



# COMPANY PRESENTATION

**MGO PLANT**

CO<sub>2</sub> NEUTRAL HIGH PURITY MGO  
AND SILICA OPPORTUNITY IN  
BRITISH COLUMBIA

TSX: WHY.V  
[WWW.WHYRESOURCES.COM](http://WWW.WHYRESOURCES.COM)

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anticipated in such statements. Important factors that could cause actual results to differ materially from the Company expectations include, among others, risks related to international operations, the actual results of current exploration activities, conclusions of economic evaluations and changes in project parameters as plans continue to be refined as well as future prices of magnesium, as well as those factors discussed in the section entitled “Risk Factors” in the Company’s Annual Information Form [available on www.SEDAR.com](http://www.SEDAR.com). Although the Company has attempted to identify important factors that could cause actual results to differ materially, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements.

All figures are in Canadian dollars unless otherwise indicated.



# WHY'S MGO PLANT

- ✓ ADVANCED PROJECT WITH ROBUST PFS
- ✓ GREEN PREPRIATORY PROCESS
- ✓ MULTIPLE CRITICAL AND STRATEGIC MINERAL PRODUCTS
- ✓ EXCEPTIONAL MARKET POTENTIAL
- ✓ STRONG MANAGEMENT AND BOARD

# HIGH PURITY MGO PLANT

A Unique Strategic & Critical Minerals Investment Opportunity



## Advanced Project

- Advanced-stage green MgO Plant project with multiple critical and strategic mineral products
- Expected feasibility study in 2024
- High purity (over 99%) MgO and  $\text{Mg}(\text{OH})_2$  products with Ni, Fe and  $\text{SiO}_2$  byproducts.

## Magnesium Market

- Global annual market for all magnesium products exceeding 29M tonnes
- High purity magnesium oxide is growing globally with CAGR projections of 10% in the next 10 years<sup>1</sup>. High demand for multiple verticals including metals, food and pharma, chemical, tech, infrastructure, etc.

## Premium MgO Product

- Proprietary process producing premium (>98% and >99%) MgO and  $\text{Mg}(\text{OH})_2$  products with nickel and silica byproducts
- Green process with no waste and little to no  $\text{CO}_2$  emissions.

## PFS<sup>1</sup> Results

- PFS<sup>2</sup> (2022) shows robust project economics with payback in 1.5 years.
- Market Study<sup>3</sup> supports premium MgO pricing outlook and considers baseline prices of US\$1,500/Mt for >98% MgO, US\$2,200/Mt for >99% MgO.

1. Global MgO Market 2023-2030, Future Market Insights (FMI), 2023. [Follow the link](#)

2. Pre-feasibility Study not 43-101 compliant for the MgO Plant (2022) by KPM/Bumigeme

3. Magnesia Market Study (2022) by TAK Industrial Mineral Consultancy

# WHY'S MGO PLANT

Strong Partnerships





# PFS HIGHLIGHTS

## Robust MgO Plant Project Economics

### PFS Highlights Based ON HCl Leaching Process of the MgO Plant<sup>1,2</sup>

Product 		>99% MgO	>98% MgO	Mg Ingot
	Unit	US\$	US\$	US\$
<b>Product Price</b>		\$2,200	\$1,500	\$6,000
<b>NPV 5% Pre-tax</b>	\$ Million	\$1,417	\$994	\$1,636
<b>IRR Pre Tax</b>	%	73.5	80	53
<b>NPV 5% Post Tax</b>	\$ Million	\$1,254	872	1,139
<b>IRR Post Tax</b>	%	64.5	72	41
<b>Initial Capex</b>	\$ Million	325	250	275
<b>LOM Average Annual Production</b>	Mt	90K	90K	50K
<b>LOM Average Mineralization Mined</b>	MT	300	300	
<b>LOM Strip Ratio</b>	Waste/Ore	0.8	0.8	
<b>Mine Life</b>	years	172	172	172
<b>Payback</b>	Years	<2	<2	<2
<b>Net After Tax Income Year 1</b>	\$ Million	90	74	160

1. Pre-feasibility Study for the MgO Plant (2022) by KPM/Bumigeme

2. PFS is a third-party report but not 43-101 compliant. Financial outlook is based on the report's projections as of December, 2022, and is provided for informational purposes. Actual results may vary due to various factors, and readers should exercise caution when relying on this information

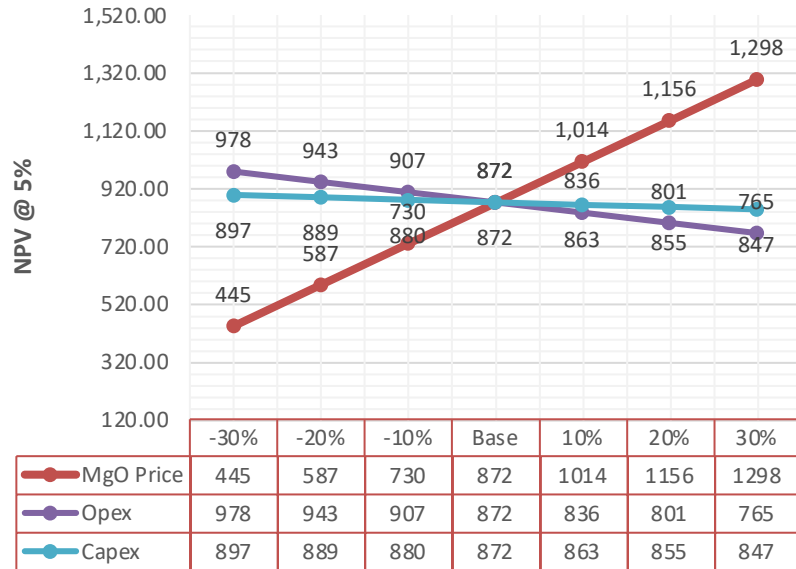




# PFS HIGHLIGHTS

## Robust MgO Plant Project Economics-2

### NPV Sensitivity based on MgO product price, CAPEX, and OPEX<sup>1</sup>

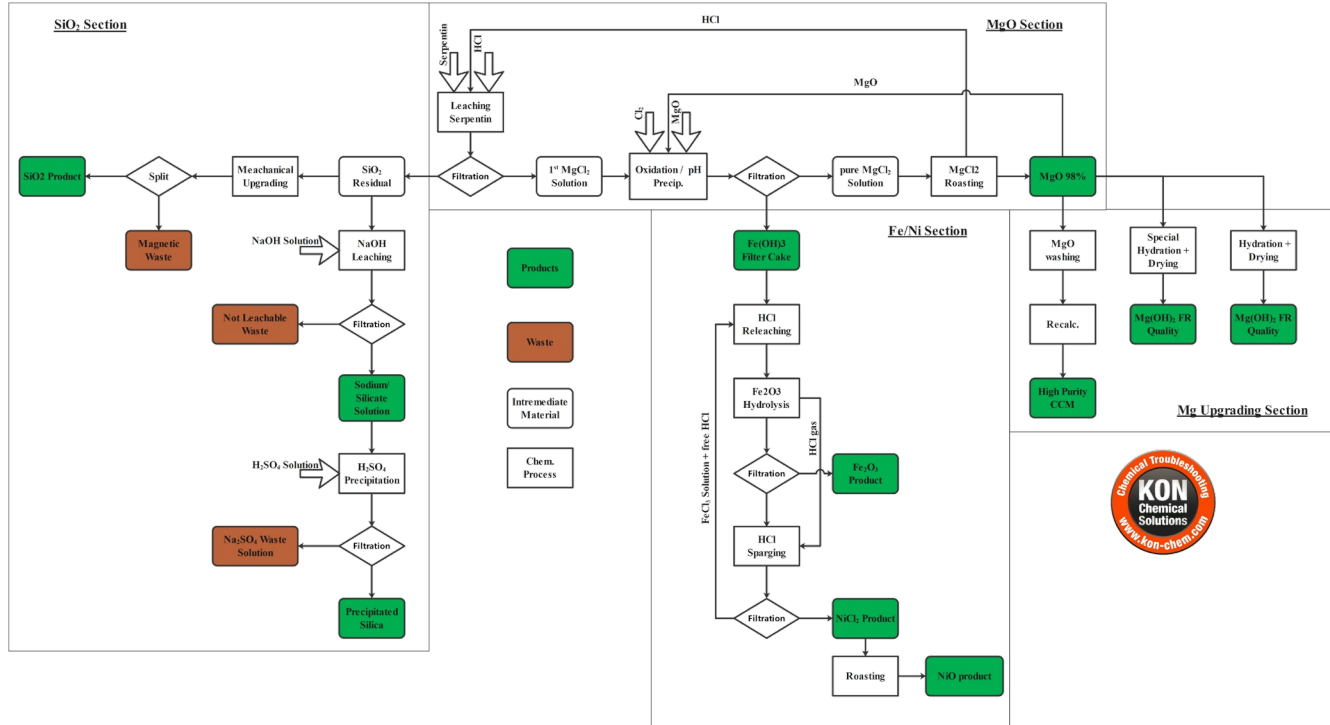


<sup>1</sup> Pre-Feasibility Study not 43-101 compliant for the MgO Plant (2022) by KPM and Bumigeme



# RR ORE PROCESSING

## HCl Leaching Process



- Developed at KPM lab facility (Kingston, Ontario)
- Proprietary hydrometallurgical process
- High purity (over 99% purity) MgO or Mg(OH)<sub>2</sub> products and 94.85% recoveries
- Marketable by-products (Nickel, Silica, Fe)
- Closed-loop with acid regeneration
- Low environmental impacts
- Low energy
- Virtually no wastes
- Minimal CO<sub>2</sub> emissions





# MGO PROJECT TIMELINE

Advanced stage development



First stage laboratory testing conducted at KPM in collaboration with Tenova and KON Chemicals (Austria) successfully leached RR serpentine ore and produced over 99% purity MgO product. Initial flowsheet was developed

2019



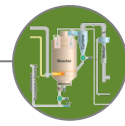
Second stage laboratory testing at KPM validated designed flowsheet for producing high purity MgO products and confirmed production of high purity silica, nickel and iron byproducts. Further process optimization was accomplished

2021



WHY engaged KPM with support from Tenova/KON to conduct PFS<sup>1</sup> to produce detailed design and economic evaluation of the commercial plants

2022



The company will initiate pilot plant testing, which will be followed by a feasibility study for the commercial plant.

2023/24

<sup>1</sup> Pre-Feasibility Study not 43-101 compliant for the MgO Plant (2022) by KPM and Bumigeme



# KEY PERFORMANCE METRICS

Favorable Economics and Environmental Impacts

- High purity >99% MgO/Mg(OH)<sub>2</sub> products and high recoveries
- High purity >99% Silica Product with additional iron and nickel by-products
- Favorable economics (OPEX and CAPEX)<sup>1</sup>
- Low environmental impacts
  - Low water
  - Acid regeneration/low waste
  - CO<sub>2</sub> free emission



<sup>1</sup> Pre-Feasibility Study not 43-101 compliant for the MgO Plant (2022) by KPM and Bumigeme



# MAGNESIUM USE

100's of applications in a variety of industries

**ENERGY STORAGE**  
Supersedes Lithium



**WALL BOARDS**  
Fire and water resistant



**PHARMACEUTICAL**  
Vital to human health



**AUTOMOTIVE**  
Light weight and strength



**MG CEMENT**  
More strength and durability



**AGRICULTURAL**  
Vital to plant growth



**AEROSPACE**  
Weight and temperature resistant





# MAGNESIUM ADVANTAGE

Wide use of Magnesium makes it one of the US strategic minerals



## AUTOMOTIVE

- Vehicle manufacturers are making lighter cars for more fuel efficiency
- High growth expectations for Mg metal as it is 33% lighter than aluminum, 75% lighter than steel making Mg the lightest high strength metal of choice for the future of the automotive industry



## METALLURGY

- Use of high purity MgO in hydrometallurgy, notably for the production of nickel (Ni) and cobalt (Co).
- The market is expected to experience strong growth due to high demand for Ni/Co in lithium battery manufacturing



## AEROSPACE AND BATTERIES

- Lightweight properties of magnesium improve performance of aircraft, vehicles, armor and military equipment.
- Magnesium batteries have better performance, lower costs, and enhanced safety compared to lithium-ion batteries (Karlsruher Institute für Technologie (KIT, 2019)



## AGRICULTURE AND HEALTH

- Magnesium (in the form of Magnesium Nitrate) is essential for healthy plant growth.
- Magnesium is vital to human health and is a co-factor in more than 300 essential enzyme systems in the body.

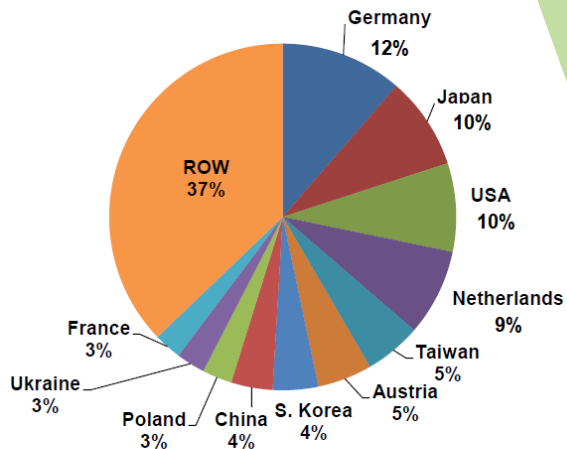


# MAGNESIUM MARKET

## MARKET FORCES

- Magnesium is considered as one of the 35 strategic/critical minerals for the US economic and national security with an Executive order to stockpile.
- US has announced the Energy Resource Governance Initiative (ERGI) in 2019 to support initiatives with member countries to develop strategic minerals projects.
- The North American magnesium compounds markets are highly dependent on imports, which represent over 50% of the demand (USGS, 2017).
- US production of caustic and refractory magnesia is declining, and consequently imports are expected to be on the rise.

World magnesia imports 2018  
Total 5.2m tonnes



Source: data from ITC; Dr Richard Flook



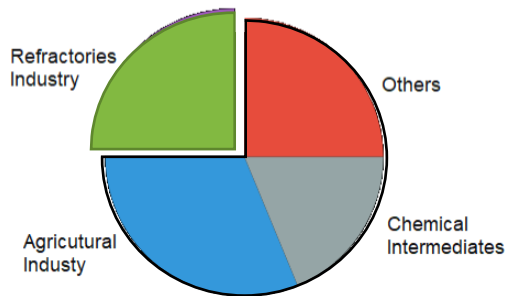
# MAGNESIUM MARKET

## MARKET VALIDATION

Current global annual market for all Mg products exceeds 29M tonnes. Focus is on the following industries including government and military:

- Pharmaceutical Companies
- Magnesium Ingot Bar Suppliers
- Potential EV Battery Companies (currently under R&D)
- Fertilizer Companies
- Health and Dietary Supplement Companies
- Magnesium Food Grade Suppliers
- Magnesium Wallboard
- Rail Car, Aerospace, Military, Commercial Transportation
- Magnesium Cement/Ceramics

Global MgO Market Share by Industry 2019 (%)



[www.marketintellica.com](http://www.marketintellica.com)



# MARKET PLAN

Path to Market

- **Pilot Plant**
  - Demonstrate the process at 10kg/hr generating MgO and Silica output using Integrated flow sheet
  - Generate samples of products for evaluation
  - Providing input for a Feasibility Study of the commercial plant
- **Commercial Plant**
  - Joint Venture/EPCM and off Takes



# WORK PLAN

## SHORT TERM

- Budget of US\$25 M
- Pilot plant (8-10 weeks)
  - Budget of \$500K with potential 50% Government funding
- Site development and mining (3-6 months)
  - Budget of \$18 million for access road construction and mine site development
  - Budget of \$1.25 million for site structures
- Feasibility Study of the commercial plant (8-10 months) at a budget of \$1.75
- Working capital of \$1 million
- 10% contingency

## LONG TERM

- Budget of US\$250 M
- Commercialization (18-24 months)
  - Feasibility Study of the commercial plant
  - FEED Study
  - Engineering and procurement
- Execution of the commercial plant (24-30 months)
  - Construction
  - Commissioning



# FIRST COMMERCIAL PLANT



## Operating Costs<sup>1,2</sup>

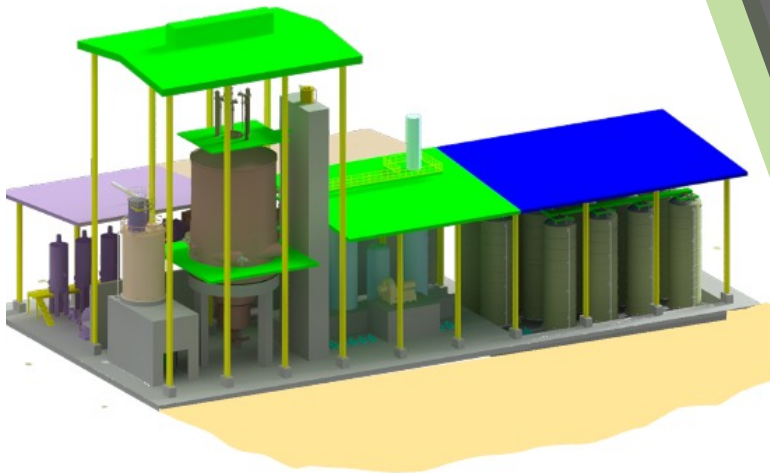
ITEM	US\$/t MgO Product
Total Operating Costs	<360

## Capital Costs<sup>1,2</sup>

	US\$
Total Capital Costs	250M

**KPM**  
Kingston Process Metallurgy Inc.

1. Pre-feasibility Study not 43-101 compliant for the MgO Plant (2022) by KPM/Bumigeme
2. Based on 250,000 tpa throughput





# PROJECT SCHEDULE

Short and Long Terms

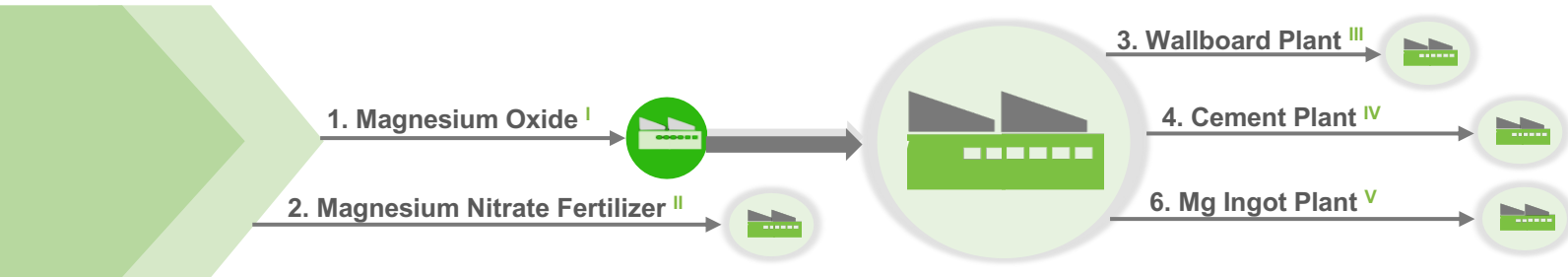
#	Milestones	Mths	2023		2024				2025				2026				2027				2028	
			Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
	Pilot Plant	6																				
M1	Development and operation	6																				
	Mine	54																				
M1	Mine Development	3																				
M2	Operation	51+																				
	Commercial MgO Plant	45																				
M1	Commercialization	21																				
	Feasibility Study	9																				
	FEED and Eng. Studies	12																				
M2	Execution	24																				
	Construction	21																				
	Comissioning	3																				
M3	Operation	6+																				
	Ramp Up	3																				
	Operation	3+																				



# PRODUCTION OUTLOOK

## Mg Industry Product Verticals

- The company will specialize in the mining and production of high purity MgO product
- The company will JV/Partner with other parties/end users to develop multi Mg industry verticals



- I. WHY can produce MgO that is up to 99% purity with no CO<sub>2</sub> emissions from the production process.
- II. Mg is a vital nutrient for healthy plant growth. It is a key component of the chlorophyll molecule
- III. Mg Wallboard plant can replace OSB board, plywood, drywall and cement board. It is fire proof, smoke proof, water proof, mould and mildew proof and termite proof.
- IV. No CO<sub>2</sub> emissions, Mg cement PSI strength ranges from 9,000 to 45,000; Mg cement lasts for 3,000-5,000 years; and it absorbs and locks its CO<sub>2</sub> emission as it sets and cures.
- V. Mg ingots are the lightest and strongest based on weight to density ratio, lighter by 33%, which results in lower CO<sub>2</sub> emissions in all uses.

# CORPORATE PROFILE

TSXV: WHY



# OUR PROFESSIONAL TEAM



**FRANK MARASCO**  
CEO, DIRECTOR

Frank Marasco is also President and Director of Big Mountain Development Corp. Ltd. Over the course of 45 years, Frank has built and sold numerous successful businesses, in Retail, Hospitality, and Commercial Real-estate. Frank's experience in resource development outside of his 16 years leading WHY Resources is based in the oil and gas sector. He had purchased 81 oil and gas development sections in S.E. Saskatchewan in the Bakken, as well as thirteen gold mines in Rossland, BC.



**PAT NELSON**  
DIRECTOR

Ms. Nelson was the Vice Chair and Director of the In Situ Oil Sands Alliance, the Controller for Sabre Petroleum and also Petroterra Resources. She also served as the Manager of Financial Control for Suncor Inc. She is currently a member of the Board of Directors of Altalink, and also Option Inc.. Mrs. Nelson served 15 years as an elected Member of the Legislature of Alberta, and was appointed as the Minister of Energy, the Minister of Economic Development and Tourism, the Minister of Government Services, and finally the Minister of Finance.



**MARIA MARASCO**  
DIRECTOR

Mrs. Marasco is an independent businesswoman who has provided services in corporate restructuring finance, acquisitions, and strategic planning. She is also responsible for overseeing management information systems, human resource strategies, and property management systems



**BARRY BAIM**  
DIRECTOR

Mr. Baim brings over 35 years activating and inspiring teams to achieve profitable revenue growth. His senior experience is diverse having held executive positions with both private and public companies including Tier one CPG and in the natural resource sector mining site development projects in oil sands and other service-related entities in energy, oil, and gas. Mr. Baim is currently a director for SGV Canada and a past board member with Millennium Seismic, Paradigm Chemical Technologies and Siksika Resource Developments Ltd.



**FOUAD KAMALEDDINE**  
PHD, P.ENG, ADVISOR

Dr. Kamaledine is the founder/principal of AIS Inc., an integrated mining consulting partnership that provides technical services to mining companies including processing and metallurgy, project development, and engineering studies. He has been an officer and director of many public and private mining companies. Dr. Kamaledine has over 20 years of academic and industry experience with demonstrated success in conducting challenging industrial research leading to several inventions and multiple achievement awards.



# CONTACT US

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