

31/12/2019

# Pharus Electric Mobility

## Portfolio Update - December



Data di lancio: 10.06.2019  
Total Net Asset al 31.12.19: € 7,715,729.81  
Valuta: EUR

Net Asset Value per share	Classe B – Isin: LU1867072222	€ 106.46
As of 31.12.19:	Classe Q – Isin: LU1867072495	€ 106.44

### Net Asset Value per share

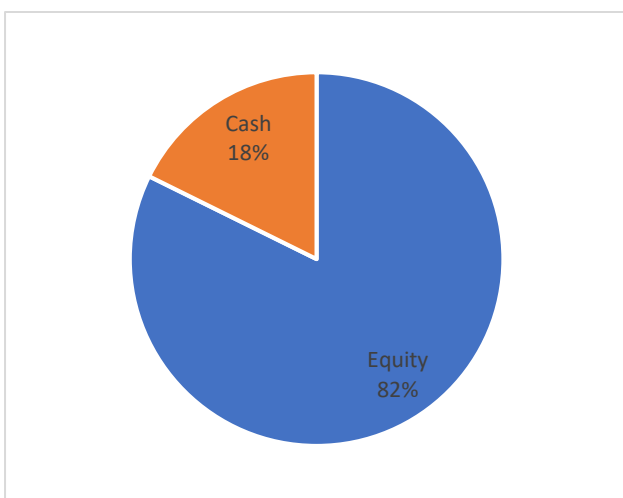
December Performance: +2.16%



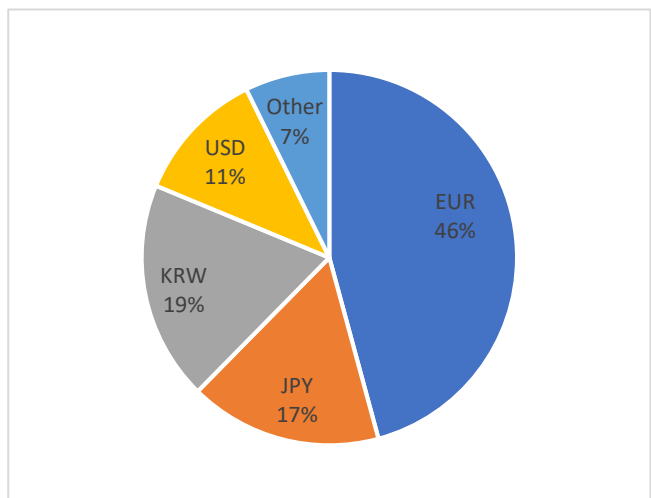
Performance since inception: +6.29%



### Portfolio breakdown by asset class



### Portfolio breakdown by currency \*



\* net of JPY hedging

## Monthly comment

The Fund Performance was positive in December (+2.2%). Commodities and Cathodes Producers rebounded this month. SQM was one of the main performers (+22%) due to the political stabilisation in Chile. Also, Syrah Resources (+22%) rebounded as the main shareholder, the biggest Australian fund, confirmed its support and the company announced completion of its graphite refining site in USA, able to make natural graphite usable for EV lithium batteries. Syrah Resources is the only significant producer of natural graphite outside China and graphite is a vital material to produce EV lithium cells. The month saw also the rebound of Korean cathodes makers after many months of decline despite attractive valuations and bright future.

Since the inception in June 2019 the fund recorded a performance of 6.29%. The outlook for EV batteries on which the fund focuses remains extremely positive despite the valuation of this area of the market has been depressed by multiple factors like elimination of China EV subsidies and the recession in the manufacturing cycle. As the shortage of lithium cells starts to emerge, we see significant room for a durable rerating of the battery related stocks.

During the month the Piaggio Group presented the new Ape E-City, the full-electric version of its iconic three-wheeler, which marks the Group's entry on to the Indian electric commercial vehicle market.

One of the enduring conundrums for prospective EV buyers who live in apartment or condominium complexes is how to charge their new EV once they buy it. Many apartment and condo parking areas simply do not have chargers available. In a press release dated December 26, Volkswagen says it has the answer — autonomous, robots that bring a battery to any car in a parking garage, plug it in, and recover it when charging is complete. Watch video

[https://www.youtube.com/watch?time\\_continue=3&v=yMC1H\\_xL3Y&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=3&v=yMC1H_xL3Y&feature=emb_logo)

On 28<sup>th</sup> December 2019, Volkswagen, the main global automaker, came out with a press release bringing forward by 2 years, to 2023, its target to produce and sell 1 mln full electric vehicles. Our educated guess is that this number will increase further.

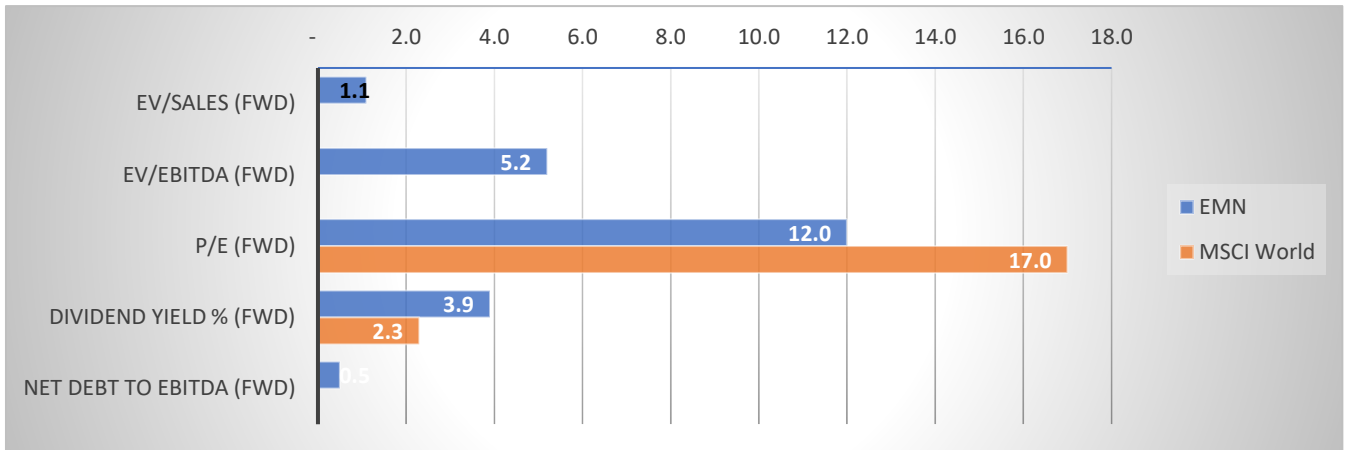
Turkey announced in December that it will jump into the EV market by unveiling its first domestically made electric vehicle, with goals of producing up to 175,000 EVs a year. The consortium, called Turkey's Automobile Initiative Group (TOGG), was established in mid-2018 by five industrial groups: Anadolu Group, BMC, Kok Group, mobile phone operator Turkcell and Zorlu Holding, the parent of TV maker Vestel. Watch video. <https://www.youtube.com/watch?v=r1wjlWzn1xQ>

The Washington State Ferries said in December that it will move to electrified ferries following the examples in Denmark and Norway. We remind that the UK government is already requiring that all new ships ordered for its waters from 2025 onward must be equipped with zero-emission technology.

## Niche Performance in December

	December
Lithium Cells	1.8%
Cathodes	6.3%
Anodes	0.0%
Separators	1.4%
Electrolytes	4.1%
Commodities	14.2%
Powertrains & Ultracapacitors	-2.5%
ADAS	-1.5%
EVs makers	-0.7%
Satellite Areas	5.2%

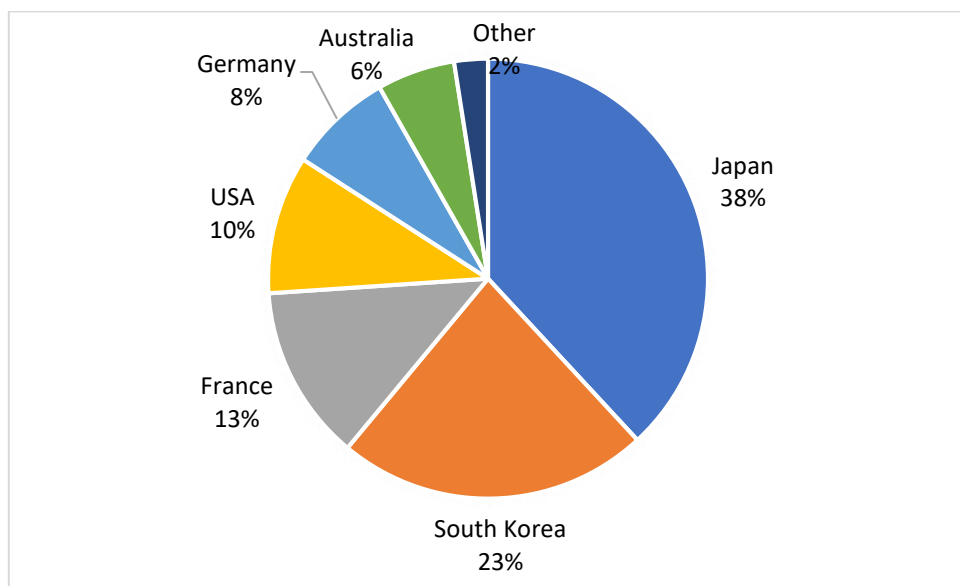
## Portfolio valuation



## Equity top holdings for December

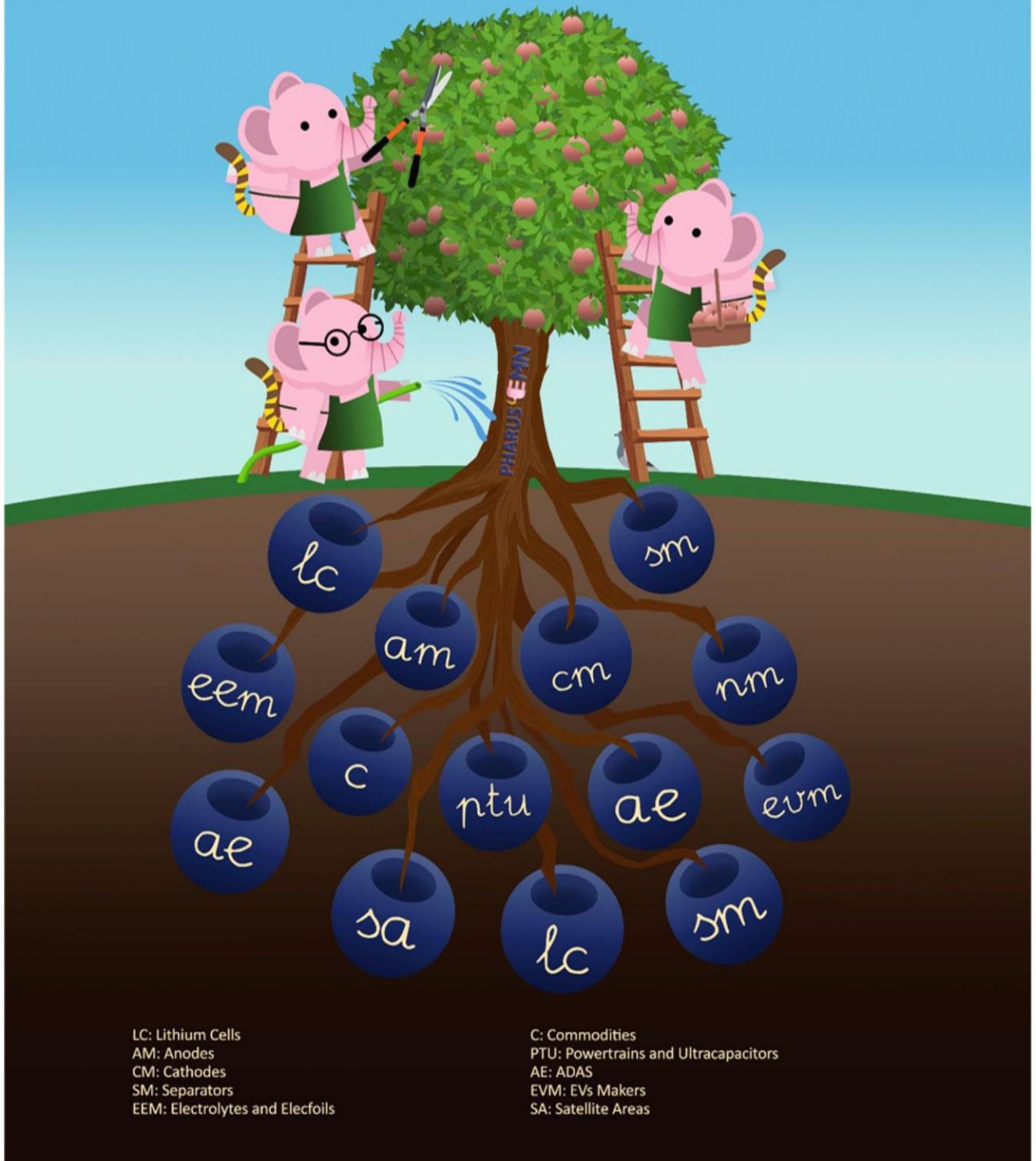
ISIN	SECURITY	%	NICHE	SUB-NICHE
JP3866800000	Panasonic Ord Shs	5.59	Lithium Cells	NCA
KR7051911006	LG Chem Preferred Stock	4.59	Lithium Cells	NMC
KR7096771001	SK Innovation NV Ord Shs	3.79	Lithium Cells	NMC
KR7006401004	Samsung SDI	3.30	Lithium Cells (LC)	NMC
FR0000131757	Eramet Ord Shs	3.24	Commodities (C)	NICKEL SULPHATE
FR0000120859	Imerys Ord Shs	3.23	Anodes (AM)	COATING
JP3401400001	Sumitomo Chemical Ord Shs	2.78	Separators (SM)	WET
AU000000SYR9	Syrah Resources	2.43	Commodities (C)	NATURAL GRAPHITE
US0126531013	Albermarle Corporation	2.41	Commodities (C)	LITHIUM
FR0000131906	Renault SA	2.36	EV Makers (EVM)	CARS

## Equity breakdown by geographical exposure



Source: Niche AM

# ELECTRIC MOBILITY NICHES



# Lithium Cells



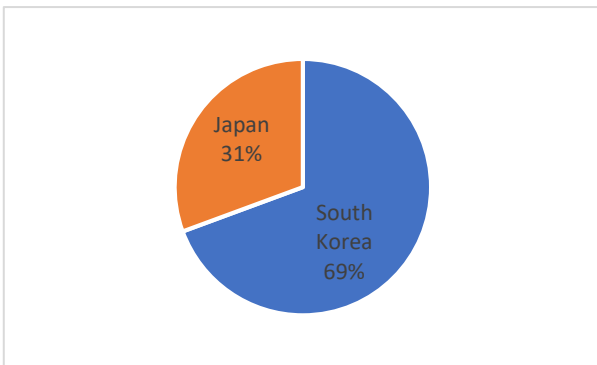
# stocks: 5      Average Market Cap (mln \$) 14,812      Median Market Cap (mln \$): 12,620

## Lithium cells – segment breakdown

		EM Fund	Lithium Niche
Lithium Cells	LC	18.2%	100.0%
Nickel Manganese & Cobalt	NMC	12.7%	69.4%
Nickel Cobalt & Aluminium	NCA	5.6%	30.6%

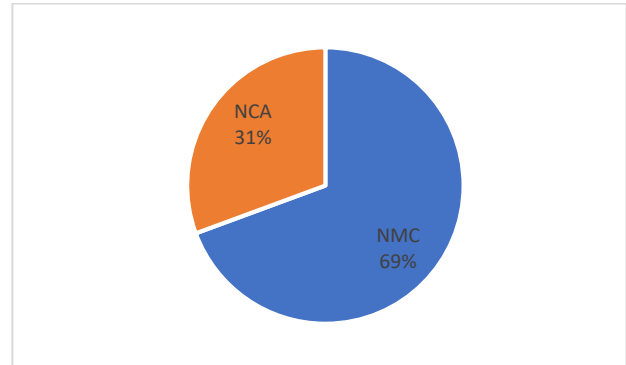
Source: Niche AM

## Geographical breakdown

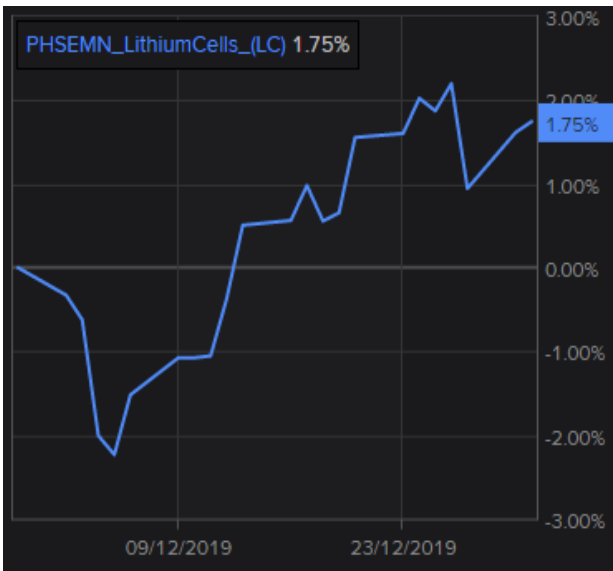


Source: Niche AM

## Segment breakdown



## Chart December (29/11 – 31/12)



Source: Niche AM

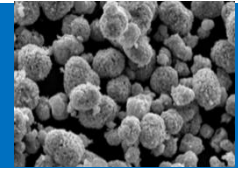
## Chart since inception (10/06-31/12)



## Niche description

Electric mobility will grow dramatically in the next few years, with a speed still unexpected by most and changing the world for good. The electric mobility will be pervasive, affecting land, air and water transportation. At the base of the electrification of mobility we found the lithium batteries that are made up of several lithium cells bundled together. Each lithium cell is a small battery with a cathode, an anode, a separator and filled with electrolyte solution. There are different kinds of lithium cells, depending on the chemistry used, although the NCA and NCM will be those by far most used in the electrification of mobility.

# Cathodes



# stocks: 10

Average Market Cap (mln \$): 2,061

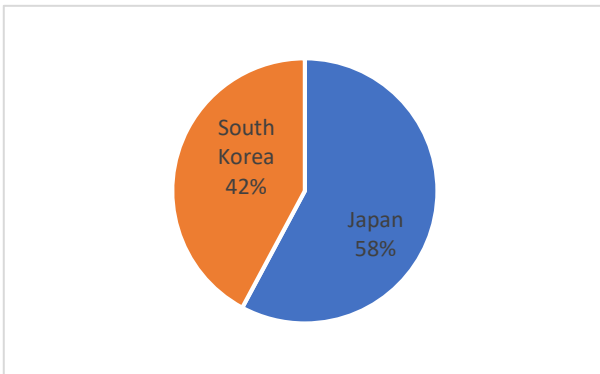
Median Market Cap (mln \$): 0,216

## Cathodes – segment breakdown

		EM Fund	Cathodes Niche
<b>Cathodes</b>		<b>12.0%</b>	<b>100.0%</b>
Nickel Manganese & Cobalt	NCM	4.8%	39.5%
Nickel Cobalt Aluminium	NCA	3.6%	29.9%
Cathode Materials	CM	3.7%	30.6%

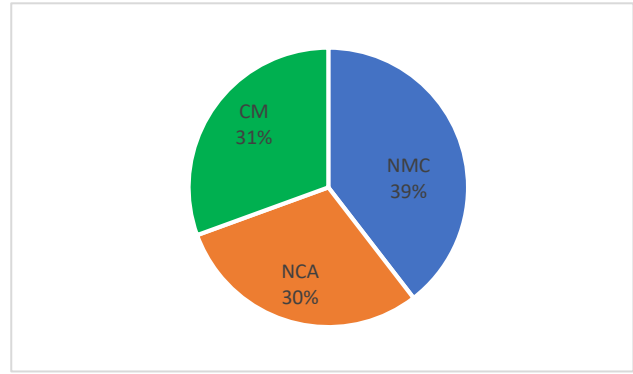
Source: Niche AM

## Geographical breakdown

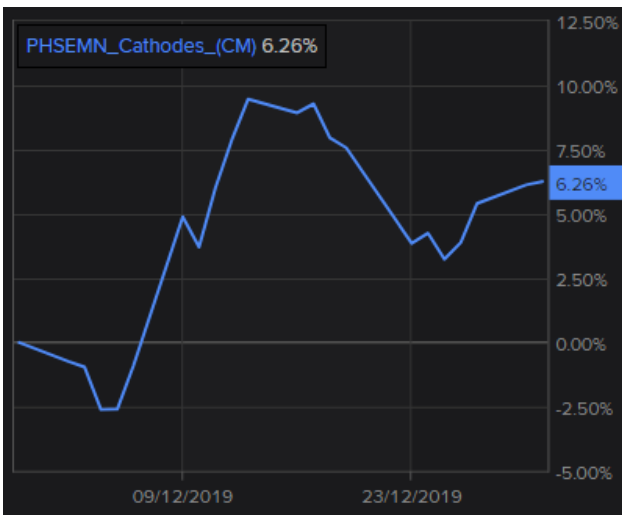


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



## Chart since inception (10/06-31/12)

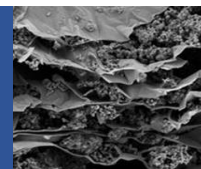


Source: Niche AM

## Niche description

Cathodes represent the most valuable component of EV batteries (making up about 1/4 of the whole cost of the cell) and their chemistry is pivotal in determining energy density and capacity of the battery. Cathodes composition for EVs, for at least the next 5/7 years, will be mainly based on two different chemistries, NCA (nickel, cobalt and aluminium) and NMC (nickel, manganese and cobalt), as they provide the energy density needed to drive the electrification of mobility mass market. Lithium cells are normally named after the chemistry of their cathodes (NCA, NMC, LFP, etc).

# Anodes



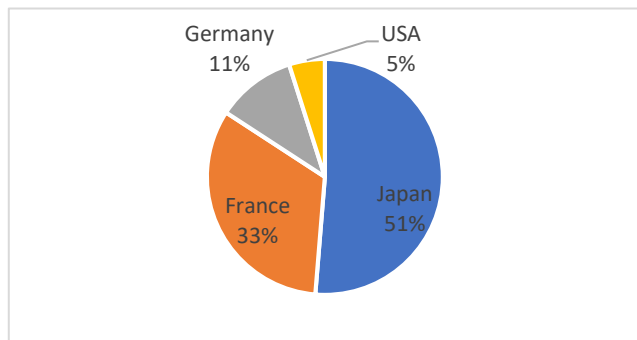
# stocks: 7      Average Market Cap (mln \$) 3,941      Median Market Cap (mln \$): 2,991

## Anodes – segment breakdown

	EM Fund	Anodes Niche
Anodes	9.8%	100.0%
Coating	3.2%	32.9%
Anodes	3.3%	33.7%
Artificial Graphite	2.4%	24.5%
Needle Coke	0.9%	8.9%

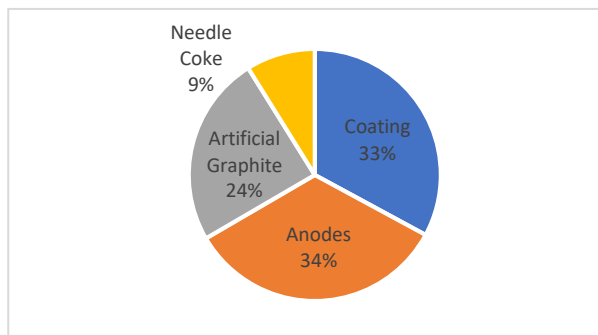
Source: Niche AM

## Geographical breakdown

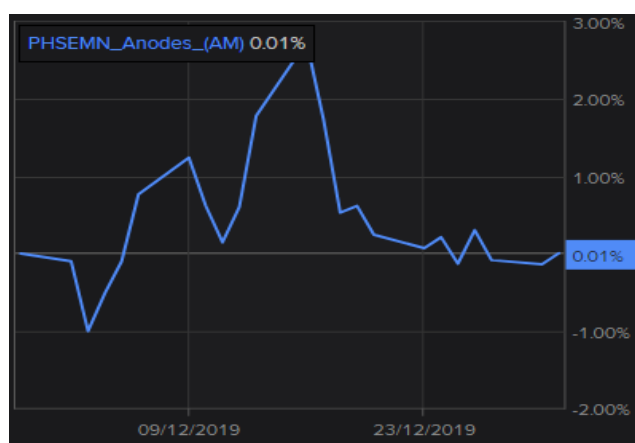


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



Source: Niche AM

## Chart since inception (10/06-31/12)



## Niche description

Anodes play an important role in determining the energy capacity and density of a battery, as they perform the role of storing and emitting Li-ions to and from the cathode. The anodes are coated on top of a copper foil, a metallic foil which acts as a current collector for the anode. Selecting a high-quality active material for anodes allows Li-ion battery cells to deliver both higher capacity retention and greater power. The selection of materials used in anodes plays a significant role in determining a battery's transmission and lifespan, which is the most important criteria in the material selection process.

# Separators Makers



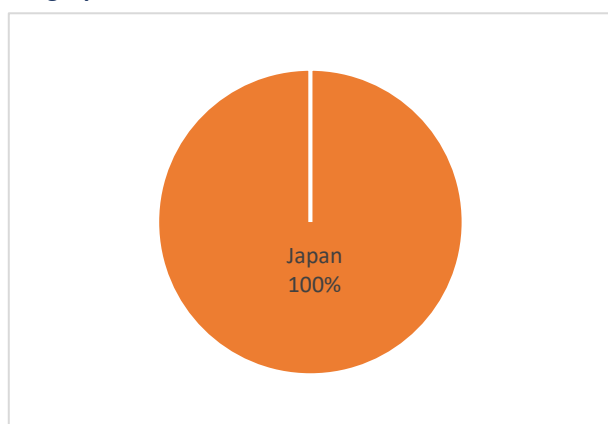
# stocks: 4      Average Market Cap (mln \$): 6,084      Median Market Cap (mln \$): 5,042

## Separators – segment breakdown

	EM Fund	Separators
<b>Separator Maker</b>	<b>6.4%</b>	<b>100,0%</b>
Wet Separators	4.8%	74.9%
Dry Separators	1.6%	25.1%

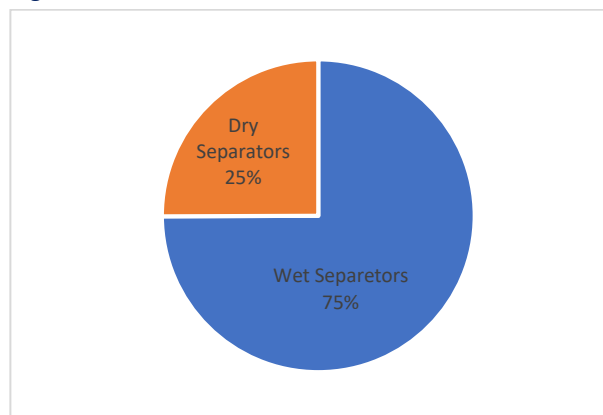
Source: Niche AM

## Geographical breakdown

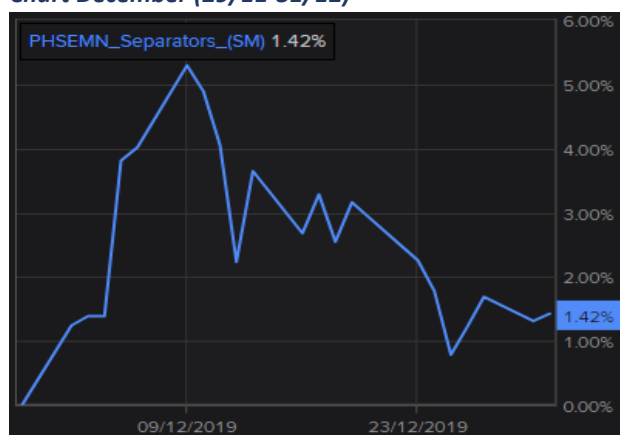


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



## Chart since inception (10/06-31/12)



Source: Niche AM

## Niche description

Separators determine the safety of a Li-ion battery as they act as an absolute barrier between the cathode and anode. Although separators account for only 5% of the battery cell content, they are the second-most significant raw material in terms of cost (about 10% of a Li-ion battery cost). The automotive separator market was worth some USD600m in 2015, and in the same year totalled 0.5bn sqm on a surface-area basis. This figure could grow to 20bn sqm by 2025, in line with the growth of the EV battery market. However, there is a risk in the future for this component as separators would be unnecessary if all solid-state batteries replace Li-ion batteries from 2030.



# Electrolytes & Elecfoils



# stocks: 4

Average Market Cap (mln \$): 3,414

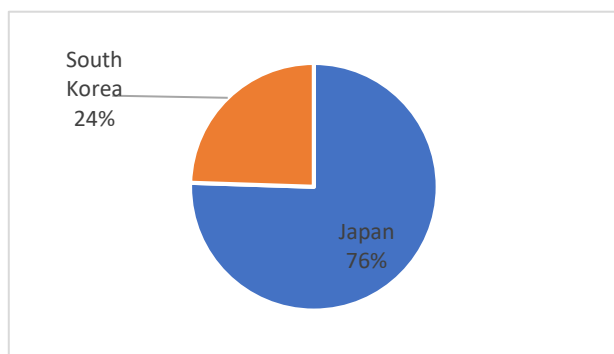
Median Market Cap (mln \$): 1,602

## Electrolytes & Elecfoils – segment breakdown

	EM Fund	Electrolytes Niche
<b>Electrolytes &amp; Elecfoils</b>	<b>4.6%</b>	<b>100.0%</b>
Electrofoils	1.3%	27.6%
Electrolytes	3.3%	72.4%

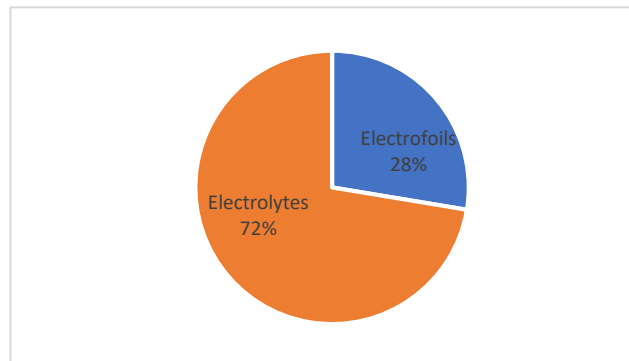
Source: Niche AM

## Geographical breakdown

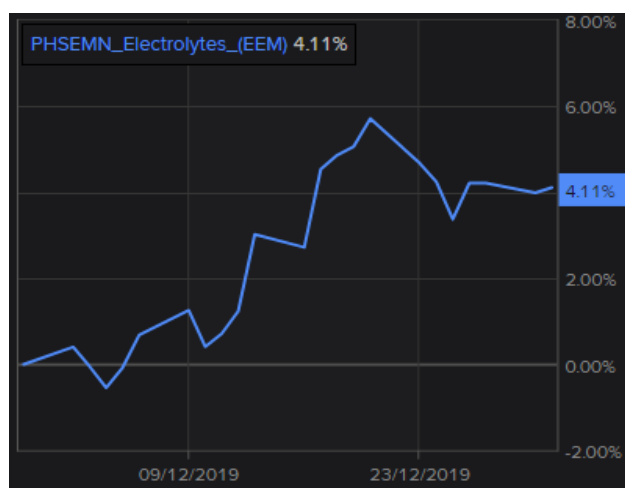


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



Source: Niche AM

## Chart since inception (10/06-31/12)



## Niche description

Electrolytes play a key role in enabling the use of electricity as they promote the movement of Li-ions between the cathode and anode. Electrolytes consist of solvents, salts and additives. Solvents act as dissolvers of the conducting salts. Salts are used as the passage for Li-ions to move and determine the ion conductivity. Additives serve a specific purpose and are usually added to the electrolyte to modify its properties. Materials with high ionic conductivity are essential so that lithium ions can freely move between the anode and the cathode. Therefore, the type of electrolyte used affects the speed of movement of Li-ions and the overall performance of the battery.

# Commodities



# stocks: 9

Average Market Cap (mln \$): 8,563

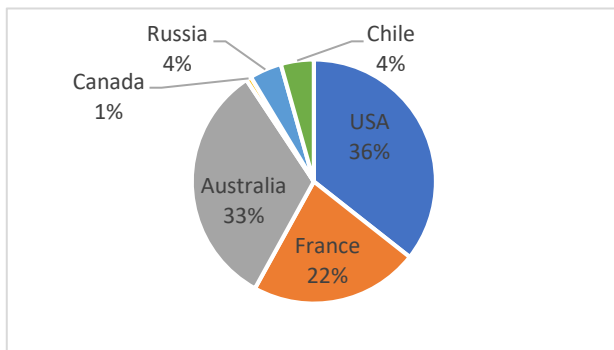
Median Market Cap (mln \$): 1,219

## Commodities – segment breakdown

	EM Fund	Commodities Niche
<b>Commodities</b>	<b>14.5%</b>	<b>100.0%</b>
Natural Graphite	2.4%	16.8%
Nickel Sulphate	3.9%	26.7%
Lithium	6.4%	44.5%
Copper	0.5%	3.4%
Nickel	1.2%	8.6%

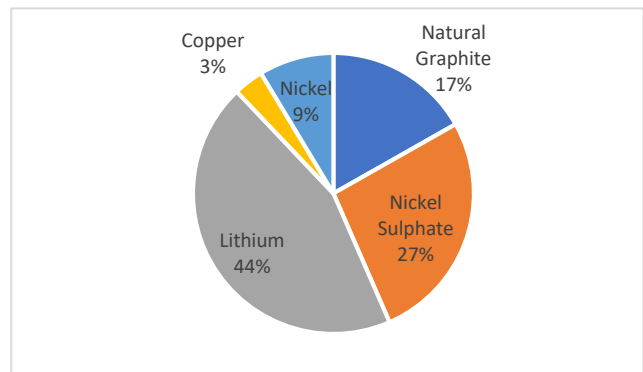
Source: Niche AM

## Geographical breakdown

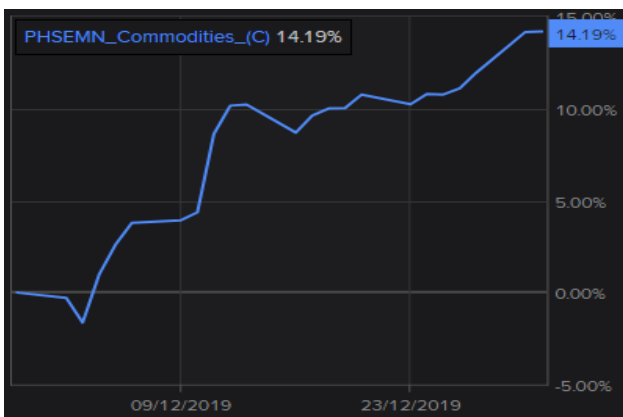


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



Source: Niche AM

## Chart since inception (10/06 – 31/12)



## Niche description

Commodities are vital to electric mobility. The need for cobalt, lithium and graphite will increase many times by 2025 while the need for nickel will almost double. Today the world looks unprepared for such a change and a gradual increase in the price of these commodities is likely. The path will be volatile but potentially highly rewarding.

# Powertrains & UTs



# stocks: 6

Average Market Cap (mln \$): 12,702

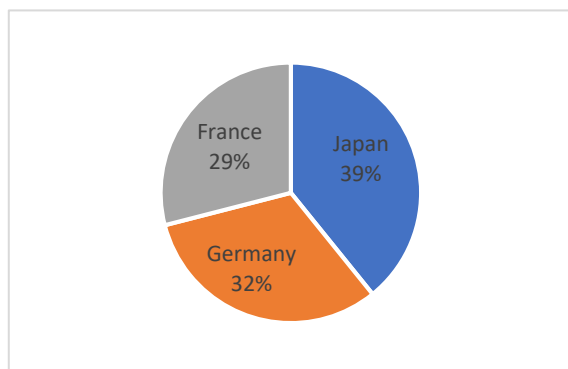
Median Market Cap (mln \$): 10,367

## PTs & UTs – segment breakdown

	EM Fund	Powertrains & UT
<b>Powertrains &amp; UT</b>	<b>6.2%</b>	<b>100%</b>
Powertrains	4.4%	70.4%
Ultracapacitors	1.8%	29.6%

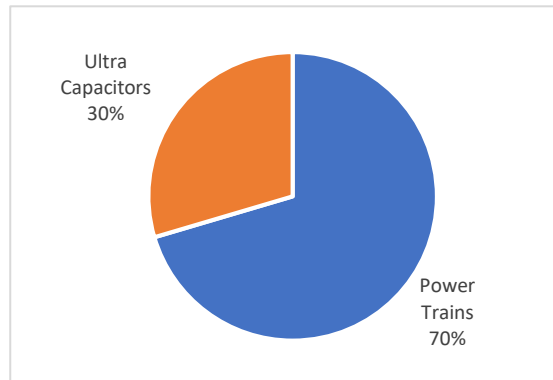
Source: Niche AM

## Geographical breakdown

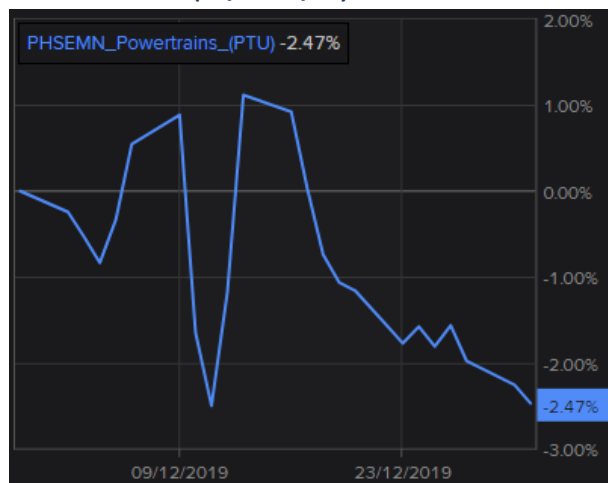


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



Source: Niche AM

## Chart since inception (10/06-31/12)



## Niche description

Powertrains will have to adapt to the electrification of mobility and many players are already active in providing new solutions to optimise the functioning of the EVs. Those better equipped to master the change could be able to gain market share and increase margins. At the same time ultracapacitors could become an important complement of the electric powertrain, providing high power when needed, and in doing so increasing the performance and lengthening the life of the batteries.

# ADAS



# stocks: 3

Average Market Cap (mln \$): 9,024

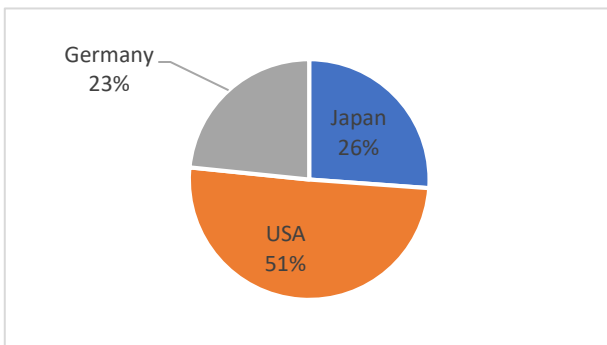
Median Market Cap (mln \$): 1,552

## ADAS – segment breakdown

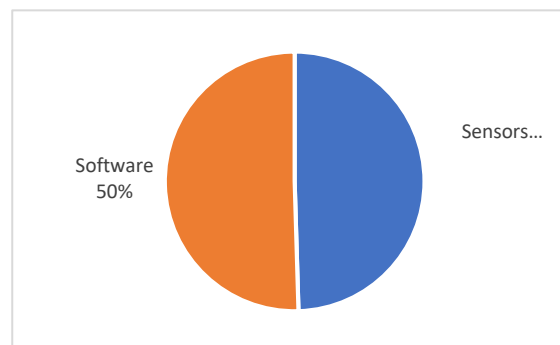
	EM Fund	Powertrains & UT
<b>ADAS</b>	<b>2.3%</b>	<b>100.0%</b>
Software	1.2%	50.5%
Sensor	1.1%	49.5%

Source: Niche AM

## Geographical breakdown



## Segment breakdown

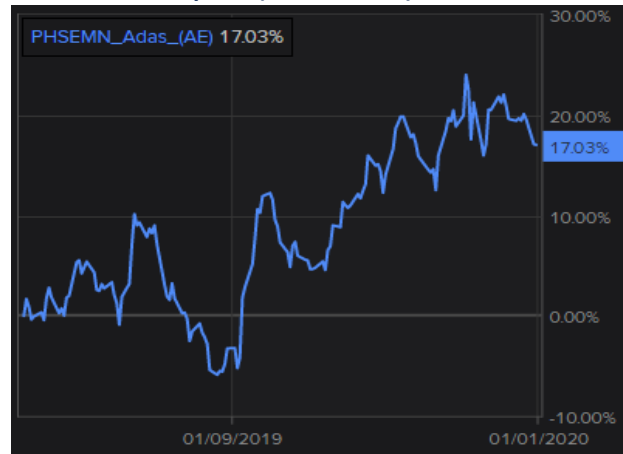


Source: Niche AM

## Chart December (29/11-31/12)



## Chart since inception (10/06-31/12)



Source: Niche AM

## Niche description

ADAS (advanced driver-assistance systems) represents the technologies that gradually will make the vehicles easier and safer to drive. The end-goal here is to be able in the future to have fully autonomous vehicles. While the concept is fascinating, we should realise that this process has been ongoing for many decades, even if the investors started to focus on it only a few years ago. After few years of enthusiasm and great investments the market realised that it will take decades to have fully autonomous cars and they dumped the sector. We think that the market now provides terrific opportunities to invest in quality companies at low valuations.

# EV Makers



# stocks: 7

Average Market Cap (mln \$): 30,556

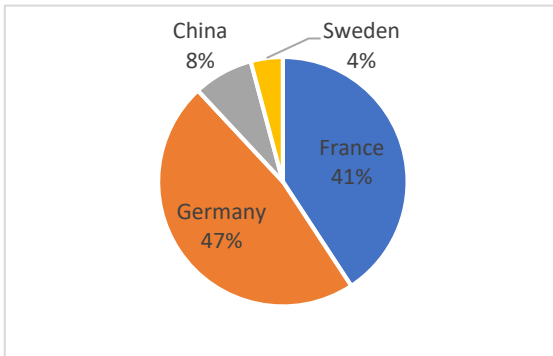
Median Market Cap (mln \$): 12,459

## EV Makers – segment breakdown

	EM Fund	EV Makers Niche
<b>EV Makers</b>	<b>5.8%</b>	<b>100.0%</b>
Cars	5.5%	95.8%
Forklifts	0.2%	4.2%

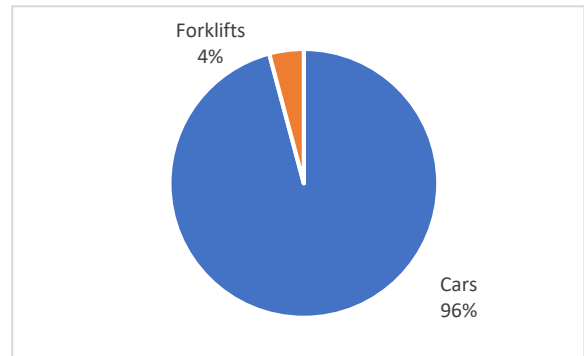
Source: Niche AM

### Geographical breakdown

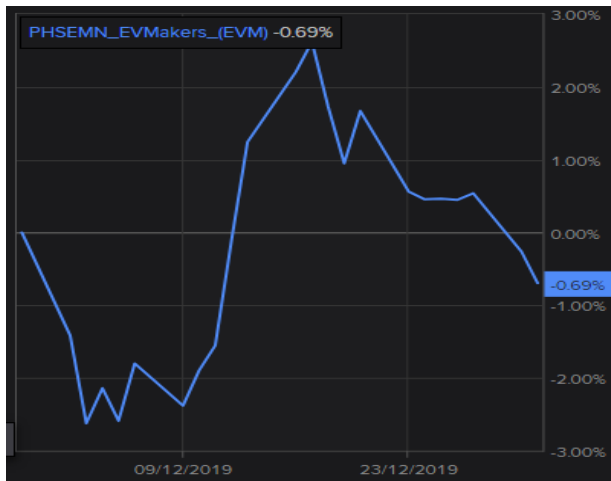


Source: Niche AM

### Segment breakdown

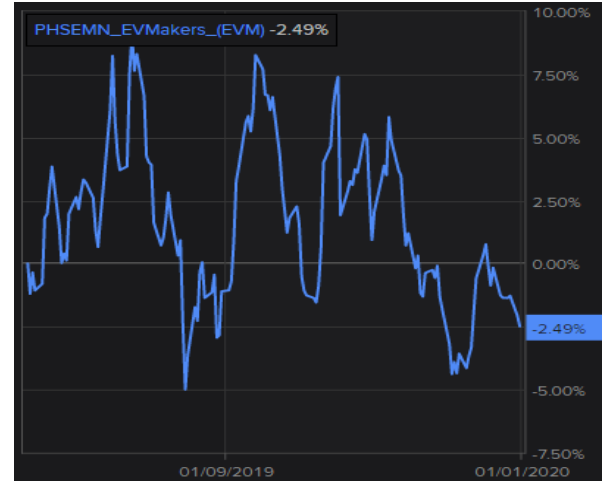


### Chart December (29/11-31/12)



Source: Niche AM

### Chart since inception (10/06-31/12)



### Niche description

In a not too distant future, we will move by ground, water and air using electric vehicles. Be it a bike, a motorbike, a car, a truck, a forklift, an excavator, a helicopter, a boat, etc. Most of the companies will be able to switch into the new technology but few of them will swiftly gain market share. Furthermore, once the potential clients will realise that an EV is cheaper, more convenient and more comfortable to drive, the demand will jump and will lead to significant margins expansion for those that have prepared in advance for it.

# Satellite Areas



# stocks: 2

Average Market Cap (mln \$): 1,260

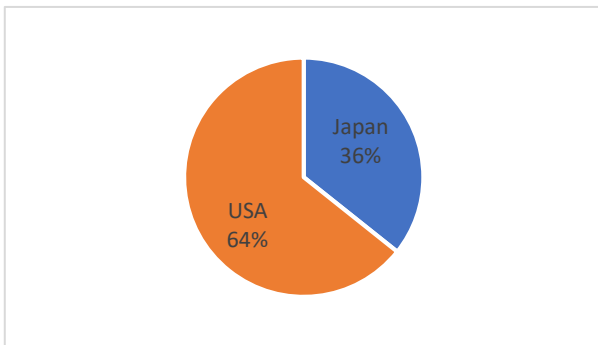
Median Market Cap (mln \$): 1,260

## Satellite Areas – segment breakdown

	EM Fund	Steel Substitution Niche
Satellite Areas	2.5%	100.0%
Rechargers	0.9%	35.7%
Assembly Lines	1.6%	64.3%

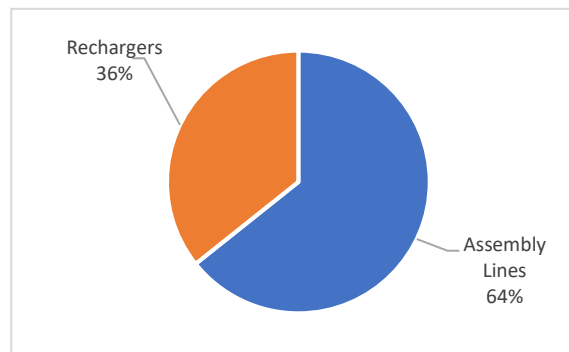
Source: Niche AM

## Geographical breakdown

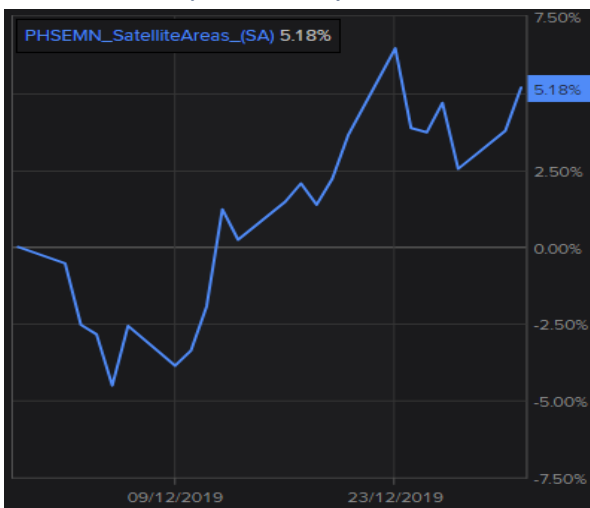


Source: Niche AM

## Segment breakdown



## Chart December (29/11-31/12)



## Chart since inception (10/06-31/12)



Source: Niche AM

## Niche description

The passage from the internal combustion powered vehicles to battery powered vehicles will be a seismic shift. The underlying market for batteries is likely to multiply by more than 30 in less than ten years by value, reaching that of semiconductors. One billion of cars and hundreds of millions of other vehicles will be affected. The spill over effect will be massive and many sectors will morph radically. This niche tries to pick the companies that could indirectly benefit from this historical shift.

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