surfaces will be surface treated to the following (or equivalent) system:

- All steelwork internal surfaces will be “As fabricated”
- All steelwork external surfaces will be
    - Blast Cleaned to AS 1627.4 class 21/2
    - Prime coat with International Coatings Intergard 251 Epoxy Zinc Phosphate to 75 microns DFT,
    - Top coat with International Coatings Interseal 670 HS to a DFT of 75 microns
    - Total dry film thickness 150 microns.

Proprietary items (motors, gearboxes, bearings, instruments, cast iron products etc.) will be treated in accordance with the manufacturer’s standards.

4.3 *Installed Motors*

The following motors are to be installed on the equipment offered:

Screw Feeder	1 OFF	3 kW TECO Motor	(4 Pole, 415V, 50Hz)
Rotary Valve	1 OFF	0.55 kW TECO Motor	(4 Pole, 415V, 50Hz)

4.4 *Instrumentation*

To provide equipment and personnel protection, the following instrumentation has been included:

- 1 OFF Screw Feeder rotor shaft rotation sensor (inductive proximity sensor)
- 2 OFF Ramsey Tilt Switches to detect a blocked fines or lump discharge chute

Cabling from the field instruments to local or remote control panels is to be done by others.

4.5 *Technical Clarifications*

No project technical specifications have been provided.

Equipment layout will be based on Drytech drawing A2-397-01-04 Rev D showing the dimensions and arrangement of the hopper 41-BIN-504.

This offer is in accordance with the detail outlined in this proposed and Bulk Handling Technologies standard designs.

5.0 SCOPE OF SUPPLY

5.1 Scope of Supply

Bulk Handling Technologies' proposal for the V_2O_3 Product Silo Discharge and Screening System for MVPL comprises the following scope:

Engineering

- Detailed structural and mechanical design of the equipment included in our supply.
- Provision of Certified General Arrangement drawings with equipment loadings.
- Provision of a Footprint drawing with foundation loads.
- A written process control functional description
- Provision of "As built" drawings
- Provision of Installation, Operating and Maintenance Manuals.

Documentation

- Provision of a Gantt Chart Manufacturing Schedule
- Provision of GA drawings of System and major equipment
- Provision of two (2) hard copy and one (1) electronic copy (pdf format) of the Installation, Operation and Maintenance Manual including proprietary manuals from sub-suppliers
- Priced List of Recommended Spare Parts

  NOTE: All electronic documents are provided in pdf format only.

Procurement

- Selection and procurement of the listed field instruments for the operation and control of the plant.
- Purchase of all proprietary mechanical and electrical equipment and components required to execute the contract and as per the descriptions and quantities outlined in this proposal.
- Provision of stainless steel labels for each piece of equipment
- Supply of all fasteners required for complete assembly of the equipment in our workshop but excluding hold-down bolts (by others)

Fabrication and Surface Treatment

- Fabrication and surface treatment of all mechanical equipment.

Trial Assembly and Workshop Testing

- Full trial assembly of equipment where practical
- No-Load Workshop testing of equipment where practical

Special Tools

- No special tools are required

Packaging and Delivery

- Packaging of all equipment suitable for road transport
- Delivery ex-works Perth Metro.

Installation & Commissioning

- Excluded.
- Provision of Commissioning Services on a Schedule of Rates Basis if required

5.2 Battery Limits / Terminal Points

This proposal is for the design, supply and delivery ex-works Perth Metro of the V_2O_3 Product Silo Discharge and Screening System.

Following is our understanding of the battery limits:

- Upper diameter of new hopper cone for site welding
- Underside of base plates on screw support steelwork
- Top of 600mm diameter bulk-bag feed hopper with 50 Sq mesh
- Plain end of brackets for vent line support for welding to hopper
- Plain end of vent line spool piece for welding into hopper roof
- Loose Matching flanges for welding to conveying line for new pneumatic conveying line inlet entrainment box
- Underside of support brackets on new entrainment box inlet
- Outlet flange on Lump discharge double-dump valve
- Grease nipples on all lubrication points
- Terminal box on all motors
- Fly Lead or terminal block on all field instruments (whichever is manufacturers standard)

5.3 Exclusions

Our pricing excludes the following:

- Design or supply of any civils or holding down bolts or cages
- Supply of any new maintenance access platforms or operator platforms for bulk-bag unloading
- Re-design of any adjacent structures or stairways to provide clearance for the new equipment
- Supply of any lighting of light poles
- Provision of site layout drawings or update of overall plant GA's
- Electrical conduits, cable trays and junction boxes for motor or instrument cabling
- Motor Starters or MCC panels
- VVVF drives
- Upgrades or modifications to the pneumatic conveying line or the downstream equipment (other than the new entrainment box)
- Delivery to site
- Unloading on site
- Installation on site
- Commissioning on Site (available on Schedule of Rates basis)

5.4 Clarifications and Assumptions

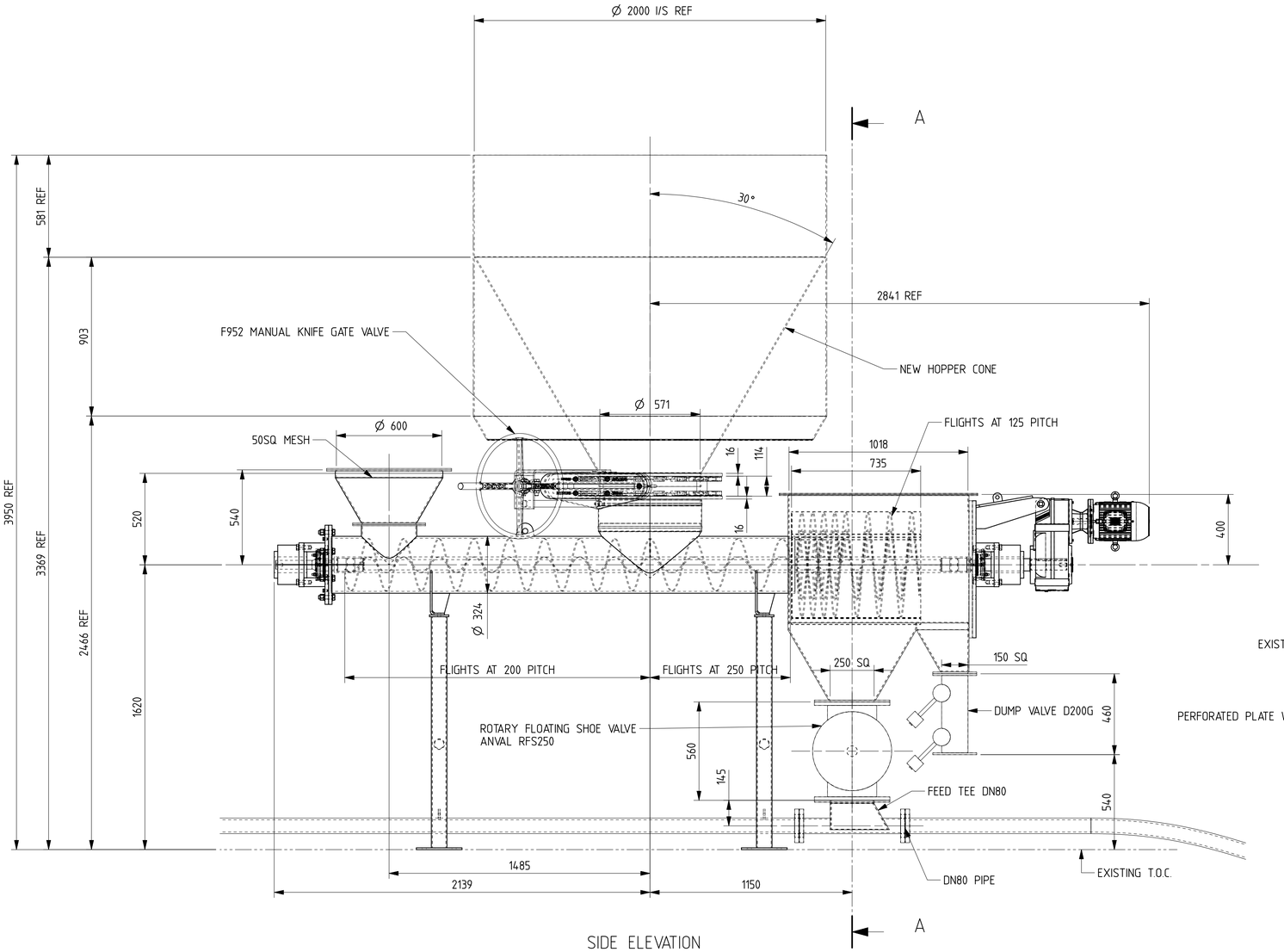
Our offer is based on the following assumptions and clarifications:

- The screw has not been designed to support the weight of a bulk-bag. During emptying, the bag must be supported by crane or forklift.
- It is recommended that the screw and rotary valve be operated via VVVF drives to allow feed rate adjustment.
- MVPL need to consider how lumps discharged from the double-dump valve should be collected. A small container, bag or drum may be required.
- The equipment will need to be assembled on site due to transport restrictions however will be despatched in as large as practical assemblies.
- The new hopper will be supplied in sections to allow installation into the existing cone. The pieces will need to be welded together during site assembly. Stiffeners and gussets will also be supplied loose for site welding.
- Site welding will be required to attached the vent line spool to the hopper roof

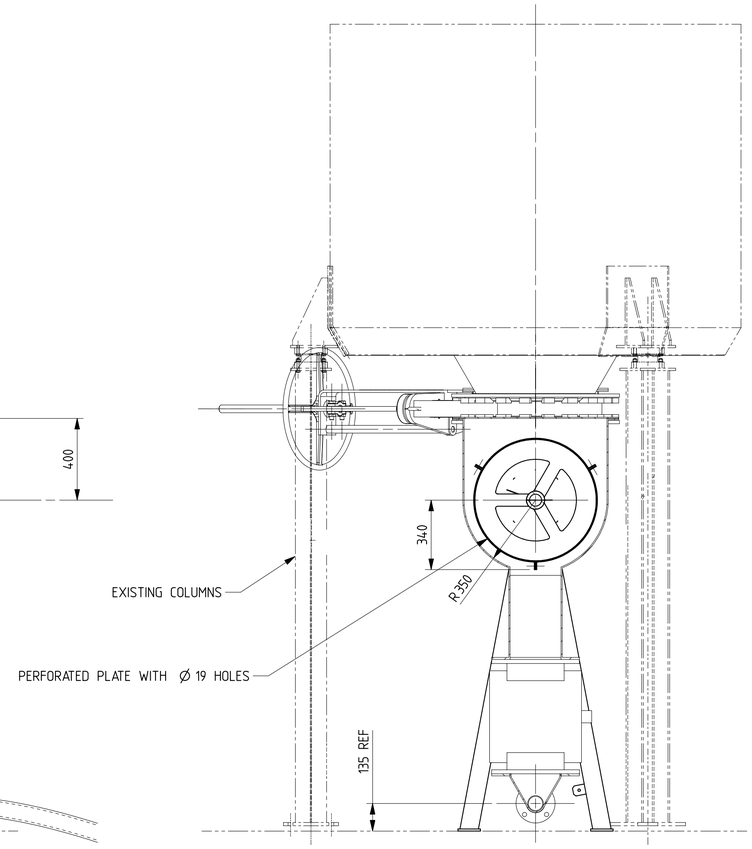
- Site welding will be required to attached the vent line support brackets to the hopper
- Site welding will be required to weld the loose matching flanges to the pneumatic conveying line in the new location.
- The original pneumatic conveying entrainment box will need to be removed and replaced with a length of pipe.
- Chemical anchors will need to be supplied and drilled into existing (or new) concrete to secure the support steelwork and brackets

6.0 ATTACHMENTS

- Preliminary General Arrangement Drawing



SIDE ELEVATION
SCALE 1:15



SECTION A-A
SCALE 1:15

REFENCE DRAWINGS

REV	DATE	BY	DESCRIPTION	APP'D
A	15OCT13	SC	ISSUED FOR REVIEW	

BULK HANDLING TECHNOLOGIES
Email: paul.inglesone@bulkhandlingtechnologies.com.au
Web: www.bulkhandlingtechnologies.com.au
Mobile: 0417 617 789

JOB NUMBER: S23-01

DRAWN	SC	DATE	12OCT13
CHECKED	-	DATE	-
APPROVED	-	DATE	-

FILENAME: 10405..dwg

ANY DISCREPANCIES ARE TO BE REPORTED BACK TO BULK HANDLING TECHNOLOGIES IF IN DOUBT ASK.

CLIENT: MIDWEST VANADIUM PTY LTD
PROJECT: PRODUCT SILO IMPROVEMENT PROJECT
TITLE: PRELIMINARY GENERAL ARRANGEMENT
PRODUCT SILO DISCHARGE & SCREENING SYSTEM
EQUIPMENT NUMBER 41-BN-504

DRAWING NUMBER: 10405
SHEET 1 OF 1

SHT SIZE	SCALE	REV.
A1	AS SHOWN	A