



# AUGWIND

## ENERGY STORAGE SOLUTIONS

Investor Presentation, April 3<sup>rd</sup>. 2022

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## 2021 MARKET SUMMARY

- Energy storage stronger than ever, 2021 was a record year
- Increasing demand for long-duration energy storage (LDES)
- COP26 and overall climate action
- Strong financial commitment to ESG related activity
- > \$1.5B capital raised by energy storage technology companies
- Global supply chain crisis, supply instability, increase in costs & inflation

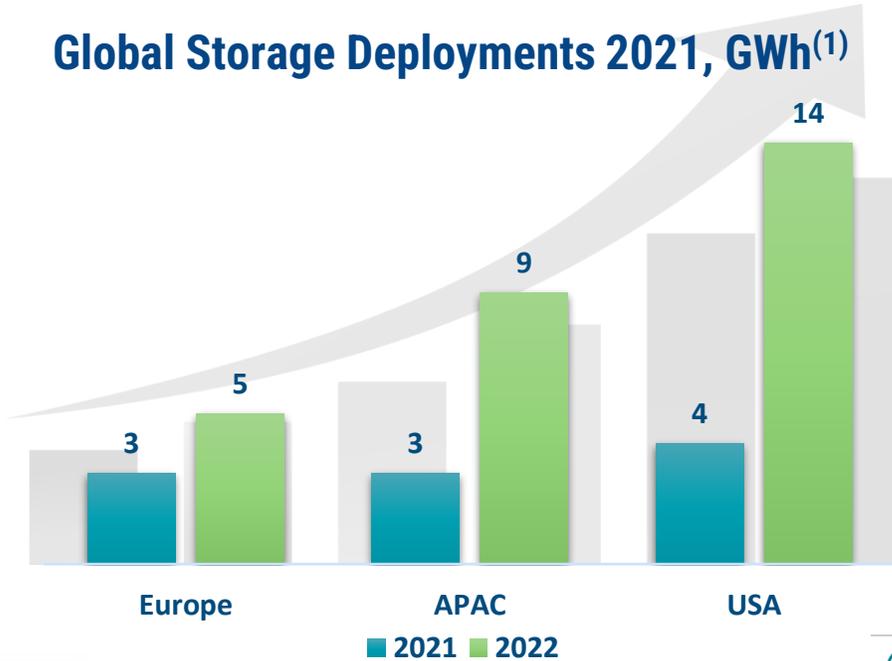
“  
This is the decisive decade...  
we must make decisions that will  
avoid the worst consequences  
of a climate crisis

PRESIDENT BIDEN, APRIL 22, 2021



# ENERGY STORAGE DEPLOYMENTS REACH NEW RECORDS IN 2021

Global Storage Deployments 2021, GWh<sup>(1)</sup>



**UTILITY DIVE** Deep Dive Opinion Podcasts Library Events Topics

## Global energy storage set to nearly triple in 2021: Wood Mackenzie forecast

Published Oct. 8, 2021

A Verisk Business

**Wood Mackenzie** Who We Are What We Do Industries We Serve Market Insights

**NEWS RELEASE**

## U.S. storage market sets new installation record in Q3 2021

MWh deployments rise but supply chain challenges remain

09 December 2021

**POWER** Distributed Energy Featured Categories

## 'Best Is Yet to Come' for Energy Storage Technology

**S&P Global Market Intelligence**

## US energy storage developers plan 9 GW in 2022, building on 2021 breakthrough

**Energy Storage NEWS** Advertising Contact

## UK sees record-breaking submitted battery storage capacity under planning in Q2 2021

By Mollie McCorkindale

August 4, 2021

**The Telegraph** News Ukraine Sport Business Opinion Money Life Style

Economy Companies Markets Tech Alex

## Europe's biggest battery to be built on Teesside

Singapore-based Sembcorp Industries is planning a new facility to help Britain manage intermittent flows of renewable power

By Rachel Millard

14 December 2021 - 6:00am

**Energy Storage NEWS** Advertising Contact

NEWS

## Expansion plan to take world's biggest battery storage project to 3GWh capacity

By Andy Colthorpe

January 25, 2022

(1) Wood Mackenzie, 2021



## 2021 CORPORATE SUMMARY

- Organizational build-up
- New Chairman & CEO, experienced leadership team appointed
- First pilot – small-scale commercial installation
- First AirSmart installation in EU
- AirSmart repeat orders from Iscar (Berkshire Hathaway Group)
- Significant increase in R&D investments
- Yahel pilot project optimization still underway
- AirSmart sales have not taken off yet to expected levels
- Surging global costs had a negative impact on our business plan



# INVESTING IN THE FUTURE

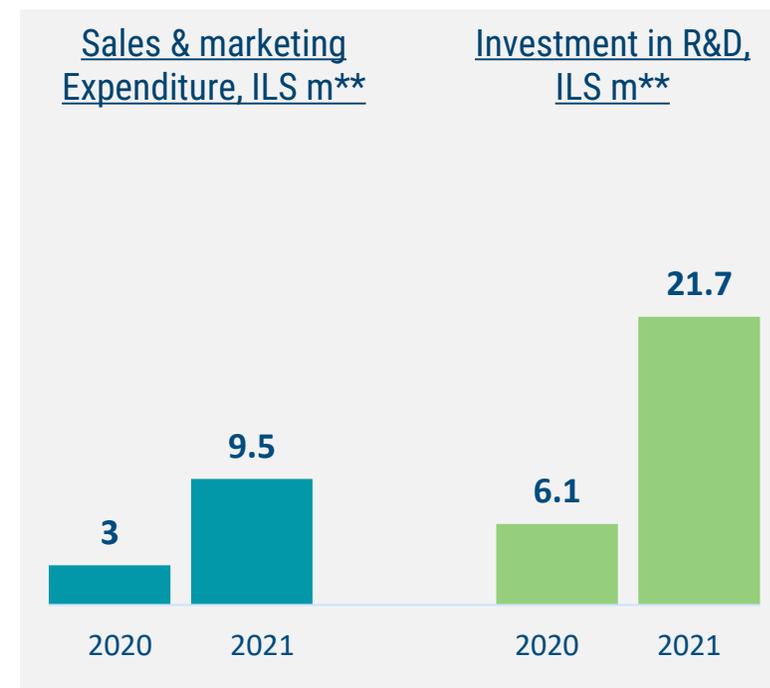
## 2021 FINANCIAL RESULTS

### Non-GAAP P&L\*

	2021 Reported	Adjustments	Share based compensation	2021 Non-GAAP
Revenues	1,763	3,433	-	5,196
Cost of sales and services	7,344	1,761	802	4,781
<b>Gross profit</b>	<b>(5,581)</b>	-	-	<b>415</b>
Research and development expenses	14,013	-	6,123	7,890
Selling and marketing expenses	15,662	-	6,195	9,467
General and administrative expenses	32,881	-	16,497	16,384
Other expenses	71	-	-	-
<b>Operating Profit (Loss)</b>	<b>(68,208)</b>	<b>5,194</b>	<b>29,616</b>	<b>(33,327)</b>
Finance income	609	-	-	609
Finance expenses	1,043	(900)	-	143
<b>Net Loss</b>	<b>(68,642)</b>	<b>6,094</b>	<b>29,616</b>	<b>(32,861)</b>

Annotations:

- Change of estimate of variable consideration (affects Adjustments)
- Impairment loss (affects Adjustments)
- Non-cash (affects Adjustments)
- Non-cash share based compensation (affects Share based compensation)



\*\* All Excl. SBC; R&D investment including Yahel development

\* Displayed in thousands NIS

# 137M NIS CASH\* AVAILABLE TO SUPPORT OUR BUSINESS PLAN

## Balance Sheet in thousands NIS

	2020	2021
Cash and cash equivalents	24,378	6,667
Short-term deposits	–	130,618
Trade receivables	2,848	3,479
Other accounts receivable	2,419	3,013
Inventory of contracts in progress	609	1,849
<b>Current Assets</b>	<b>30,254</b>	<b>145,626</b>
–	–	–
Long-term deposits	150,140	–
Other Non-Current Assets	10,001	41,438
<b>Non-Current Assets</b>	<b>160,141</b>	<b>41,438</b>
<b>Total Assets</b>	<b>190,395</b>	<b>187,064</b>
–	–	–
Current Liabilities	7,676	14,530
Current Liabilities	3,429	15,261
Equity	276,105	322,730
Accumulated Deficit	(96,815)	(165,457)
<b>Total Liabilities</b>	<b>190,395</b>	<b>187,064</b>

\* As of December 31<sup>st</sup>. 2021

# Energy Storage

# 1



# Industrial Compressed Air

# 2



# Energy Storage

# 1



# Industrial Compressed Air

# 2



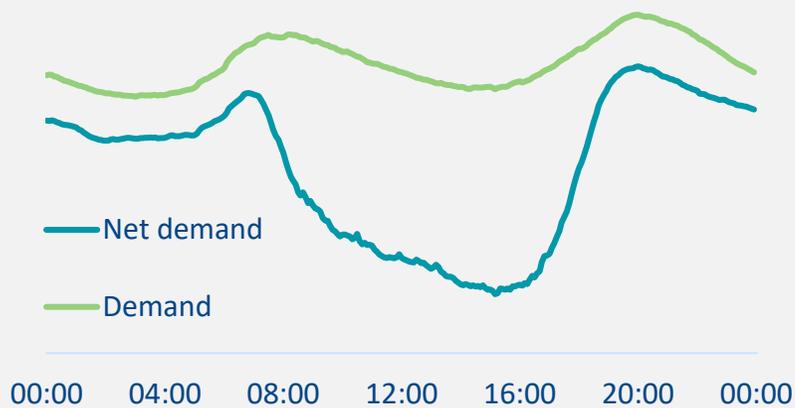
AIR | WATER | EARTH

harnessing the elements  
for a **CLEAN FUTURE.**

# ENERGY STORAGE IS AN ENABLER IN THE TRANSITION TO RENEWABLE ENERGY SOURCES

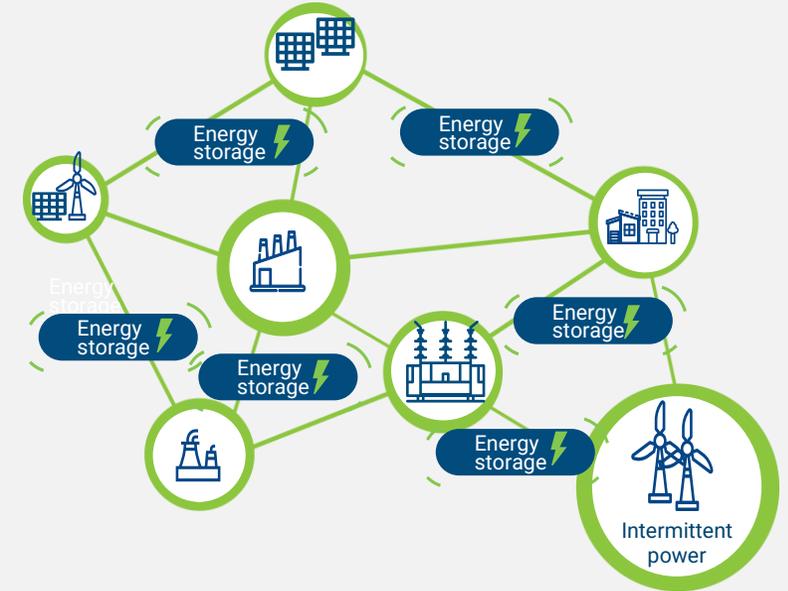
## Supporting the integration of Renewable Sources

California net-load curve sample (GW)<sup>1</sup>



## Energy Storage

Energy storage is becoming distributed



Supporting resiliency

ENVIRONMENT AMERICA

ABOUT ▾ OUR WORK ▾ NEWS BLOG JOBS SHOP

### Learning from the Texas freeze: How clean, local energy can build resiliency



2/1/2022 |

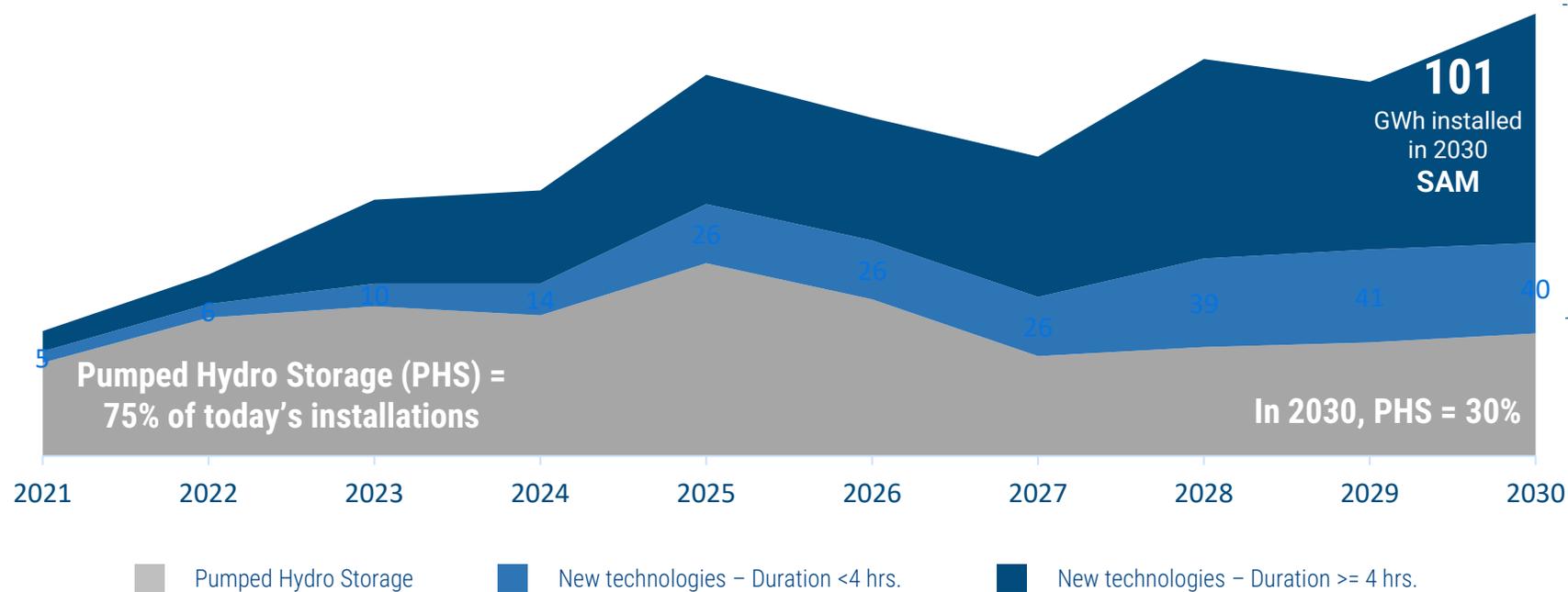
(1) California System Operator, March 31<sup>st</sup> 2022; Net Demand = Demand less wind & solar production

# LDES IS BECOMING KEY TO THE GLOBAL ENERGY TRANSITION

NEW TECHNOLOGIES ARE NEEDED TO ADDRESS THE DEMAND

Annual energy storage deployments, globally (GWh)<sup>(1)</sup>

Total 195 GWh deployed in 2030



Augwind's servable market expected to reach 101 GWh by 2030

New technologies are emerging to fill the gap

- AirBattery 
- Mechanical solutions
- Electrochemical solutions
- Thermal solutions
- Others

(1) Company's Analysis based on several market forecasts: [Bloomberg](#); [Wood Makenzie](#); [IHS Markit](#)

# AIRBATTERY UNBUNDLES PUMPED-HYDRO CONSTRAINTS

PHS IS THE MOST COST-EFFICIENT ENERGY STORAGE SOLUTION  
BUT IT REQUIRES MASSIVE LAND AND UNIQUE TOPOGRAPHY



# AIRBATTERY IS AT THE SWEET-SPOT OF LONG DURATION ENERGY STORAGE



## Electrochemical

Lithium-Ion and other chemistries:  
Lead-acid, Zinc, Sulphur, flow, metal-air...



Ambri



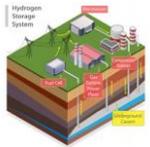
ZincFive

NGK



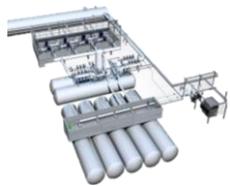
## Mechanical

Pumped Hydro; CAES, Gravity



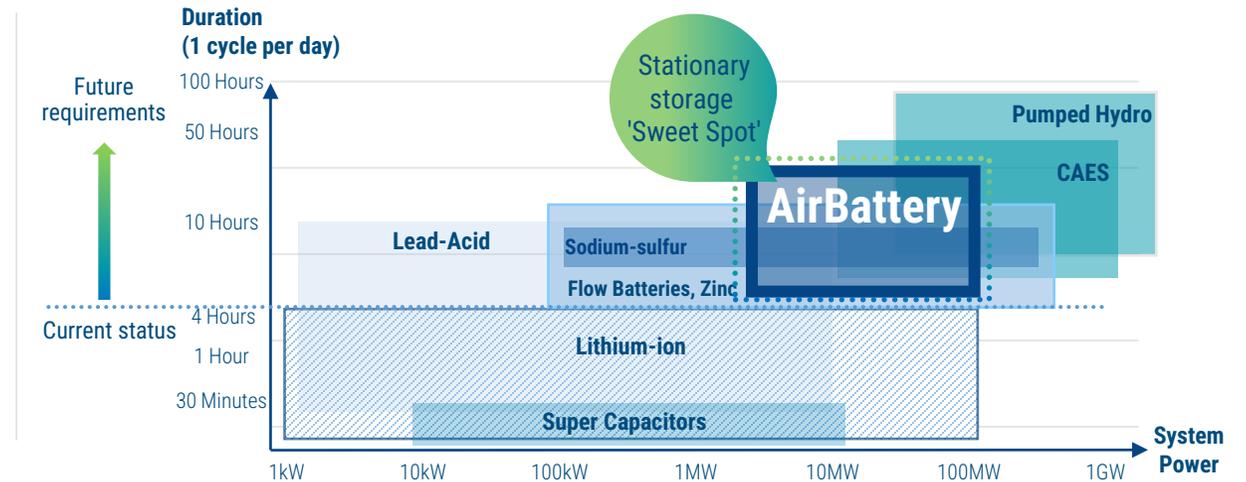
## Future / early stage

Thermal; liquid-Air; Hydrogen; Magnetic, massless...



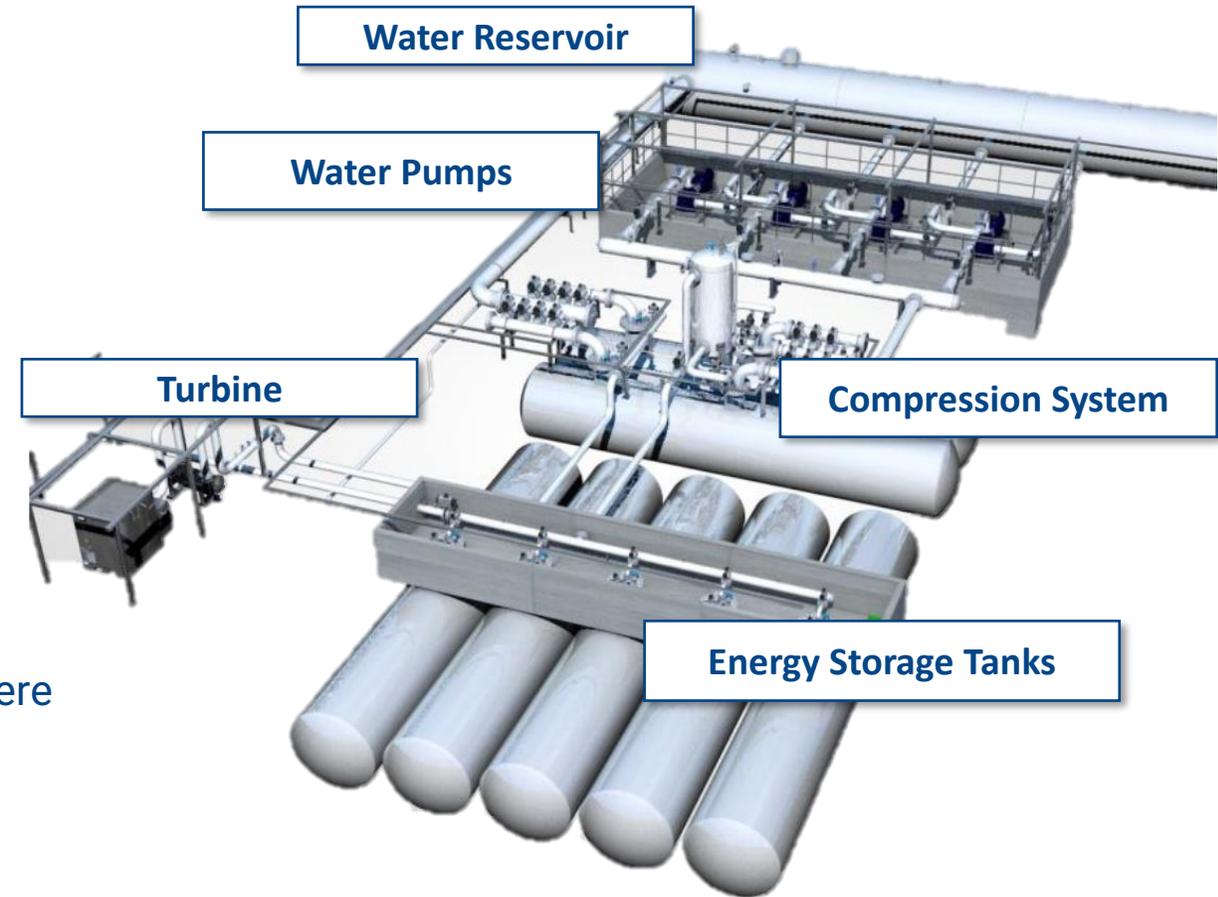
## AirBattery

A novel combination of pumped-hydro and compressed air energy storage in a modular, scalable system architecture.



# AIRBATTERY PROVIDES THE ADVANTAGES OF PUMPED-HYDRO WITHOUT ITS DRAWBACKS...

- ✓ Suitable for Long duration 4-12 hrs. & Multiple daily cycles
- ✓ Minimal degradation
- ✓ Over 70% Round-Trip Efficiency (RTE target)
- ✓ Competitive total cost of ownership (TCO) vs. existing alternatives
- ✓ Strong ESG: Not dependant on rare chemicals or metals, uses recycled materials, no major recycling challenges, relies strongly on local sourcing and manpower
- ✓ Minimal footprint and can be implemented almost anywhere
- ✓ Scalable & modular – 10-1,000 MWh



Energy Storage

1

# Industrial Compressed Air

2

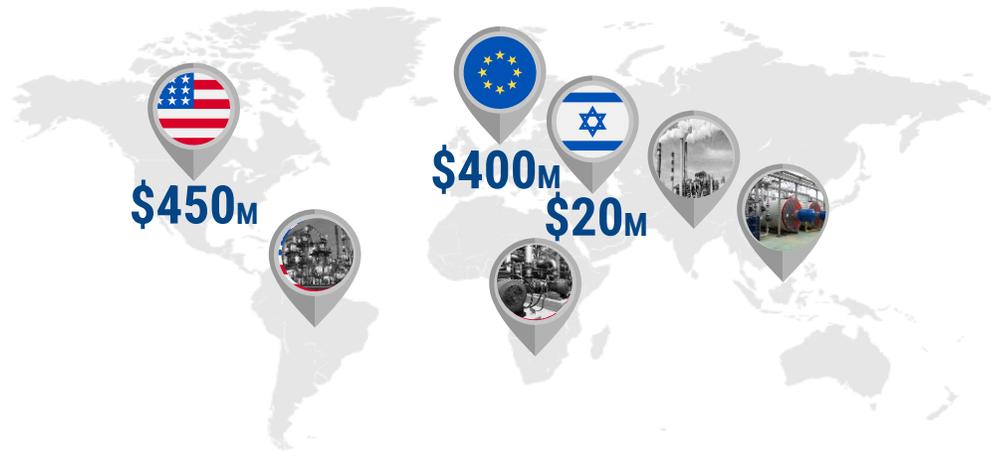


ENERGY  
EFFICIENCY

# IMPROVING INDUSTRIAL ENERGY CONSUMPTION

CREATES HUGE OPPORTUNITIES FOR AUGWIND ACROSS INDUSTRIES AND GEOGRAPHIES

## AirSmart potential market size in focus regions<sup>(1)</sup>



Industrial players are eager to implement energy efficiency solutions to increase manufacturing resiliency, meet decarbonization goals and improve overall profitability

**AirSmart offers a huge saving potential** for Industrial compressed air consumers **across developed and emerging markets**

(1) Augwind's analysis as elaborated in the financial reports

## Key Target Industries



Steel



Chemical & Petroleum



Cement



Glass



Paper & Pulp



Automotive



Food & Beverages



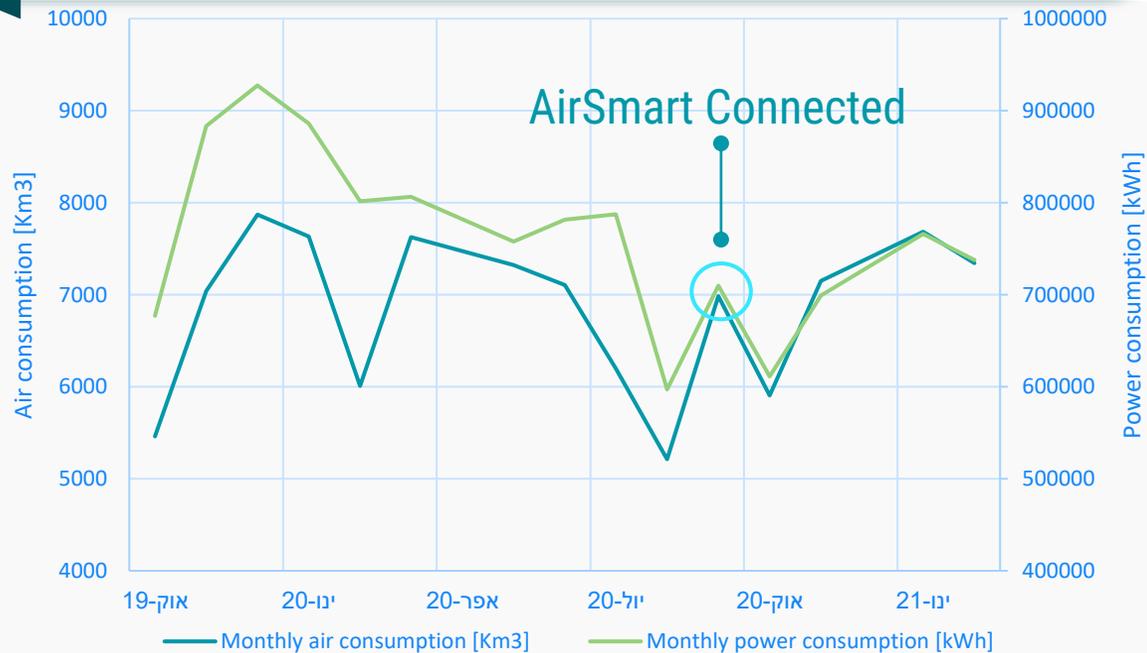
Plastic



Textile

# PROVEN ENERGY SAVINGS (EXAMPLES)

## Metalworks customer : ~17% savings

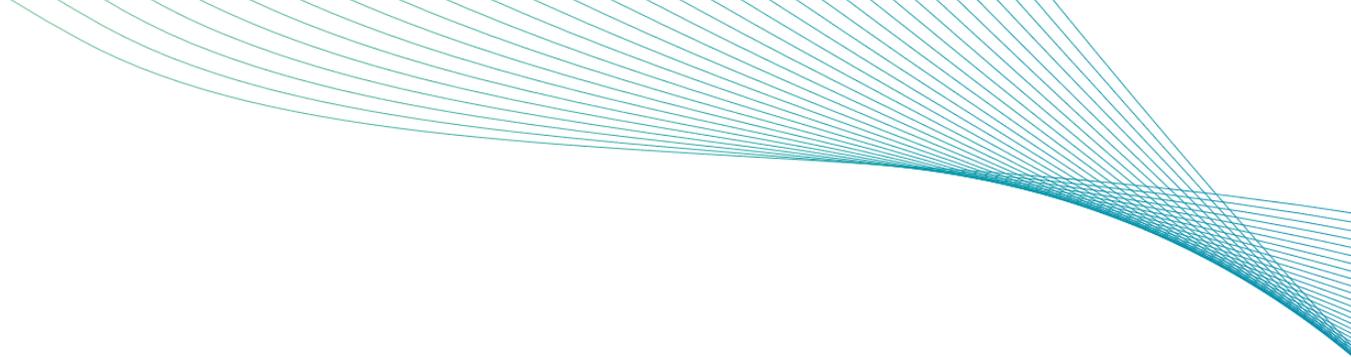


Optimizing power consumption with compressed-air generation

## Plastic customer: ~15% savings



Optimizing pressure & flow



# STRATEGY GOING FORWARD

INITIAL INSIGHTS 3 MONTHS INTO THE JOB

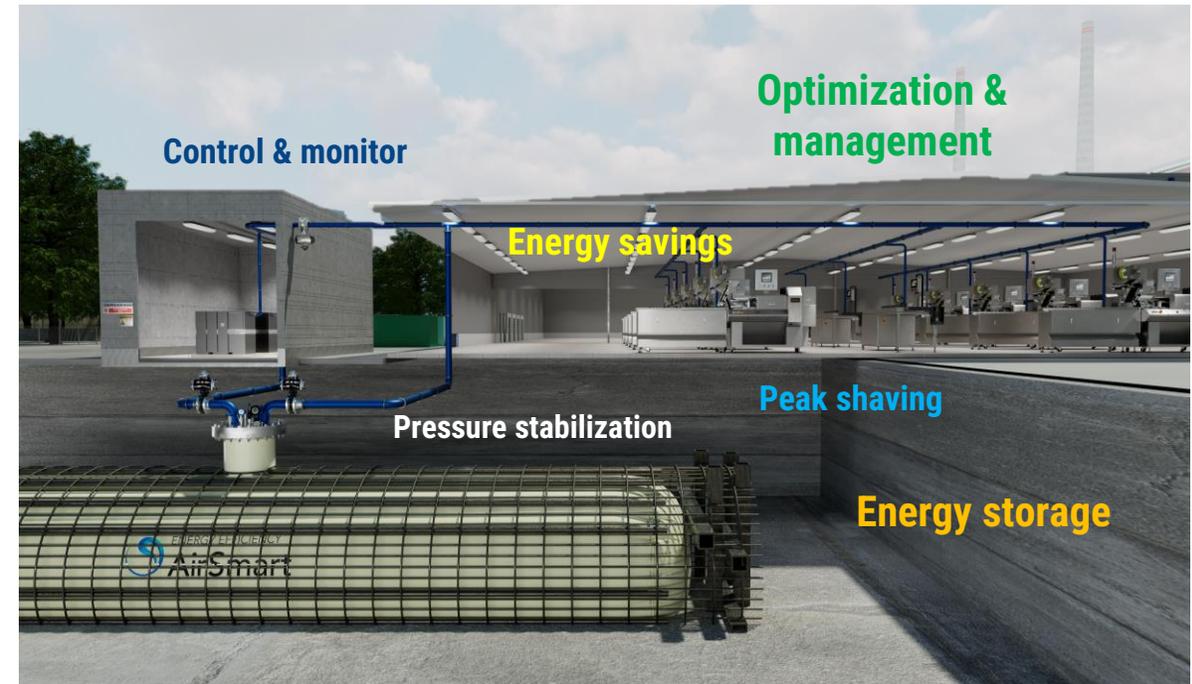


# AIRSMART: BECOMING A HOLISTIC INDUSTRIAL EFFICIENCY SOLUTION

**AirSmart projects are currently focused only on compressed-air energy savings**

Track-record of over 30 AirSmart projects\* has shown significant additional industrial benefits, such as:

- ✓ Process stabilization
- ✓ Reduction in reject-rates
- ✓ Improved productivity and yield
- ✓ Reduced down-time/Back up
- ✓ Machinery longevity



**In 2022 Augwind plans to expand its UVP and significantly increase sales and profitability of AirSmart product line**

\* Over 60 AirXs installations

# AIRSMART PROVIDES A UNIQUE OPPORTUNITY FOR AUGWIND TO BECOME **THE PREFERRED INDUSTRIAL ENERGY EFFICIENCY PARTNER**

## A new growth path for growing Augwind's AirSmart line of business:

- **Develop an extended industrial energy management system** combining hardware and software
- **Increased deal size/ value** by expanding the product offering for industrial clients
- Leverage relationships with industrial players to **create additional growth opportunities**
- **Increase Augwind's UVP (unique value proposition)** by developing exclusive solutions and system configurations
- **Enhance Augwind's energy efficiency capabilities** by expanding its management team, OEMs, collaborations and potential acquisitions

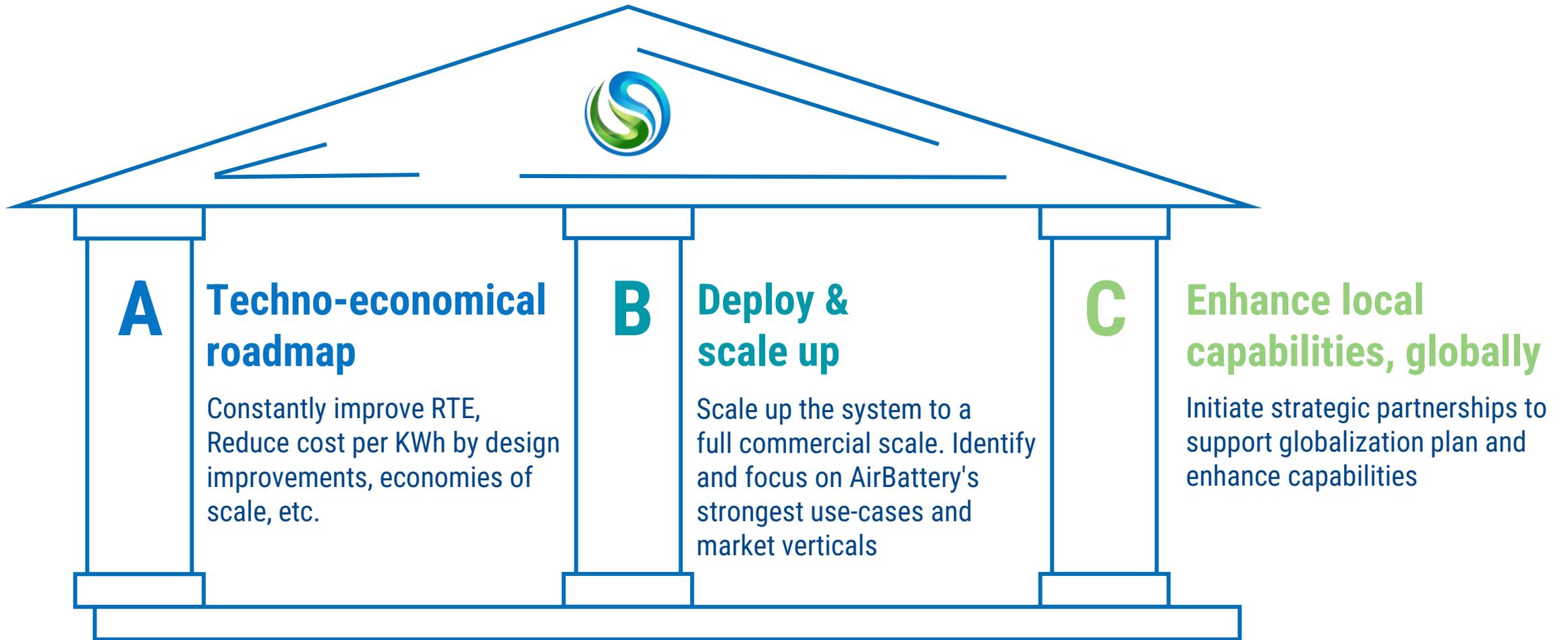


# AIRBATTERY: FROM YAHEL TO GLOBAL DEPLOYMENT



**1MWh Project in the southern part of Israel, a (small) commercial-scale pilot**

# AIRBATTERY'S ROADMAP TO GLOBAL COMMERCIAL SUCCESS RELIES ON 3 PILLARS



# AIRBATTERY AS A COMPETITIVE LONG DURATION SOLUTION

## COMPARATIVE ANALYSIS

8 hrs. AirBattery Total Cost of Ownership (TCO) difference vs. Li-Ion (%), NPV<sup>(1)</sup>

75%	-9%	-14%	-20%	-25%	-31%
70%	-5%	-11%	-16%	-22%	-28%
65%	-1%	-7%	-12%	-18%	-24%
RTE <sup>(1)</sup> / Price (\$/KWh)	300	275	250	225	200

### Li-Ion base case assumptions:

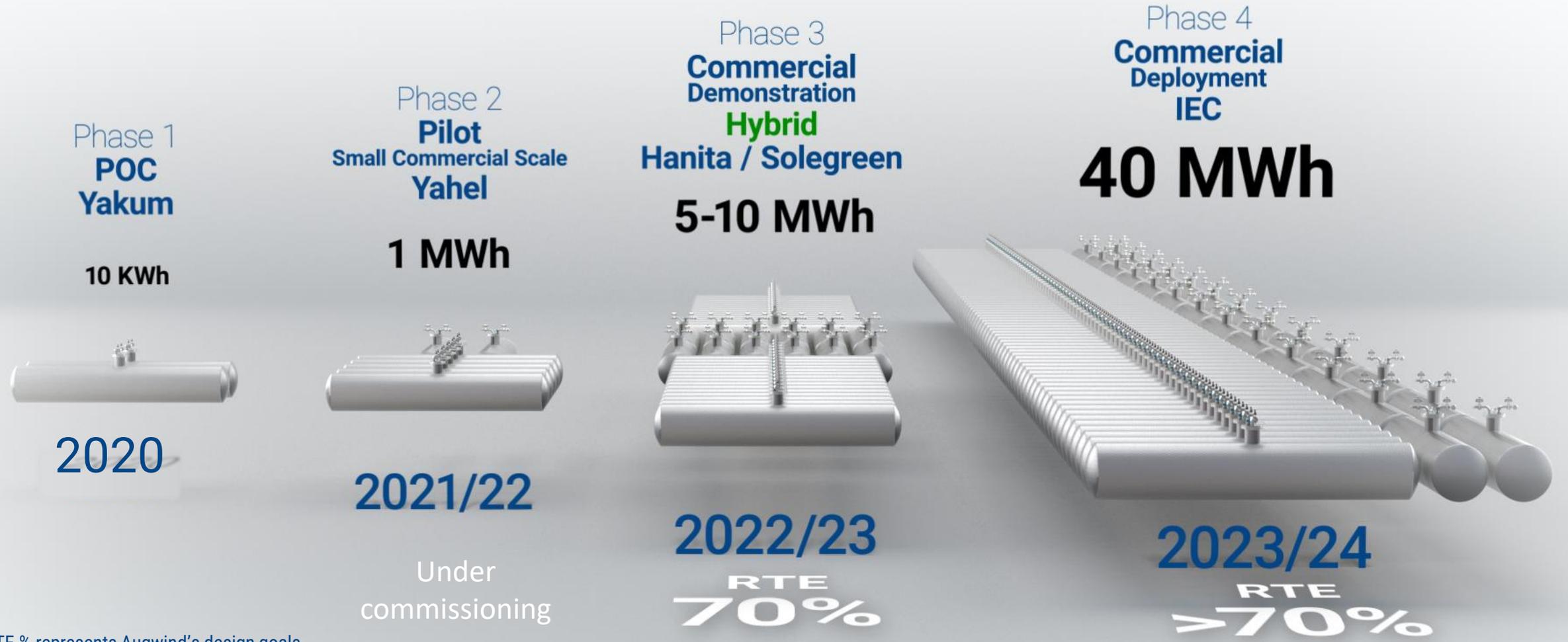
- CAPEX: \$250/kWh\*
- RTE<sup>(1)</sup>: 86%

(1) Illustrative analysis, based on the following additional assumptions: Project Duration: 30 Years; Charge costs: \$20/MWh; Li-Ion degradation: 2% p.a.; Li-Ion O&M: 1%-2%; WACC: 4%; Li-Ion full replacement after 15 years at 50% of initial CAPEX; RTE – Round Trip Efficiency

\* Including full installation, civil, and logistic costs (ready on-site)

# B SCALING-UP IS ALREADY UNDERWAY

FOCUS ON LONG DURATION, UTILITY SCALE & COMPRESSED AIR INTEGRATION

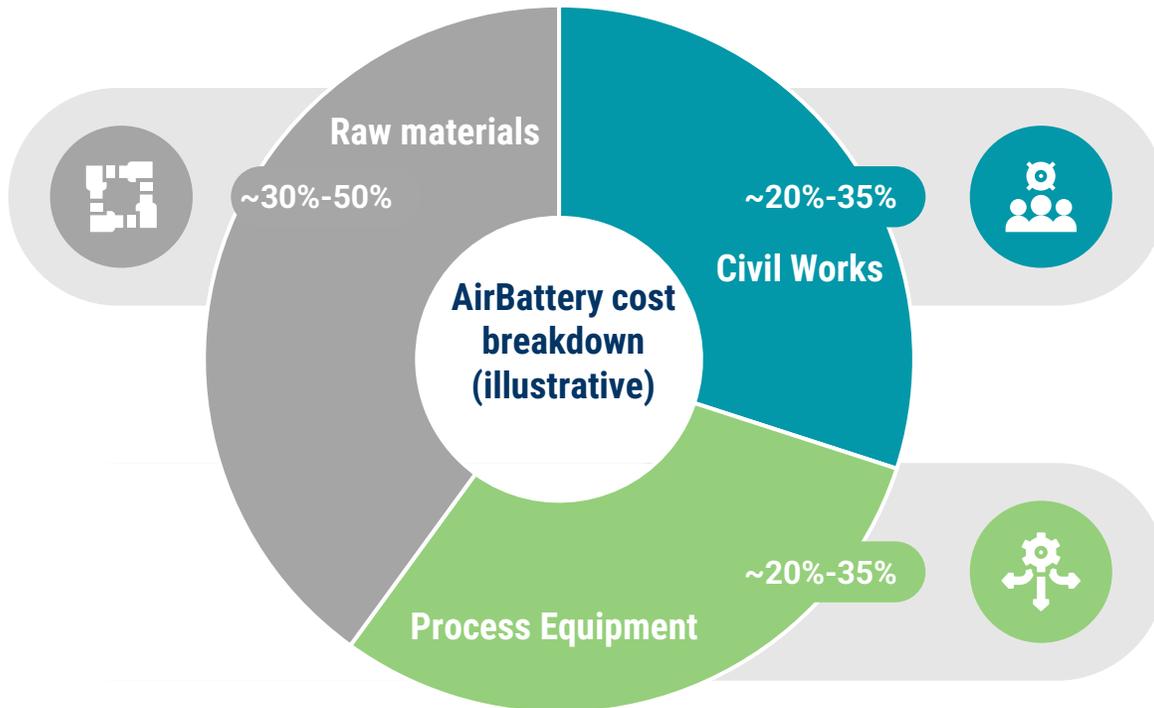


RTE % represents Augwind's design goals

# C LOCAL CAPABILITIES & SOURCING ARE KEY TO SUCCESS

## AIRBATTERY INCLUDES SIGNIFICANT LOCAL CONTENT

AirBattery is a combination of a novel energy technology and a local infrastructure project

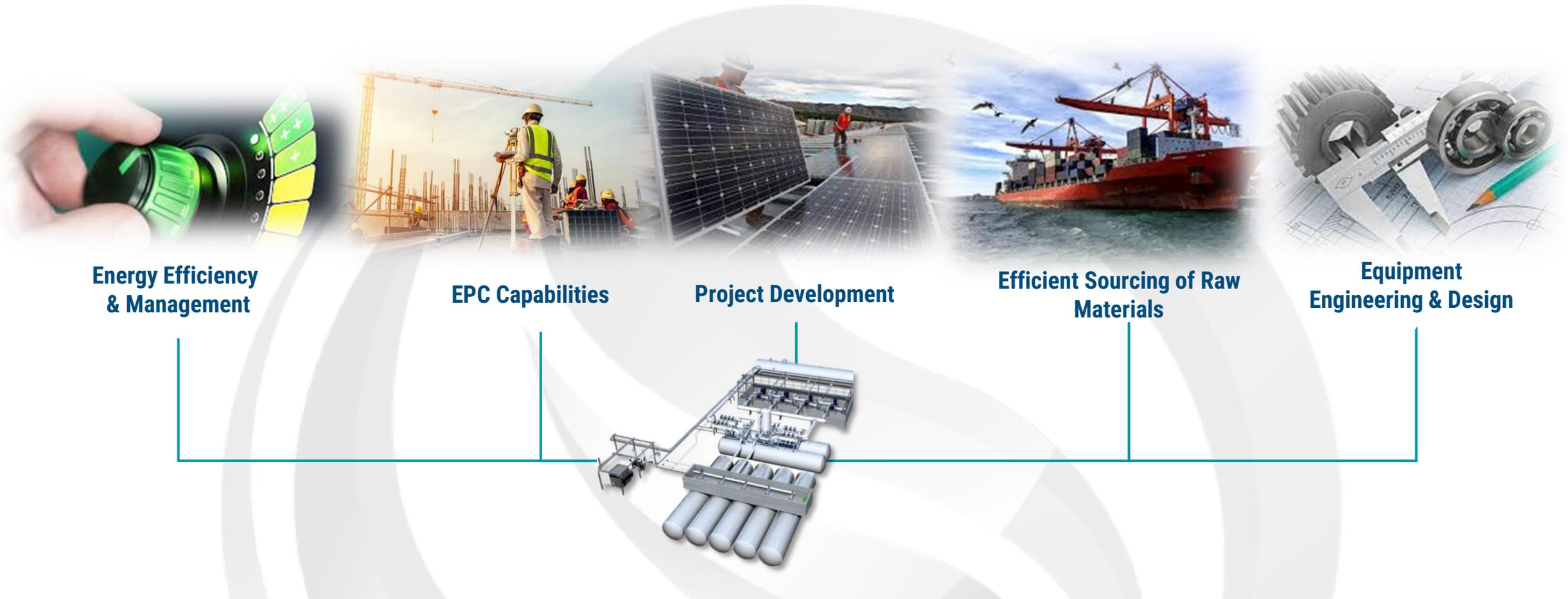


Costs & use-cases are influenced by geography



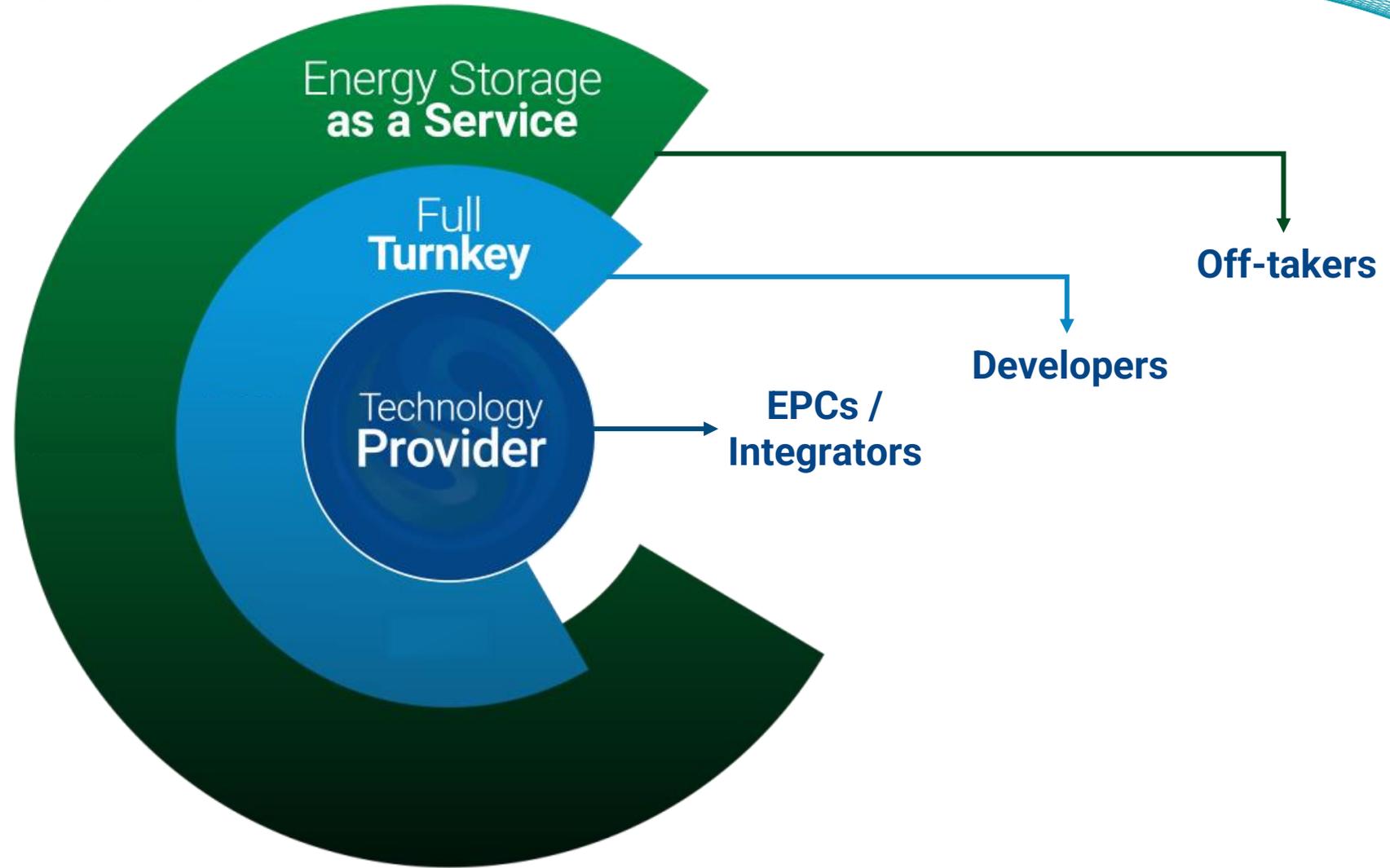
# C STRATEGIC PARTNERSHIPS AND COLLABORATIONS TO ENHANCE AUGWIND'S CAPABILITIES

Focus on strategic partners with significant value-added capabilities, either locally or globally, such as:



# MAXIMIZE AIR BATTERY'S VALUE

UNDER VARIOUS BUSINESS MODELS



# AUGWIND'S NEW LEADERSHIP TEAM

## SET TO LEAD THE ROAD TO GLOBAL IMPLEMENTATION



**Gabi Seligsohn**  
Executive Chairman



New Executive

**Allon Raveh**  
CEO



New Executive

**Kobi Vinokur**  
CFO



**Or Yogev, PhD**  
Founder & CTO



New Executive

**Oded Lilian**  
COO



New Executive

**Ronit Haver-Gold**  
VP Human Resources



**Eshhar Chetsrony**  
VP Business Development



**Avi Geller**  
VP Engineering & Product Dev.



**Gil Frechtman**  
VP Projects



**Avner Stern**  
General Counsel



# 2022 WILL BE A PIVOTAL YEAR FOR AUGWIND

## KEY TARGETS FOR 2022

- Identify & focus on AirBattery's strongest use-cases & market verticals
- Continue technological roadmap to improve RTE & reduce costs
- Create strategic partnerships to enhance Augwind's capabilities and support geographic expansion plans
- Construct first commercial demonstration project of 5-10MWh and develop additional demo projects in various geographies
- Expand value proposition for industrial energy efficiency, increase sales & profitability, grow in new geographies
- Further solidify organizational scale up



**JOIN US ON THE ROAD  
TO A CLEANER FUTURE.**

**Thank you!**

For more information:  
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[Kobi.vinokur@aug-wind.com](mailto:Kobi.vinokur@aug-wind.com)

# ADDITIONAL SLIDES

# AMBITIOUS CLIMATE TARGETS DRIVE THE HIGH DEMAND FOR **RENEWABLE ENERGY AND ENERGY EFFICIENCY**



— ” —  
This is the decisive decade...we must make decisions that will avoid the worst consequences of a climate crisis

PRESIDENT BIDEN, APRIL 22, 2021



**Targets:** cut carbon emissions by 50-52% below 2005 levels by 2030



Target **32% renewable energy** and **32.5% improvement in energy efficiency** by 2030



Govt' publish energy storage guidelines to achieve the need for **27GW/108GWh of storage**



25 States have mandatory **Energy Efficiency Resource Standards or Goals**



Today, wind and solar are the cheapest ways to generate electricity in many countries



Energy efficiency increases industries' competitiveness and reduces energy bills

Source: [President Biden at the Virtual Leaders Summit on Climate Opening Session, Reuters, dsireusa.org](#)

# AUGWIND'S CORE TECHNOLOGY

## IN THE HEART OF TWO INNOVATIVE LINES OF PRODUCTS

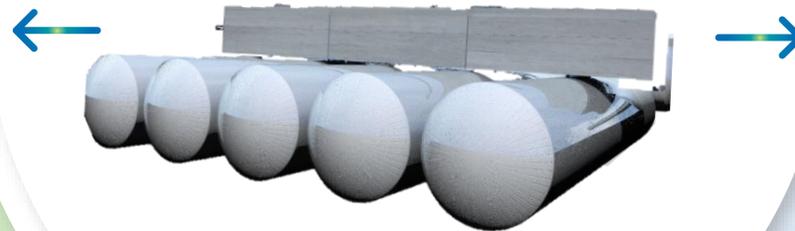
### AirBattery

#### Energy Storage System

- Secure energy resilience
- Save energy costs
- Integrate renewables
- Site-able with minimal footprint

### AirX

Patented technology for safe, reliable and cost-effective underground storage of compressed air & gas



**18 patents granted**  
13 pending

### AirSmart

#### Industrial Energy Efficiency

- Slash energy costs
- Secure production continuity
- Enable peak shaving
- Maintain machinery longevity

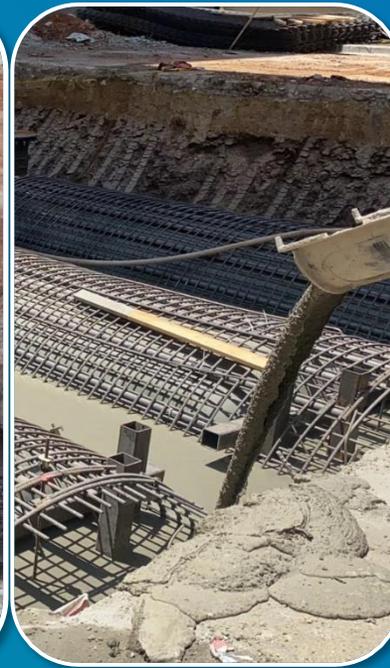
# AIRBATTERY IS BASED ON A PROVEN TECHNOLOGY

AIRX IS USED FOR UNDERGROUND STORAGE OF COMPRESSED AIR



AUGWIND

Providing safe, cost-effective storage with minimal footprint



1. Polymer liner

2. Steel frame

3. Placing

4. Casting

5. Completion

6. Maintenance

# AIRBATTERY: A SCALABLE AND DURABLE ENERGY STORAGE SOLUTION WITH MINIMAL FOOTPRINT



Separate charge, discharge and storage components enable multiple energy storage services

Play movie 

Multiple daily cycles  
with no degradation



Commercial  
& Industrial



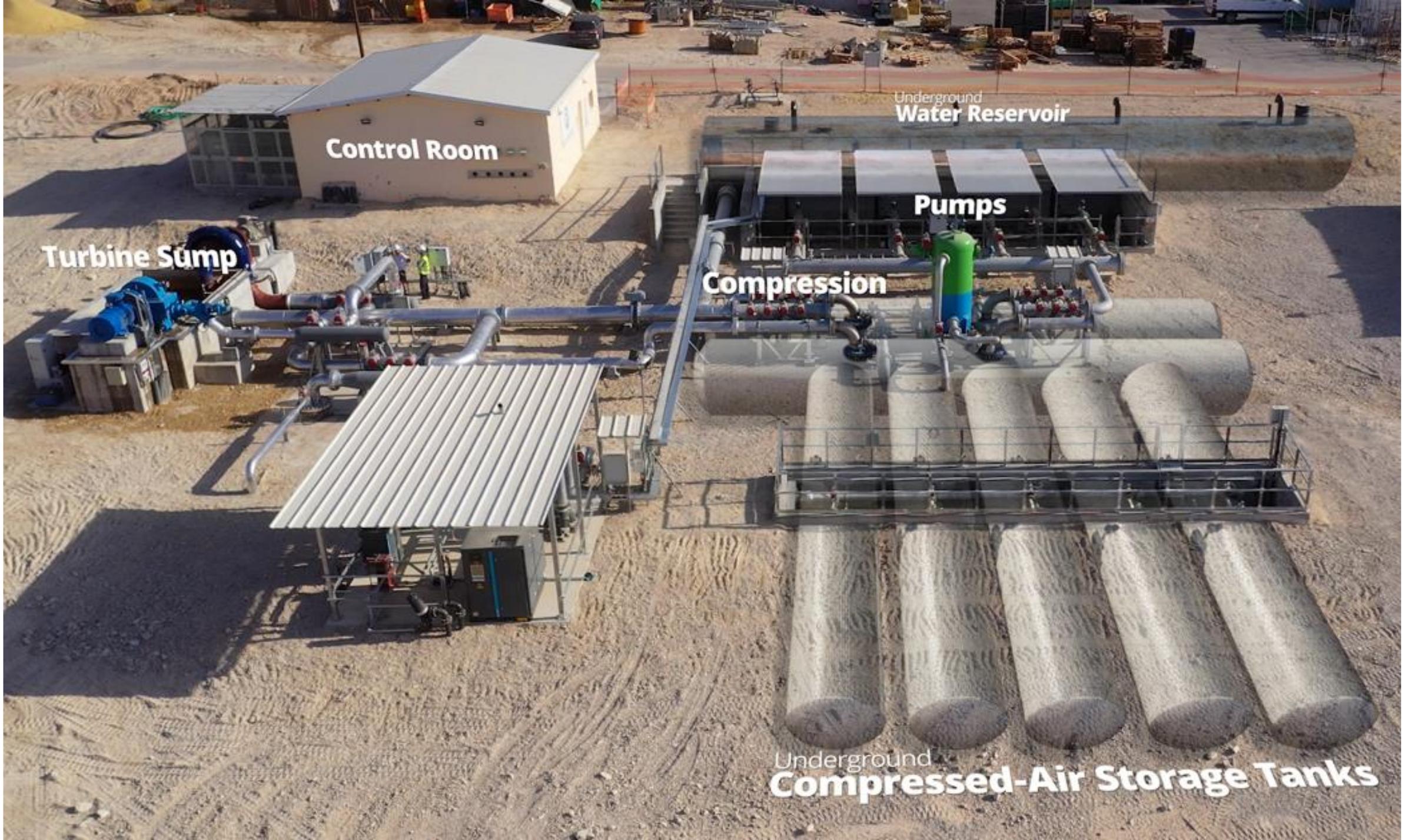
Transmission  
& Distribution



Peaking capacity  
& Energy shifting



Bulk energy  
& Longer duration



**Control Room**

**Underground  
Water Reservoir**

**Turbine Sump**

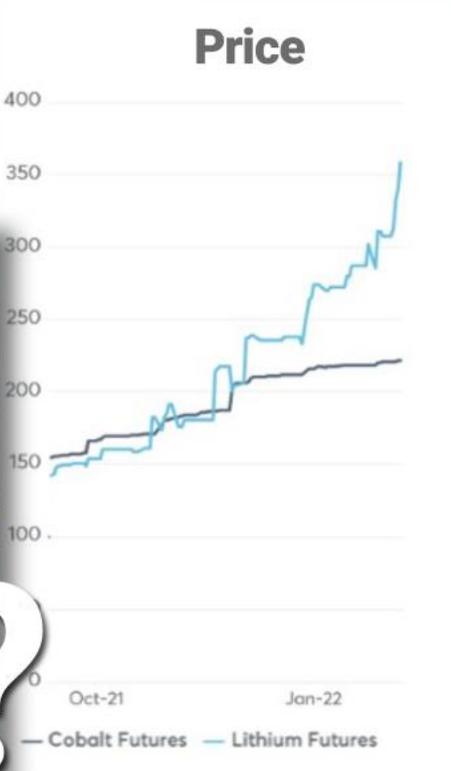
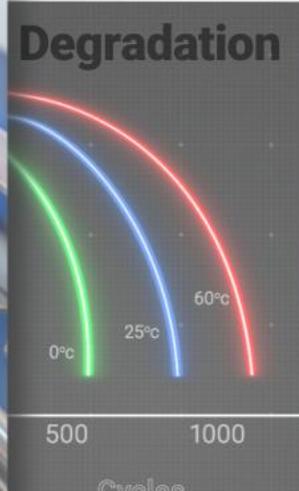
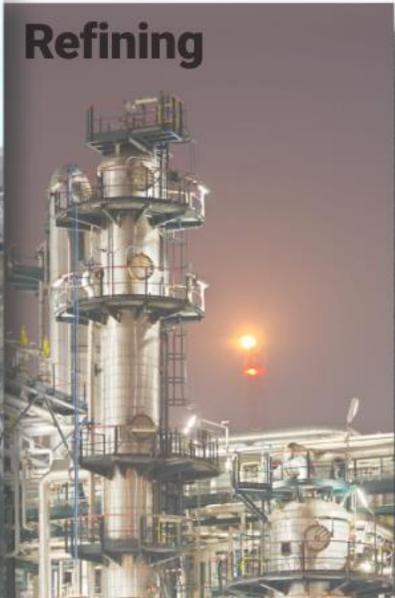
**Pumps**

**Compression**

**Underground  
Compressed-Air Storage Tanks**

# ELECTROCHEMICAL SOLUTIONS POSE RISKS AND COMPLEXITIES

SUPPLY CHAIN STABILITY?



# ENVIRONMENTALLY FRIENDLY?

# THE NEED FOR COMPRESSED AIR ENERGY EFFICIENCY SOLUTIONS

- Compressed air is an integral part of most manufacturing processes
- However, it is one of the most inefficient, expensive and misused utilities in manufacturing plants
- Energy used for air compression may account for **10%-30% of the overall electricity bill of a typical plant**
- Industrial compressed-air, and the global ambition for carbon emissions reduction create a **huge opportunity for Augwind**

Source: M.L. Stowe "Compressed Air Basics", American Institute of Chemical Engineers.

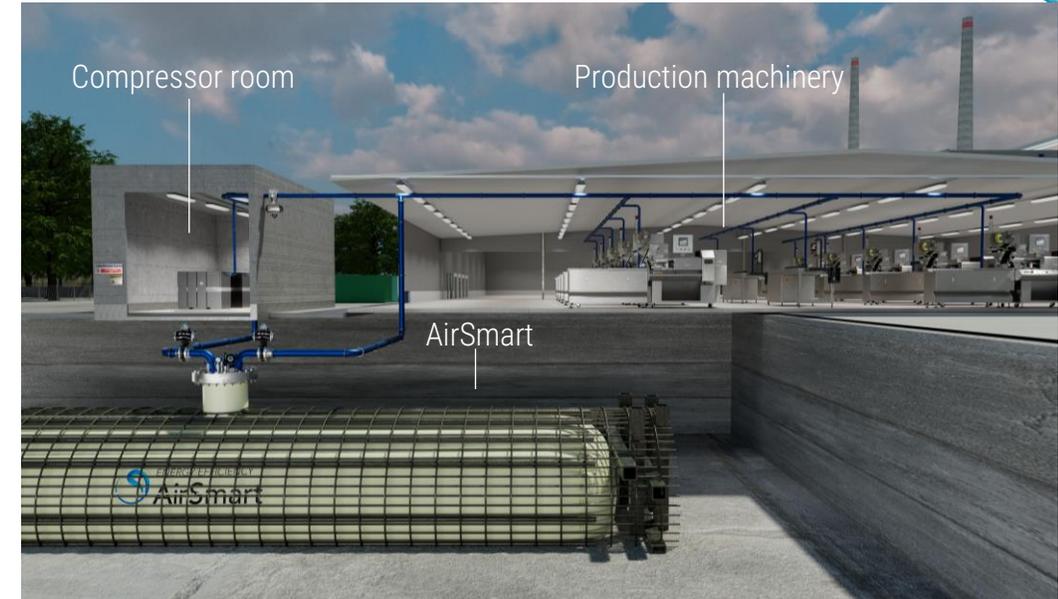
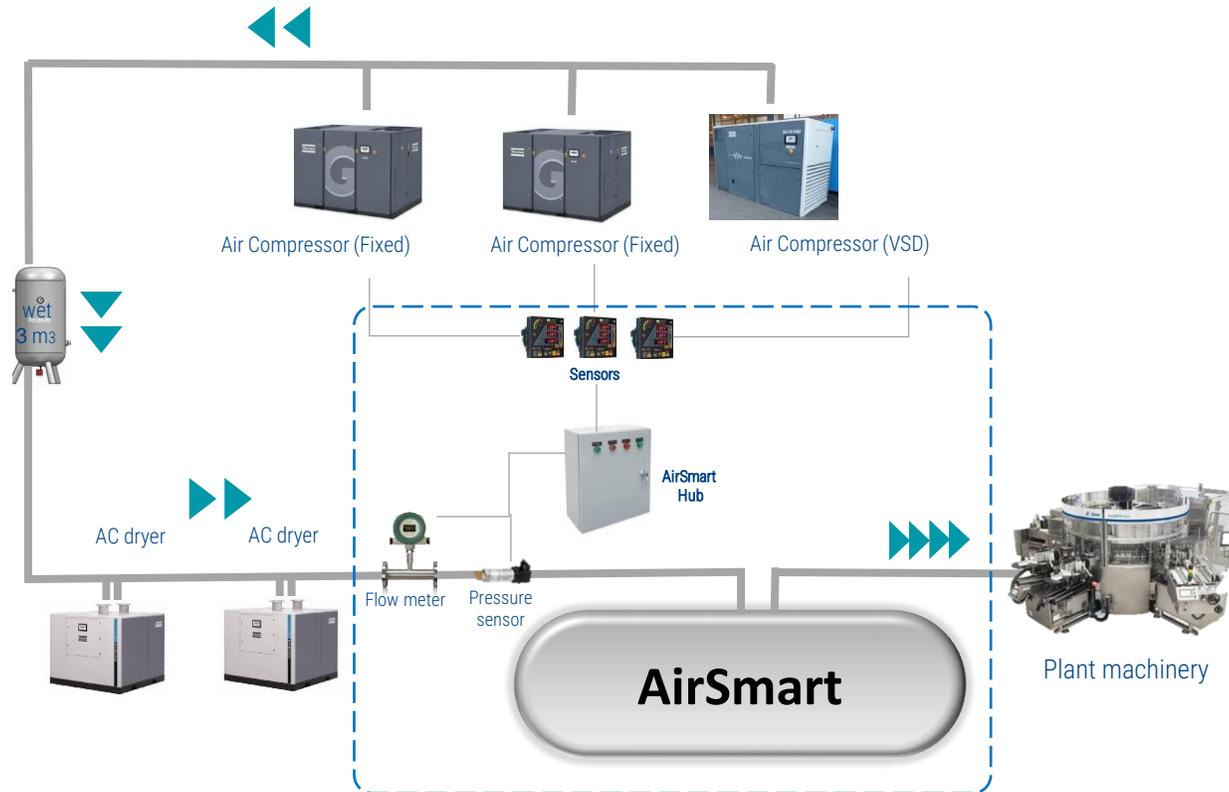


Over 60 successful installations at large industrial players:



# AIRSMART SYSTEM ARCHITECTURE

ALLOWS A SAFE AND EFFICIENT INSTALLATION FOR INDUSTRIAL PLANTS



Installed underneath operational/ functional areas of the plant  
With no footprint and minimal maintenance