

BERMAD HYDRAULIC CONTROL VALVES

FOR THE MINING INDUSTRY



Water Control Solutions

INNOVATION AT A GLANCE

BERMAD HYDRAULIC CONTROL VALVE – 700 SERIES

Hydraulic Control Valves can be configured to provide pressure, flow or level control and are customized according to the needs of the system being designed. Provide On/Off Service, Pressure Reduction, Pressure Sustaining/Relief, Surge Anticipating, Reservoir Level Control, and Pump Control in standard or high pressure applications.

- Up to 15% better flow capacity than standard globe valves due to y-pattern design and streamlined internal mechanism
- Double chamber actuator provides rapid response to changing system conditions
- Advanced actuator design increases operating life
- Actuator design eliminates potential damage of internal components during maintenance
- Variety of joining methods available to install on any pipe line
- On-site service of Bermad valves is up to 8 times faster to perform due to the single unit actuator

"Y" Pattern Valve Body with Full Bore Valve Port

Obstruction-free design **increases flow capacity by 15%**

Center Guided Valve Plug

Single point guidance maintains actuator alignment without obstructing flow path

Optional V-Port Throttling Plug

Allows for **low flow stability**

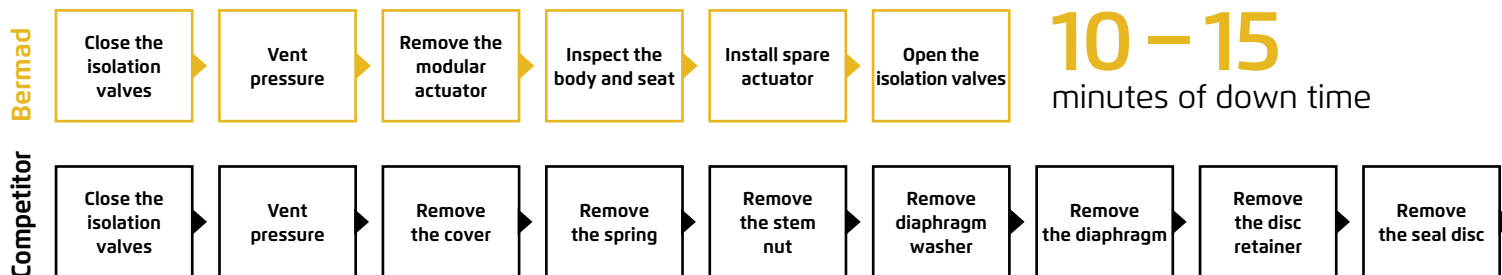
Flanges, Victaulic Grooved Ends and Other End Connections Available

Multiple Valve Body Materials and Coatings Available



Onsite Valve Service Protocol: Down Time

BERMAD Modular Actuator vs. Competitor



10 – 15
minutes of down time

BERMAD Hydraulic Control Valves

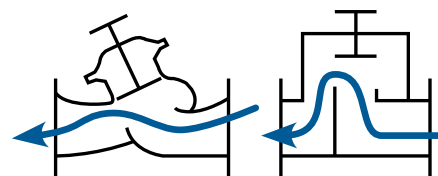
BERMAD semi-straight valve body design vs. competitive globe valve design



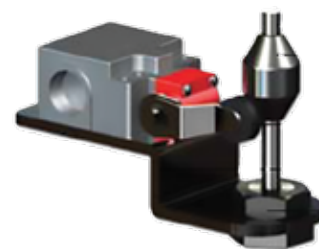
Double-Chambered, Modular Actuator Assembly

Simplified maintenance – can be removed as a single unit

Rapid response to sudden changes in system conditions



Direct flow path reduces cavitation and wear, extending operating life of valve and eliminates clogs



Cover Port for Indicator Switches enables on-site retrofit for remote position indication



Valve Trim with Parallel Control Loop Filters

On site service of BERMAD valves is

UP TO 8 TIMES FASTER to perform

Remove the stem

Inspect the body and seat

Replace elastomers (grease O-rings)

Reassemble all of the parts

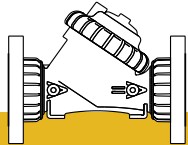
Place cover and tighten bolts

Open the isolation valves

60 – 80
minutes of down time



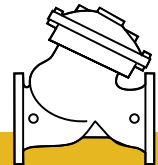
HYDRAULIC CONTROL VALVES FOR MINING



BERMAD 100 SERIES VALVES DIAPHRAGM ACTUATED

Features and Benefits

- Full bore seat with unobstructed flow path, free of in-line ribs or supporting cages
- Flexible Super Travel diaphragm provides ultra-high flow capacity with minimum pressure loss
 - No chattering or slamming
 - Accurate and stable regulation with smooth motion
 - No diaphragm erosion or distortion
- Low operating pressure requirements
- Size Range: 1½ – 6" | DN40 – DN150
- Operating Pressure Range: 5 – 145 psi | 34.5 – 1000 kPa
- Body Materials: Glass-filled nylon (standard), Polypropylene (optional)
- End Connections (based on size): Flanged, Grooved, Threaded



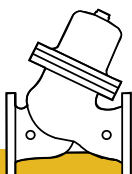
BERMAD 700 SERIES VALVES DIAPHRAGM ACTUATED

Features and Benefits

- Full bore seat with unobstructed flow path, free of in-line ribs or supporting cages
- Double-Chambered, Modular Actuator provides simple maintenance and seat inspection without disassembling the actuator
- Rapid response to changing conditions
 - No water hammer, protecting your system
- Low flow requirements, further enhanced with optional V-Port Throttling Plug
- Size Range: 1½ – 48" | DN40 – DN1200
- Maximum Operating Pressure: 400 psi | 2758 kPa
- Body Materials: Ductile Iron (standard), Carbon and Stainless Steel, Super Duplex, Hastelloy, Alloy 20 (optional)
- End Connections (based on size): Flanged, Grooved, Threaded

BERMAD Hydraulic Control Valves

100, 700 and 800 Series bodies are available in either oblique (Y) or angled patterns with full bore seats, providing superior flow, reduced friction loss and reduced wear from cavitation. Actuator assemblies are modular and can be serviced and/or replaced in-line without removing the valve, providing fast, worry free service.



BERMAD 800 SERIES VALVES PISTON ACTUATED

Features and Benefits

- Full bore seat with unobstructed flow path, free of in-line ribs or supporting cages
- Double-Chambered, Modular Piston Actuator provides simple maintenance and seat inspection without disassembling the actuator
 - Rapid response to changing conditions
 - No water hammer, protecting your system
- Low flow requirements, further enhanced with optional V-Port Throttling Plug
- Size Range: 1½ – 20" | DN40 – DN500
- Maximum Operating Pressure: 600psi | 4137kPa
- Body Materials: Ductile Iron (standard), Carbon and Stainless Steel, Super Duplex, Hastelloy, Alloy 20 (optional)
- End Connections (based on size): Flanged, Grooved, Threaded



INNOVATION AT A GLANCE

BERMAD COMBINATION AIR VALVE MODEL C50

Combination air valve for a variety of sewage, wastewater and industrial process water applications

Kinetic Orifice

Air relief/air intake during pipeline filling, draining and vacuum conditions

Service Ports

Tapped ports available for back flushing, cleaning and/or gauge attachment

Corrosion Resistant Body and Components

Standard material: Nylon base and cover, polypropylene float

Optional materials: Type 316 SS base, cover and float, Polypropylene base and cover

Auxiliary float

Prevents solids from making contact with the valve's operating parts insuring smooth operation and system protection

Straight Flow, Elongated Body

Efficient design includes a large diameter kinetic orifice resulting in superior intake and discharge flow rates

Inflow Prevention (optional)

Prevents intake of atmospheric air in cases where this could lead to damaged pumps, required re-priming, or disruption of siphons

Surge Protection (optional)

Smoother operation, preventing damage to the valve and the system in the event of water surge

BERMAD Hydraulic Control Valves

BERMAD COMBINATION AIR VALVE MODEL C70

Insect Screen

Prevents insects and other objects from interfering with normal operation

Automatic Orifice

Efficiently release accumulated air during pressurized operation

Corrosion Resistant Materials and Coatings

Standard Material: Ductile Iron, fusion bonded epoxy coating with stainless steel trim (NSF Approved for Potable Water)

Optional Materials: Cast Steel, Nickel Aluminum Bronze, Type 316 SS, Duplex, Super Duplex, Titanium

Aerodynamic Full-Body Kinetic Shield

Unique design prevents premature closing without disturbing air intake/discharge flow patterns or sacrificing flow capacity

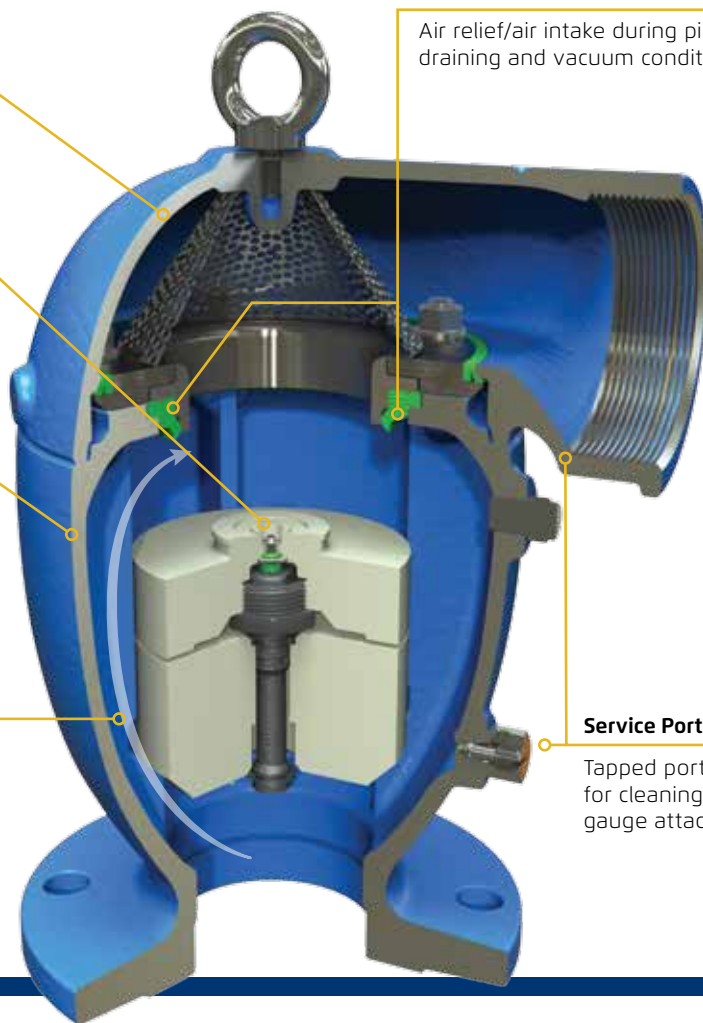
Combination air valve for a variety of water network and clean water applications

Kinetic Orifice

Air relief/air intake during pipeline filling, draining and vacuum conditions

Service Ports

Tapped ports available for cleaning and/or gauge attachment

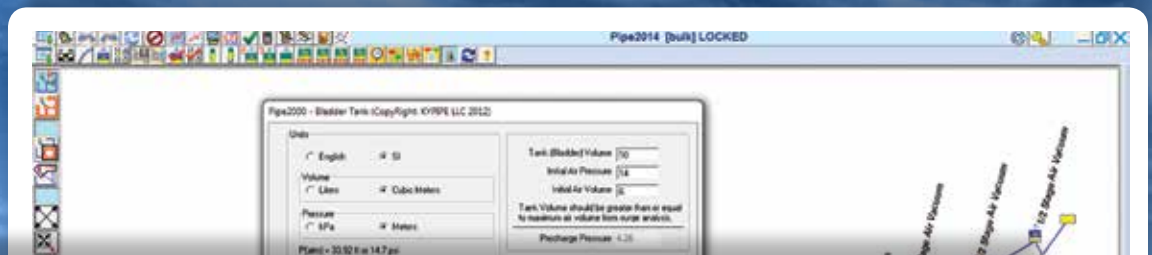


Surge Protection (optional)

Smoother operation, preventing damage to the valve and the system in the event of water surge

WORLD CLASS SERVICE AND ENGINEERING

For 50 years, BERMAD has been the recognized pioneer and world leading provider of high quality Hydraulic Control Valves. World Class pre-sale engineering support is paramount to matching your challenges with the best, most economical solutions from BERMAD.



Valve sizing Calculation

Valve Data

Series	700
Type	00
Application	Pressure Reducing (20)
Control Loop	2 Way
Body Material	S.S. 316
Plug	Vport
Pattern	Y

Operation Data

	Min.	Normal	Max.
Flow Conditions			
% - Working Time	25	50	25
Q - Flow Rate	300	500	700
P1 - Upstream Pressure	70	60	50
P2 - Downstream Pressure	20	30	40

Results - Typical For Steel Pipes

	10" (DN250)
ΔP - Differential Pressure (P1-P2)	30.0
ΔP - Min. Differential Pressure	4.0
QC - Choked Flow	1806
V - Flow Velocity (pipe)	1.7
H - Valve Travel	24.0
N - Hydraulic Noise	76.6
Flow and Cavitation Valve Load	None
Weighted Time to Overhaul	100000

Sizing Evaluation (Normal)

Optimal

% from optimal

Flow and Cavitation Load

SEVERE
MODERATE
MILD
LOW
NONE

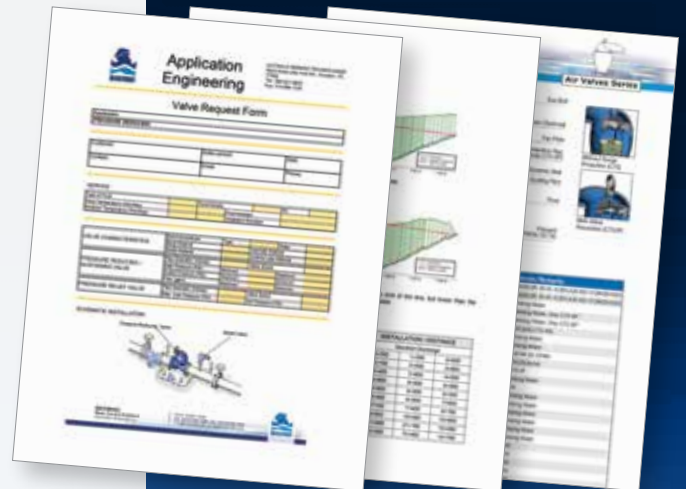
BERMAD Hydraulic Control Valves

VALVE SELECTION AND SIZING

Define Your Needs

Developed in-house by BERMAD Engineers, this software optimizes the location and sizing of hydraulic control valves in a specific project.

- Simplified quotation process
- Size and style selection based on application analysis and experience
- Flow charts, graphs and reports based on real life conditions

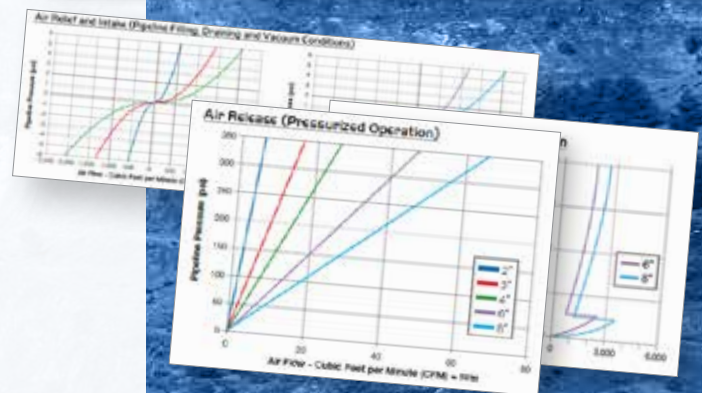


PIPING SYSTEM PROTECTION ANALYSIS

KYPipe — Surge Analysis

BERMAD Engineering also offers surge analysis in order to determine the required optimal protection strategies to ensure effective and safe system operation.

- Modeling and data verification
 - Transient analysis without any protection
 - Running iterations with various protection measures to achieve optimal solution
- A comprehensive report is provided; including recommendations on products and settings.



BERMAD AIR

Air Valve Sizing Program

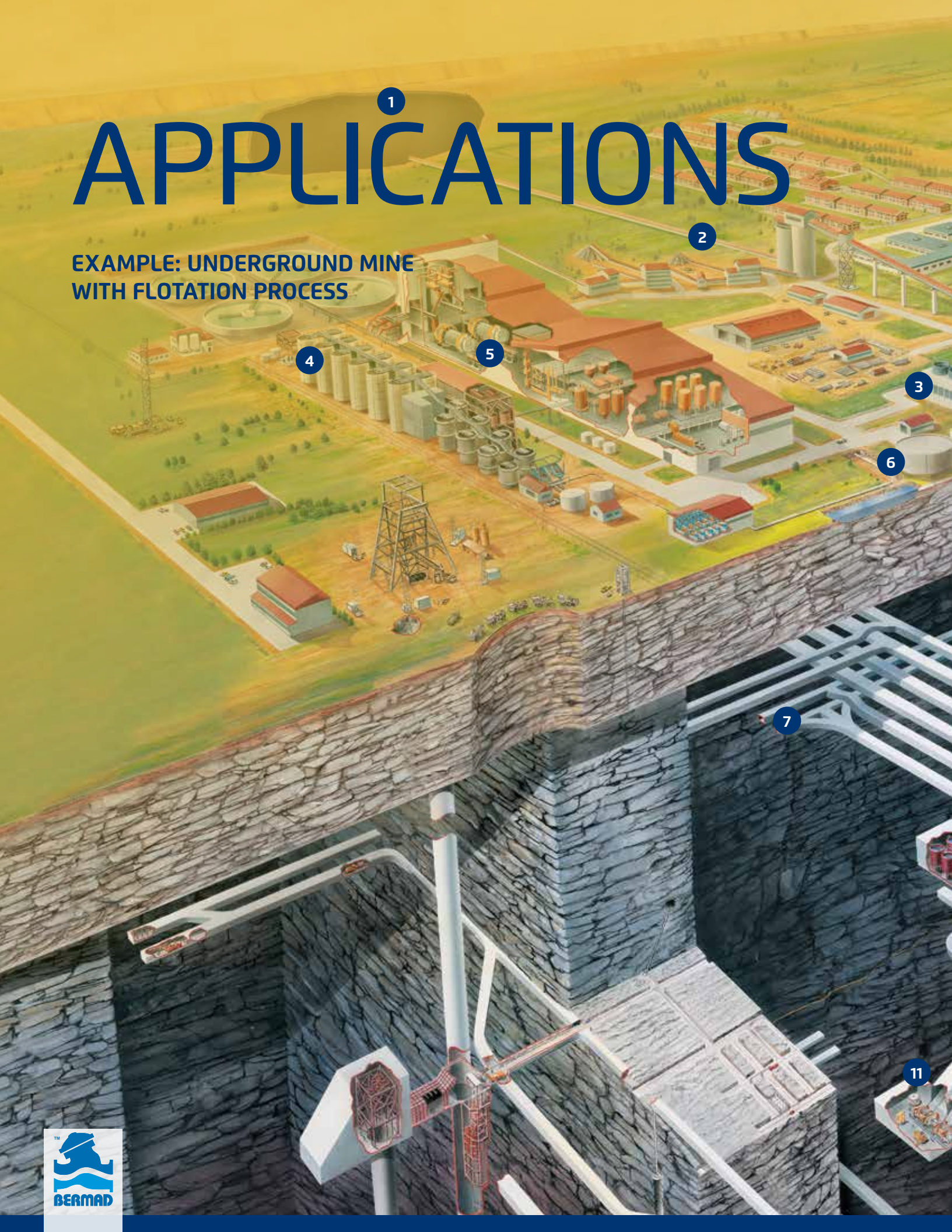
Developed in-house by BERMAD Engineers, this software optimizes the location and sizing of air valves in a specific project.

This software has been designed as an engineering tool, enabling every system designer to make an informed decision regarding model selection and placement.



APPLICATIONS

EXAMPLE: UNDERGROUND MINE
WITH FLOTATION PROCESS





1 Recovery Water/Tailings – Pump Protection

- Pump Control Valves (Active Check Valve)
- Surge Anticipating Valves
- Combination Air Valves

2 Slurry Lines – Vacuum Protection

- Combination Air Valves

3 Water Treatment – Pump Protection and Level Control

- Pump Control Valves (Active Check Valve)
- Surge Anticipating Valves
- Recirculating Valves
- Combination Air Valves
- Altitude Valves
- Float Valves

4 Flotation/Thickeners

- Pump Control Valves (Active Check Valve)
- Surge Anticipating Valves
- Combination Air Valves

5 Pump Gland Seal

- Electric Remote Operated On/Off Valves
- On/Off Valves with Pressure Reduction

6 Water Supply

- Pump Control Valves (Active Check Valve)
- Level Control Valves
- Surge Anticipating Valves
- Combination Air Valves

7 Dust Suppression

- Electric Remote Operated Valves

8 Pumping Station

- Check Valves
- Relief Valves
- Combination Air Valves

9 Pressure Reduction Station

- Pressure Reducing Valves
- Pressure Relief Valves
- Combination Air Valves

10 Dewatering System

- Pump Control Valves (Active Check Valve)
- Surge Anticipating Valves
- Combination Air Valves

11 Fire Protection Systems

- Monitor Valves
- Deluge Valves
- UL/FM Pressure Reducing Valves
- UL/FM Pressure Relief Valves

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