

# Lithium-Ion Battery Grade Aluminum Foils

## INVESTMENT OPPORTUNITY SCORECARD

May 2022

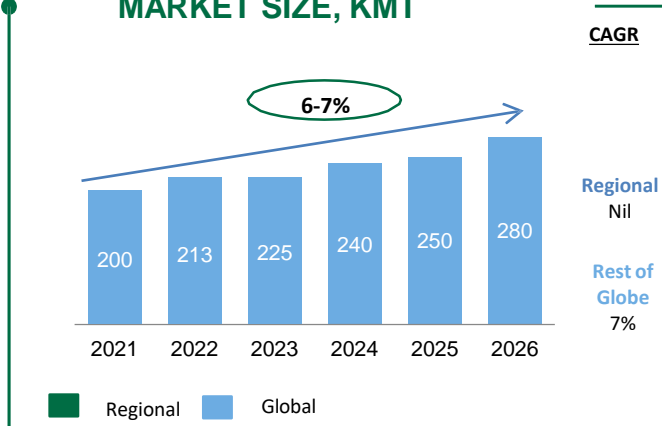


## Lithium-Ion Battery Grade Aluminum Foils

**OPPORTUNITY DESCRIPTION:** Opportunity to develop an exclusive Aluminum LiB foils production facility of 10,000 MT to cater regional and global demand. The product is critical to battery cell manufacturing as cathode current collector

### DEMAND

#### MARKET SIZE, KMT



### INVESTMENT OVERVIEW

#### INVESTMENT HIGHLIGHTS

- Expected investment size of USD 30-40 Mn
- Plant capacity: 10 KMT
- Investment model options: The investment model can be through a pure private sector model, banks and institutional investors can provide the upfront capital investment, or through a JV with an aluminum foil producer
- Aluminum foil is a critical material and only material suited for lithium-ion battery cathode current collectors

#### VALUE PROPOSITION

- Increasing energy demand from various industrial, residential, and commercial sectors within the Kingdom is boosting the growth of Li-ion battery aluminum foils, this project provides a first mover advantage in the region being a critical material in battery cell manufacturing.
- As per the Saudi Arabia Vision 2030, 58.7GW of energy from renewable sources is expected by 2030, around 50% of the national energy consumption.
- Furthermore, other governmental projects such as Neom and Qiddiya shall accelerate the demand for gaming, surveillance, construction, and other smart electronics. This will in turn boost the battery materials market.
- Increasing adoption of electric vehicles, along with a boom in data centers can lead to a surge in Li-ion battery demand.

#### KEY DEMAND DRIVERS

- Aluminum is set to benefit from rising Electric Vehicle production. Battery foils will surge with increased usage of higher-grade \*NCA & NMC
- Aluminum foils in LiB are a primary material for cathode usage in battery cell manufacturing and do not have any potential threat of substitution
- Energy storage systems are a growing end user segment which is enabling grid operators to save surplus electricity. The KSA has developed plans that utilize Li-ion in energy storage systems in its mega project 'NEOM'

### MARKET OVERVIEW

#### GLOBAL TRENDS

- The Lithium-ion battery grade aluminum foils demand was around 200 Ktpa in 2021 and is expected to reach ~280 Ktpa by 2026, growing at a CAGR of 7% from 2021 to 2026.
- Europe, North America and Asia Pacific regions account for the vast majority of the market (more than 90%), with the US and China being key demand drivers. Companies in the US are making significant advancements in R&D in this space.
- The increasing demand for highly efficient density batteries and consumer products has boosted demand. Consumer electronics such as smart phones, drones, wearable smart watches, cameras along with the automotive industry where electrical vehicles penetration is rapidly replacing traditional \*ICE engines has fueled the increase in the usage of \*LiB foils.
- Latin America, Middle East and African markets are relatively nascent, representing less than 10% of the global demand, which could increase with new investments over the next 10 years.

# Metals

## Lithium-Ion Battery Grade Aluminum Foils

Public / متاح

High Potential

Moderate Potential

Low Potential

### SUPPLY

#### SCALABILITY AND LOCALIZATION

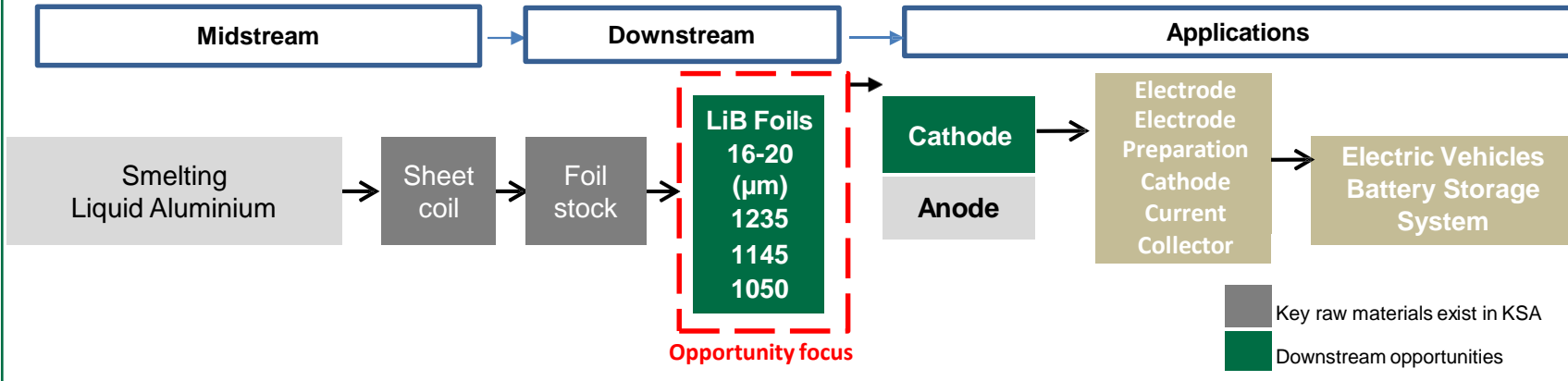
Grade: Low Medium High

- The KSA Automotive sector is a key pillar in the Vision 2030 program. There is a global shift towards EVs, representing an estimated 30% of vehicle sales in 2030
- Access to feedstock is a key advantage of establishing this project in the KSA
- A state-of-the-art lithium-ion (Li-ion) battery foils unit will cater to growing Electric vehicles & battery cell manufacturing activity in the region and globally
- Battery materials will play a key role in renewable energy, automotive and electronic sector developments over the next decade. Li-ion batteries has proved to be a viable option providing improved charge rates, energy density, and lighter designs.

#### IMPORT DEPENDENCY

- The product is in nascent stage, but global surge in EVs and other key end sectors will result in an anticipated shortage of supply of Aluminum foils
- Aluminum foilstock is the primary raw material available in GCC

#### VALUE CHAIN ANALYSIS



#### KEY STAKEHOLDERS



### ENABLING FACTORS

#### ENABLERS

- Jubail Industrial City and Ras Al-Khair Industrial City provide easy access to utilities and a world class infrastructure
- Increased focus on the development of lightweight vehicles and rising aluminum content in vehicles
- Up to 75% of project financing by Saudi Industrial Development Fund (SIDF).
- 2-year grace period for the repayment of loans.

#### COST OF DOING BUSINESS IN KSA

Factor	Ranking Amongst Regional Peers
Electricity tariffs for industrial players	\$48 /MWh
Productivity adjusted wages	\$3.3 /hour
Logistics Performance Index (1 – 5)	3.2
Customs Clearance Index (1 – 5)	2.7
Ease of getting credit (0 – 100)	50

Bottom 25% | Top 75% | Top 50% | Top 25%

# DEFINITIONS

#	SCORECARD SECTION	DEFINITIONS
1	Market size	Size of market in value/volume in KSA and/or Region (MENA/GCC) covering future projections based on available estimates from published /government sources
2	Demand drivers	A select number of factors that will influence future demand for the related product/service
3	Investment highlights	An overview of key financial metrics summarizing the investment opportunity along with the expected return based on the suggested investment size
4	Value proposition	Summary of key differentiators that position KSA as a strategic choice over other regional/global peers
5	Market readiness	An overview of KSA market structure, market maturity and level of participation by local and global players
6	Competitor analysis	List of the local & international players manufacturing the underlying product in Saudi Arabia and their market share
7	Global trends	Latest business developments within the sector/product category
8	Scalability and localization	Ease of scaling the business across the value chain or into new adjacent products or geographies that would maximize the opportunity's investment returns and the ability and potential to locally manufacture the product and its components
9	Import dependency	An overview of the countries from which Saudi Arabia is importing the product and their value/volume and share in total imports
10	Value chain analysis	The process or activities that would potentially need to be carried out to deliver the underlying product or service
11	Key stakeholders	Government institutions, organizations, and/or authorities that participate or influence the market for the underlying product/service
12	Enablers	Factors that enable investment in the underlying opportunity
13	Cost of doing business in KSA	Key factors that position KSA as a competitive destination for investment in the region. Productivity adjusted wages do not include cost of \$1.23/hour towards annual recurring charges including work permit, resident identity (iqama) and health insurance

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