eDART
Slurry Solutions & Products

Company Introduction

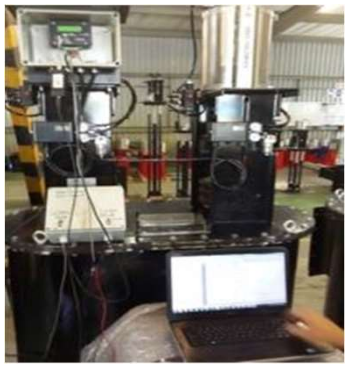
Established in 2004 to provide specialist slurry valves and has rapidly expanded its offering, skills and expertise to serve the mineral processing industry worldwide with a broad range of specialist slurry valves, samplers and engineered systems.

Located in South Africa with two self-sufficient factories in Johannesburg having a staff compliment of over 100 people and ably supported by our design and analysis office in Cape Town able to develop all our products and solutions to maximize our client's probability.

eDART Group manufacturing facilities are ISO 9001/2015 rated (Certificate No. SA1837) and our Engineering Capability has in-house engineering and design capability covering Valves, Mechanical, Process, Hydraulics, Pneumatics, Electronics, Instrumentation, Controls and Software.

QAS INTERNATIONAL
ISO 9001:2015
REGISTERED COMPANY
Certificate No. SA1837

eDART Solutions and Products



eDART designs and manufactures slurry equipment to improve recovery rates for metallurgical plants:

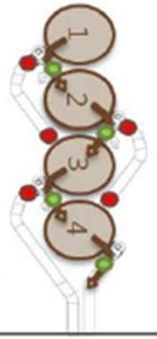
- Flotation back pressure pipes to improve level control in the final tank and Dart valves to provide the best level control in flotation circuits.
- Process control samplers to cost effectively sample the entire metallurgical process.
- Best-in-class knife gate valves, pinch valves and diaphragm valves designed for maximum life & ease of maintenance.
- Splitter & distribution boxes for mills, cyclone clusters, flotation circuits, thickeners & leach tanks.
- Fully automatic bypass systems for flotation tanks to facilitate planned / unplanned maintenance.
- Lime dosing valves for precise PH control

eDART Products & Services

Zero down-time

Safely repair flotation cell agitator & rubber line tank whilst producing concentrate

Flotation auto-bypass system



IOT connected

Best-in-class isolation valves with *early warning system

Metal seated knifegate & easy-lift pinch valves

~35%

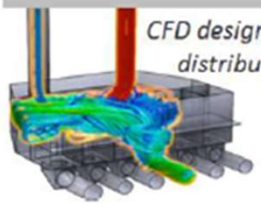
Improved flotation recovery vs manually controlled plant

Industry standard dart valves (internal & external)

Save $63k p.a.

Accurately split slurry by volume & PSD

CFD designed splitter & distribution boxes



~50%

Improve final flotation cell performance

CFD designed back pressure pipe

Lowest cost

Metallurgical calibration & compliance

Primary & secondary process control samplers

eDART Slurry Products

External dart valves

Internal dart valves

Inline dart valves

Knifegate, pinch & diaphragm valves

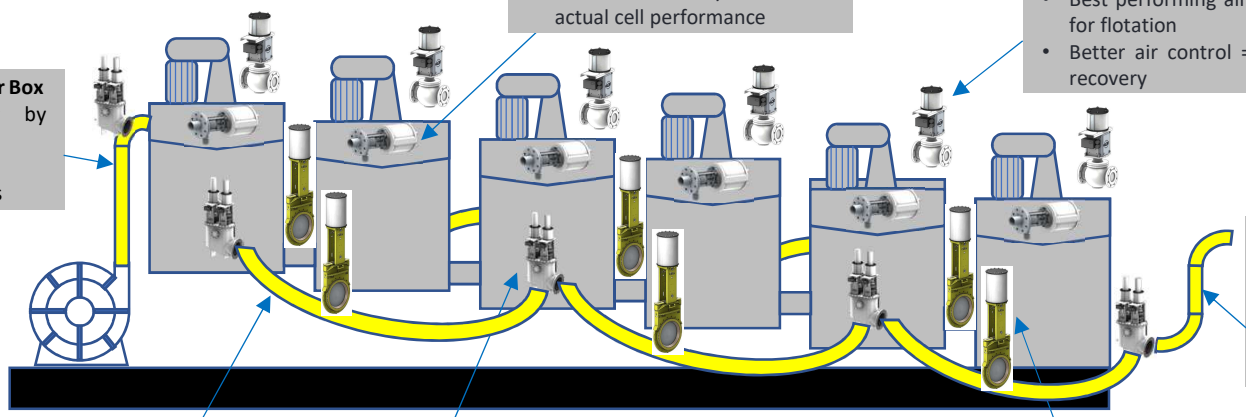
Process control samplers

3-way lime dosing & globe air valves

Actuators & Dual Valve Controller

Zero down time, optimised flotation plant

Save $1million to $3million per day (unplanned shutdowns)



Process Control Samplers
- Collect concentrate from each float cell for assay & establish actual cell performance

Globe Air Valves
- Best performing air flow valve for flotation
- Better air control = improved recovery

Pressurized / Gravity Splitter Box
- Accurately split slurry by volume & PSD
- Dart valves for control
- Stop over-dosing reagents

Back Pressure Pipe
- Huge improvement in level control for final cell
- Reduced wear on dart valve
- Reduces overall plant height & saves civil & steelwork

Auto Bypass System
- Take individual float cell offline for inspection & repair
- Continue producing concentrate at reduced capacity

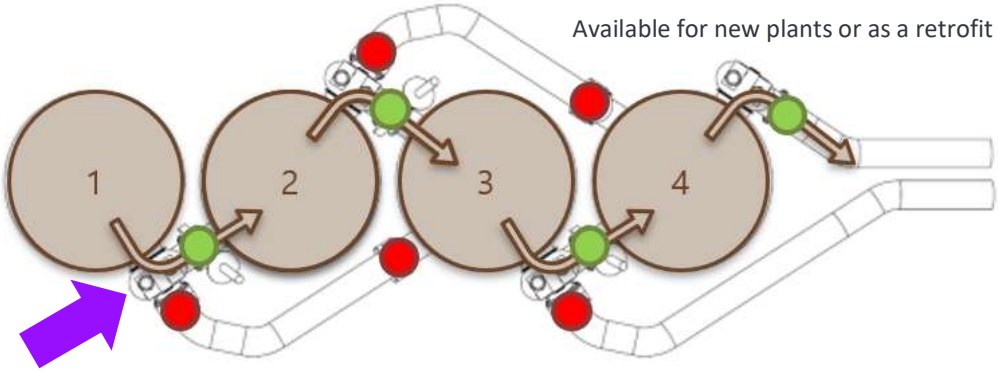
External Dual Dart Valves
- Industry leading level control valve = better recovery
- Externally mounted for easy maintenance & no work in enclosed tank

Knife Gate Isolation Valves
- Non leaking, metal seated valve
- Early warning system talks to maintenance team when valve is worn

Zero Downtime | APC Ready | Safe Isolation

Fully Automatic Bypass System – Flotation Plant

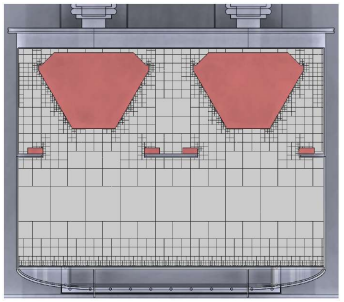
Available for new plants or as a retrofit to existing plants



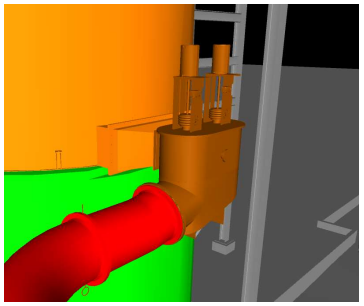
Benefits of external dart valve

- Improved safety maintenance (No tank access required)
- Standby valve pre-calibrated & pre-compressed (plug ‘n play)
- Shorter, lighter shaft = quicker response for APC
- Flexible housing size for future capacity increases

Installation on bypass system



CFD analysis of flow patterns



3D CAD design ensures exact fit

Flotation Feed Splitter System (Case Study)

Pressurised feed system to parallel rougher flotation banks using dart valves for continuous control of split vs setpoint

1. Feed Split Before:

Rougher bank A:
513m³/hr (-55m³/hr) -9.7%

Rougher bank B:
607m³/hr (+39m³/hr) +6.4%

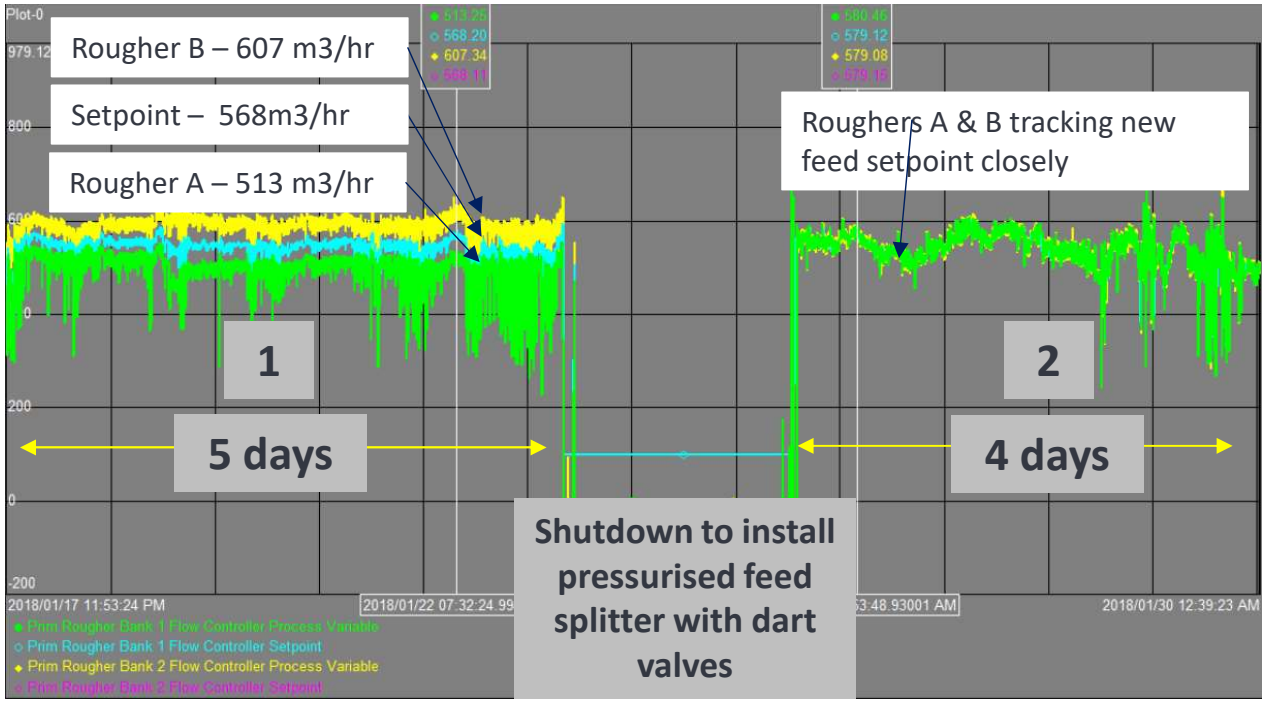
Split Variance 16.1%

2. Feed Split After:

Rougher bank A:
580m³/hr (+1.3m³/hr) +0.2%

Rougher bank B:
579m³/hr (-0.07m³/hr) -0.01%

Split Variance 0.3%

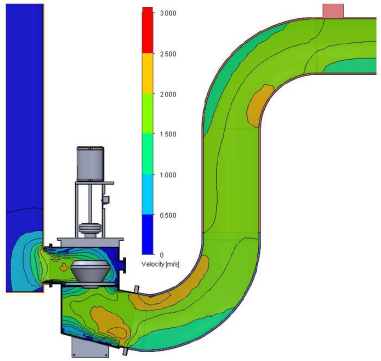


Back Pressure Pipe (case study)

Level control in the final flotation cell is difficult due to substantial increase in pressure drop vs previous cells.
A Back Pressure Pipe installed after the final float cell dramatically improves level control & mass pull in final float cell.

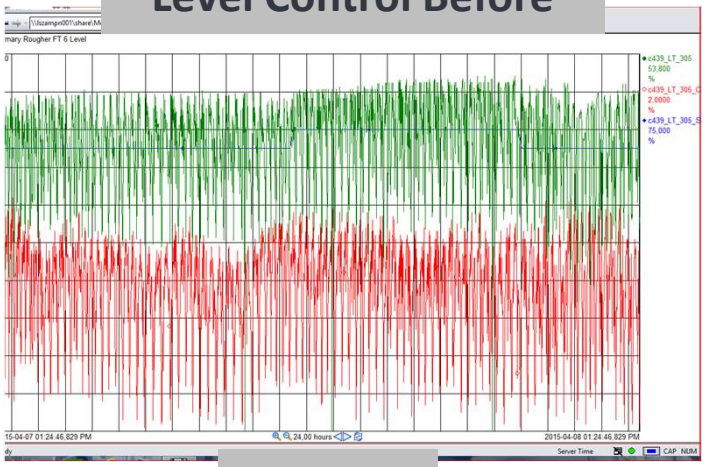
Back Pressure Pipe installed to:

1) Reduce pressure drop
2) Improve level control & mass pull



CFD designed Back Pressure Pipe

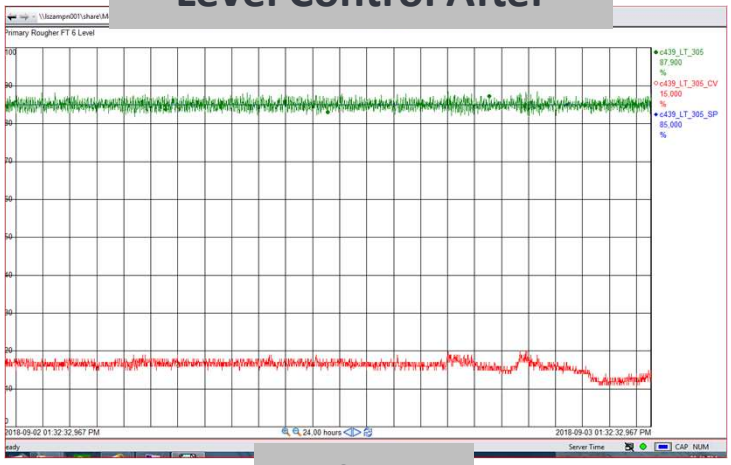
Level Control Before



24 hours

No Back Pressure Pipe & 4.7m pressure drop in final float cell

Level Control After



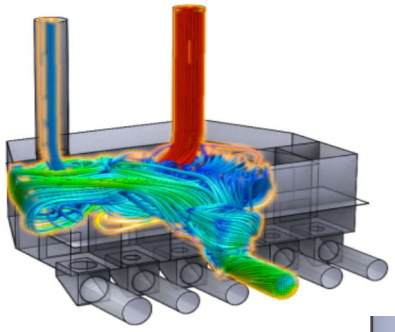
24 hours

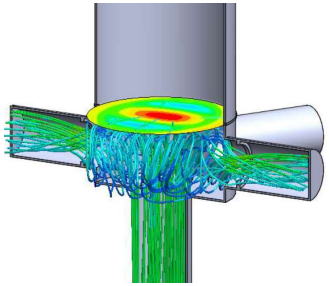
Back Pressure Pipe installed & pressure drop now 2m in final float cell

New internal dart valve installed

Distribution & Splitter Boxes

Distribution & Splitter Boxes

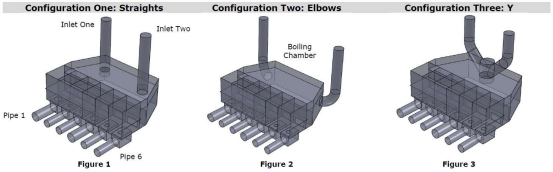


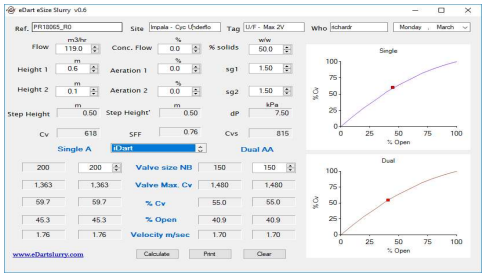


Feed balancing for multiple parallel processes - volumetric & particle size

Mechanical Design & Sizing

The geometry for the three configurations is shown below. The two inlet pipes mix in a so-called boiling chamber before the weir. The flow then splits into one of six outlets. Control is achieved with an eDART TriDart and isolated with an eDART penstock valve.



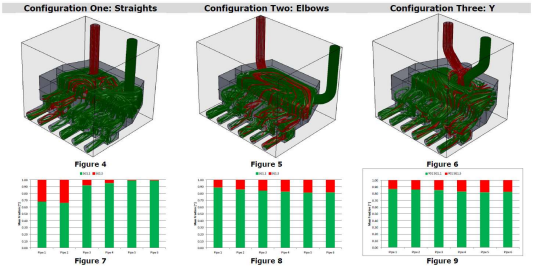


Low risk assessment of name plate & future throughput options

CFD Analysis of Distribution Box

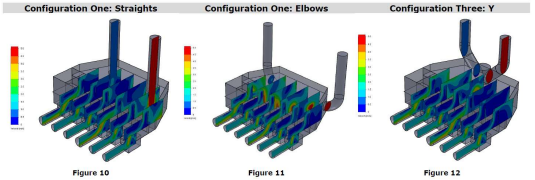
CFD of Mixing:

The concentration raio at each of the pipe outlets show that configuration two and three are better than the first.



CFD of Velocity:

The vertical cut plots show the velocity field in the distribution tank. The velocity in the 600mm pipe is fairly high and dissipates on the floor of the tank in the two vertical inlet pipe orientations. This suggests that we need to pay attention to erosion here.



It can also be seen that erosion may occur on the rear of the penstock valve and the distance between that and the weir should be increased.

Optimise the design for mixing & velocity before installing on site

eDART Slurry Valves Support

PRIMARY OBJECTIVES

- Assist with installations and routine valve maintenance.
- Perform valve audits and inspections to maximize the life of the installed valves.

SUPPORT SERVICES OFFERED

- New valve installations
- Routine maintenance & Spares
- Calibrations and Inspections
- Fault-finding
- Positioner Repairs
- On-site Training
- Actuator Repairs and Services
- Polyurethane coated tanks

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