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AMS – a young, fast-growing membrane manufacturer with strong IP and R&D effort backed by a focused team

The Product



- Development and marketing of **chemically and thermally stable ultrafiltration (UF) and nanofiltration (NF) membranes**
- Complete product line of extreme **acid, alkaline, solvent, thermal- and pressure-stable membranes**

The Company



Headquarters



Laboratory



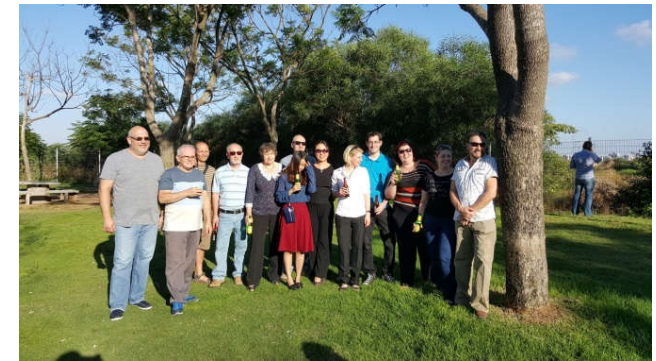
Production line



Lab Testing

- Company based in **Tel Aviv / Israel**
- **Lab, test and production as well as office facilities** in house
- **High-end test and production equipment**

The Team



- Extremely **experienced team of professionals** guides AMS
- Technical team with vast experience in the membrane business

Chimerical Technology exclusively distributes AMS elements in Southern Africa

Chimerical is experienced engineering company from South Africa

Over 10 years Chimerical team specializes in providing membrane-based solutions worldwide.

The Company proved to be a reliable contractor for projects of any complexity, delivering turn-key solutions:

- Laboratory and pilot studies;
- Engineering;
- Fabrication;
- Installation and Commissioning;
- Operations and Maintenance;
- Plant optimization.



Following many years of joint projects AMS fully relies on Chimerical to serve Africa

Chimerical and AMS are long-term partners in researching and delivering membrane-based projects.

In numerous global projects Chimerical gained extensive experience in applying AMS membranes.

in 2018 Chimerical was selected to be exclusive distributor for AMS on our key market of Sub-Saharan Africa and, particularly, South Africa.

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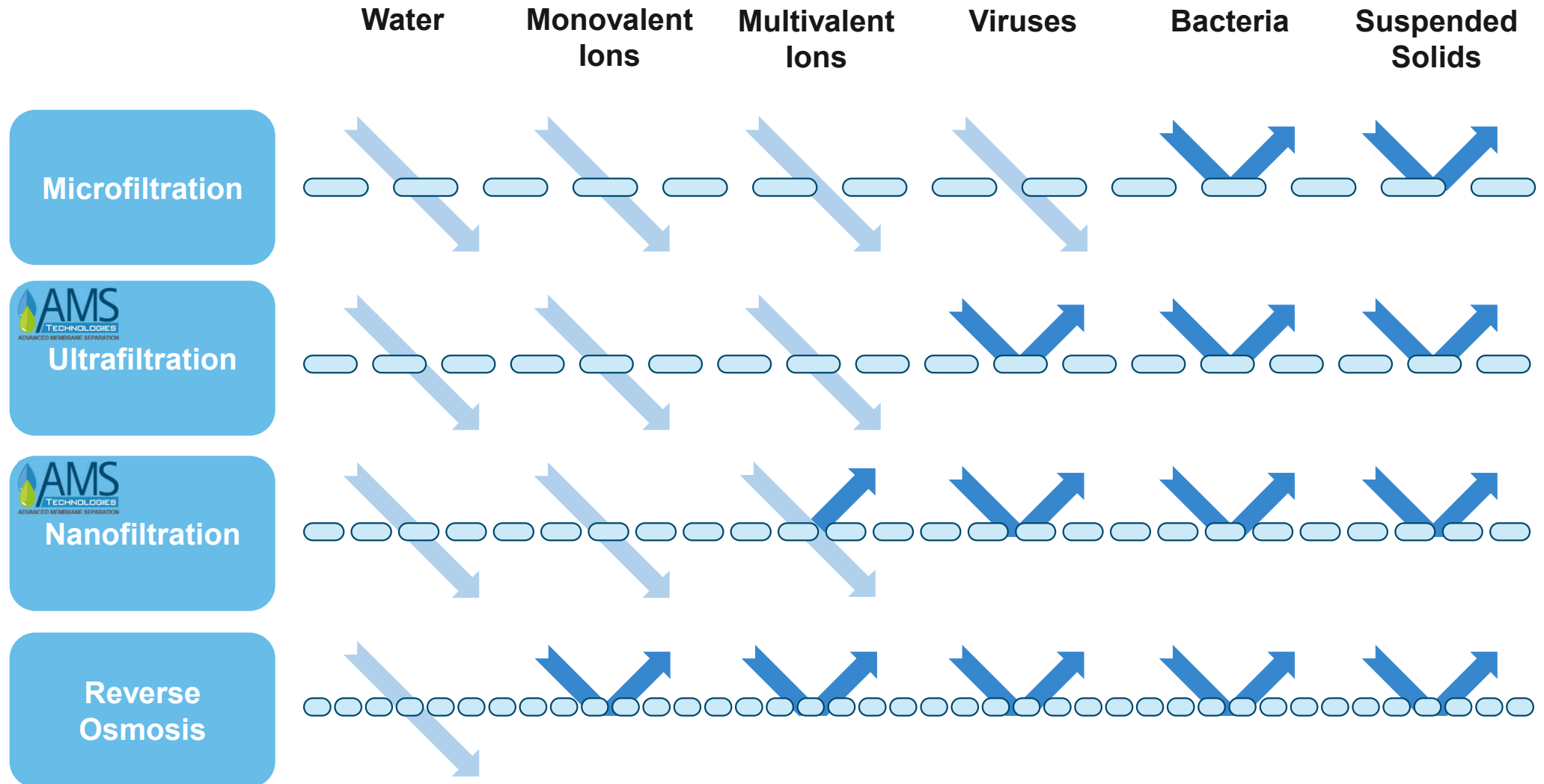
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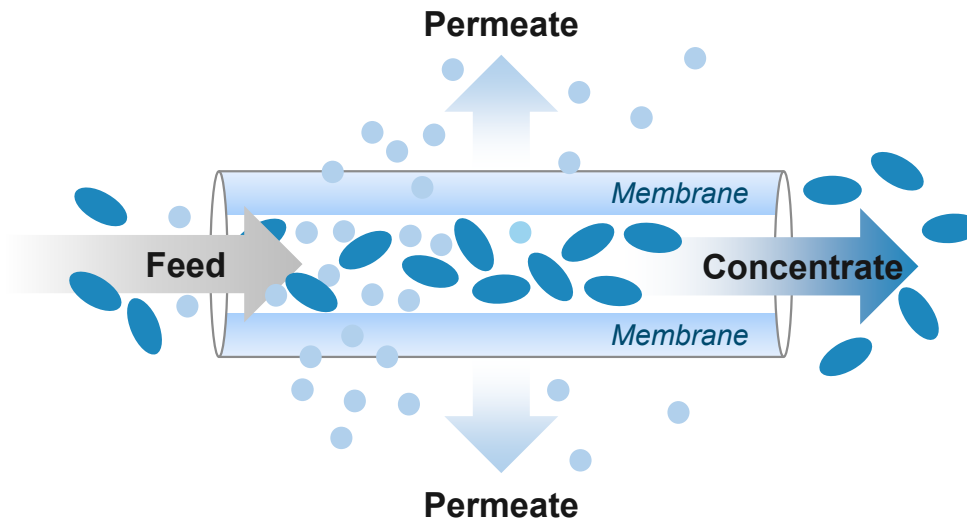
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Membranes selected to match requirements of component separation



AMS membranes uniquely designed for organics complex separation under aggressive conditions

Nanofiltration membranes separate multivalents from liquid streams



- Small molecules (e.g. water, acid, caustic)
- Multivalent components and organics

Superior chemical, thermal and pressure durability as well as high separation makes AMS ideal in aggressive applications

Highest acid, alkali and solvent stability...

Unmatched performance in acid conditions

- ✓ Tested acid solutions include: 20% H₂SO₄, 20% HCl, 30% H₃PO₄

High end performance in alkali conditions

- ✓ Tested alkali solutions include: 20% caustic soda, 20% potassium hydroxide

High end stability in solvents

- ✓ Tested solvent solutions include: Methanol, Propanol, Ethanol, Acetone, Hexane, THF, NMP, DMF, Methylene chloride and Alcohols
- ✓ Unique durability under acid and solvent mixtures

... superb thermal & pressure stability

Thermal durability up to 80°C (176 °F)

- ✓ No need for cooling

Pressure durability up to 70 bar (1'015 Psi)

- ✓ Better recovery at high osmotic pressure conditions

High and stable separation

- ✓ High recovery of valuables

Membrane	Max Temp	Max Press	MWCO ¹
AMS NF	80°C	70 bar	180 Da
Competitor 1	70°C	35 bar	200 Da
Competitor 2	80°C	40 bar	500 Da

1. MWCO = Molecular Weight Cut-Off, the lowest molecular weight solute (in daltons, 1 dalton = 1 g/mol) in which 90% of the solute is retained by the membrane or the molecular weight of the molecule that is 90% retained by the membrane

Source: AMS Technologies

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Membrane technology is well-established in industrial applications and gaining high popularity in mining

Mining sector to target application development

Mining	 Uranium, Rare Earth	✓ Acid recovery in the in-situ leaching process
	 Copper & Cobalt	✓ Copper recovery and acid recycling
	 PGM	✓ Separate acid from metals and sodium
	 Zinc	✓ Acid recovery and zinc concentration
	 Nickel	✓ Acid recovery
	 Bauxite	✓ Caustic recovery in Bayer process

Multiple Industrial applications Regularly utilizing membranes

Industry	 Pharma	✓ Recovering of antibiotics from mother liquor
	 Chemicals	✓ Acid application in the ion exchange resins production process
	 F&B & Dairy	✓ Caustic recovery from spent bottle washing streams
	 Pulp & Rayon	✓ Caustic recovery in dissolving pulp mills and rayon operations
	 Paint & Coating	✓ Solvent & paint recovery from spent paint-tank washing
	 Others	✓ Electroplating & battery applications ✓ Aircraft de-icing

Confirming USD 15 M project on SX raffinate treatment for African SX/EW base metals plant

Pilot project for SX raffinate stream on its home stretch at copper-cobalt SX/EW in Africa ...

Client	Global natural resources company from C. Asia
Project Region	Middle Africa
Application	NF treatment of SX raffinate stream
Treatment Vol.	Approx. 30 m ³ /hour
Status	2 nd phase of pilot project undergoing

... to cut acid consumption and improve EW efficiency ...

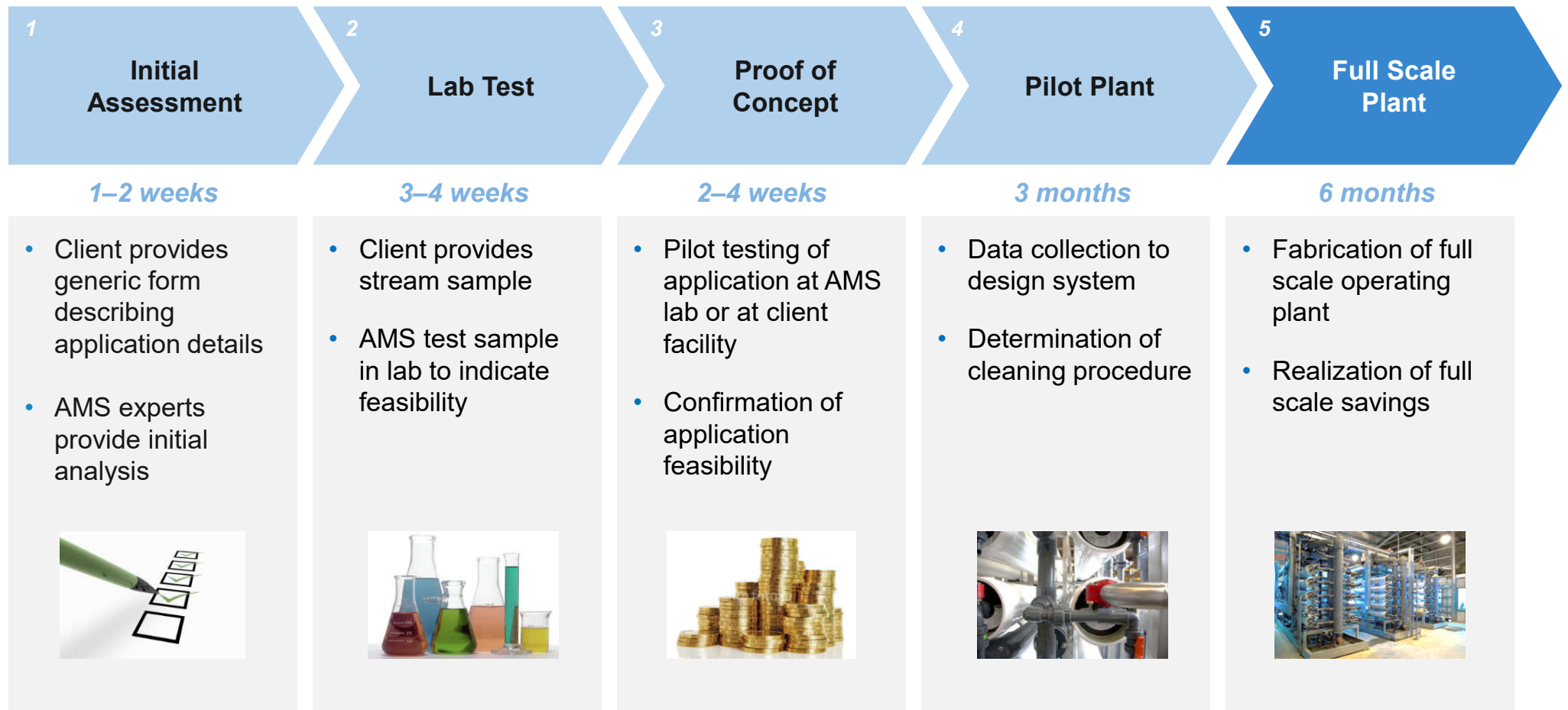
Feed Solution	H₂SO₄: 3% (pH < 1) Cu: 0.60 g/L Co: 4.5 g/L
Treatment Highlights	H₂SO₄: Clean 50% recovery in concentrate Cu & Co: 99% recovery in concentrate, 2 times increase in concentration
Realized Benefits	<ol style="list-style-type: none"> Acid recovery enables reuse at heap leaching decreasing a) acid consumption, b) transportation and handling, and c) heating cost; Metals concentration allows to a) increase EW efficiency and b) decrease metals loss.

... providing NPV of USD 15 M and 1 year payback

USD Millions	Year 1	Year 2	Year 3
Savings est. by AMS	4.9	4.9	4.9
CapEx	3.6 <i>Stainless steel membrane plant</i>	0	0.1 <i>Elements replacement once in 2 years</i>
OpEx	0.1 <i>Membrane cleaning and electricity</i>	0.1	0.1
Net CF	1.2	4.8	4.7
Total CF	1.2	6.0	10.7

NPV @ 12% = USD 15 M

Consecutive steps in analysis of application and feasibility mitigate risks of the project



in-house expertize and capabilities



In collaboration with EPC

AMS supports its clients from lab to full scale plant

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Got any questions? – Contact us!

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