MOTILAL OSWAL

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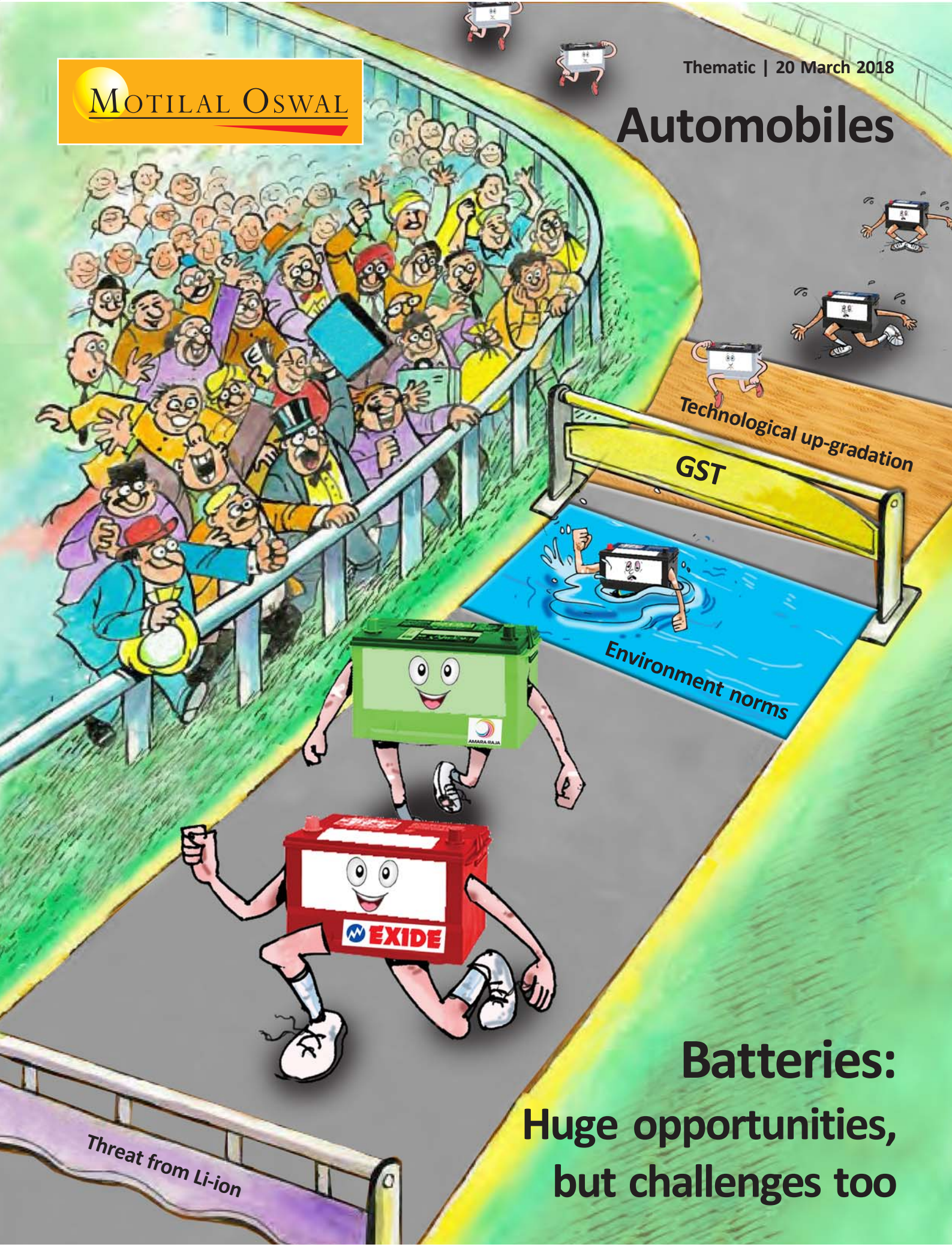
Automobiles



Batteries:
Huge opportunities, but challenges too

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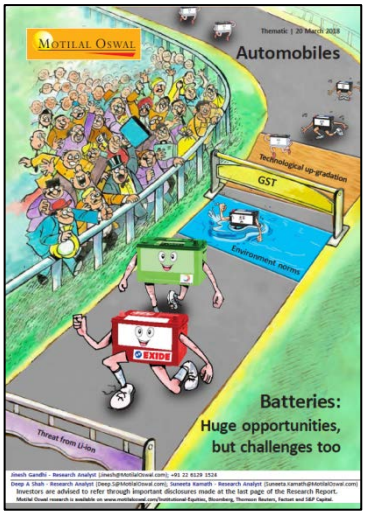

Huge opportunities, but challenges too

Exide and Amara Raja at the forefront

- **The battery industry is evolving, led by cyclical slowdown in the auto battery segment as well as competitive pressures in the industrial battery segment.**
- **GST would drive consolidation in the replacement market of automotive and inverter batteries, leading to strong growth of 16-17% for the organized players.**
- **New segments in industrial batteries – e-rickshaw, motive power, and solar applications – would drive growth, as conventional drivers of this segment stabilize.**
- **Electric vehicles (EVs) are unlikely to displace lead acid batteries (LAB), as these are still preferred for SLI (starter, lighting and ignition) application. Manufacturing of Li-ion batteries could be a USD42b opportunity by 2030 (~9x of LAB).**
- **While we like both AMRJ and EXID, we prefer EXID over AMRJ due to its cheaper valuations (~30% discount to AMRJ after adjusting for insurance business value).**

EVs not to displace lead-acid batteries; to create opportunity to manufacture lithium-ion batteries: Contrary to general perceptions, electric cars (EV) have a 12v lead acid battery (LAB) as auxiliary battery for SLI (starter, lighting and ignition) applications. We believe LAB will remain relevant even in the EV world. We expect localization of Li-ion battery to be highest priority for OEMs to reduce cost of batteries and lower forex exposure. Given the criticality of the battery and scope of differentiation it offers, we expect OEMs to manufacture EV batteries in-house. Li-ion batteries could be a ~USD42b opportunity by 2030 (9x the automotive LAB opportunity). Based on this, the cell manufacturing opportunity would be ~USD15b.

GST to drive consolidation, benefitting AMRJ/EXID: The share of the unorganized segment in the replacement market has been gradually declining, but is still 40-50%. Our analysis suggests that non-compliant manufacturers (those who evaded indirect taxes) enjoy a price advantage as high as >20%. While we are yet to see material change in compliance post GST implementation, cost of doing business is expected to increase for non-compliant players, as the government's focus shifts towards higher compliance. In the overall battery replacement market, we expect the share of unorganized players to reduce from ~45% to ~27% by FY22.

Replacement segment offers secular and profitable growth opportunity: The automotive replacement battery segment offers a secular and profitable growth opportunity, driven by (a) increasing penetration of automobiles driving expansion in automobile population, and (b) GST-led consolidation. The auto replacement segment enjoys the highest profitability due to (a) B2C nature of the business, (b) high pricing power with diffused customer base, and (c) low competitive intensity. We expect AMRJ and EXID to outperform the industry, with revenue CAGR of 16-17%, driven by market share gains from the unorganized players.

Automobile | Batteries

Huge opportunities, but challenges too

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Please click here for Video Link

E-rickshaw, motive power, solar applications – new avenues can drive growth in industrial sector: The e-rickshaw battery market is estimated to grow at ~16% CAGR over FY17-20 to ~INR41b. Though AMRJ and EXID have been late entrants in this segment, they are now heavily focused on this fast growing and lucrative segment. The GST-led consolidation of warehouses should boost demand for forklifts, pallet trucks, stackers, order pickers, and reach trucks among others, in turn driving demand for motive power batteries. Assuming motive power contributes ~15% to the industrial segment by FY22 (v/s 1% currently and 34% globally), this segment offers an opportunity of INR25b-30b as against <INR2b currently.

Industrial segment to stabilize over 6-9 months: The conventional industrial segment (ex e-rickshaw, motive power and solar) is likely to stabilize from 2HFY19 and grow from FY20, driven by 8-10% CAGR in UPS, stabilization in the telecom segment (from 2HFY19) and continued weakness in inverters. The home inverter segment should also witness a shift from unorganized (>50%) players, benefitting AMRJ/EXID. In the telecom tower battery segment, demand is bottoming out and competition is peaking out. Demand from this segment is expected to recover, led by increase in tenancy ratio to 2.45x in FY20 (from 2.3x in FY17). Also, stabilization in competitive intensity should support full pass-through of lead cost inflation.

Valuation and view: Concerns overplayed; valuations attractive

- Over FY18-20, we expect earnings CAGR of 19%/23% for AMRJ/EXID, driven by revenue CAGR of 15%. In our view, the key revenue drivers are: (a) strong demand visibility in the auto OEM segment, (b) market share gains in the replacement segment from unorganized and small organized players post GST, and (c) emerging opportunities in e-rickshaw, motive power and solar, offsetting pressure in telecom and inverter segments in industrial batteries.
- We like both AMRJ and EXID, especially considering that (a) there is little difference between AMRJ and EXID in terms of operating performance, and (b) valuations are very attractive relative to auto component peers. However, EXID (ex-Insurance) is trading at over 30% discount to AMRJ, which should narrow down considering convergence of operating performance. We prefer EXID over AMRJ due to relatively cheaper valuations.

Exhibit 1: Comparative valuations

	EPS CAGR	PE (x)			EV/EBITDA (x)			P/BV (x)			ROE (%)		
	(FY17-20E)	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E
Local Peers													
AMRJ	12.6	27.7	23.0	19.6	14.5	11.7	9.8	4.5	3.9	3.3	17.3	18.0	18.3
EXID	14.3	26.4	21.4	17.5	15.0	12.3	10.2	3.3	3.0	2.7	12.6	14.0	15.3
BHFC	39.1	35.1	26.5	20.1	19.4	15.5	12.4	6.8	5.7	4.7	21.0	23.5	25.5
BOS	15.6	39.0	30.1	24.5	23.3	17.8	14.5	5.7	5.1	4.5	15.2	17.9	19.6
ENDU	29.8	42.7	31.2	23.4	19.1	15.2	12.0	8.2	6.8	5.7	21.0	23.9	26.5
MSS	31.4	37.8	24.4	17.5	13.2	8.9	6.3	6.8	5.7	4.7	19.2	25.4	29.3
Global Peers													
Johnson Control *	L2P	13.0	12.0	10.7	9.4	8.8	8.4	1.7	1.6	1.5	11.6	12.7	11.7
Camel Group *	22.5	18.2	14.6	11.9	13.5	11.4		2.1	1.9		11.9	13.2	15.0
Chaowei Power *	19.1	7.3	6.3	5.2	7.1	6.3	5.4	1.2	1.0	0.9	17.5	17.1	17.8
Dynavolt Renew *	75.2	34.9	17.3	14.4				3.0	2.0	1.6	8.4	10.3	11.9

*Bloomberg Consensus; Source: Bloomberg, MOSL

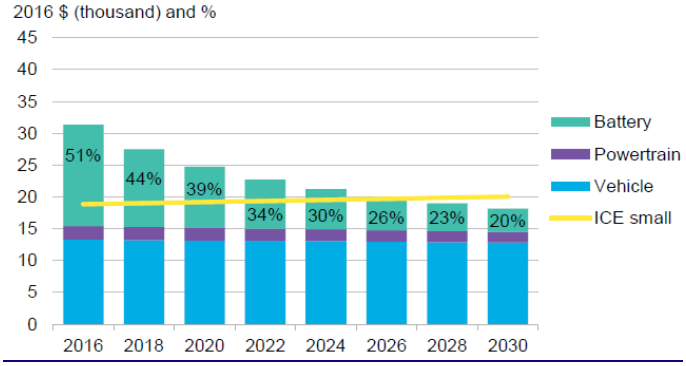
Story in charts

Exhibit 2: LAB Industry revenue model – Organized player to grow 13-14% CAGR on back of ~9% industry growth

(INR b)	Industry			Organized players			Organized (% of total)		
	FY17	FY20E	FY22E	FY17	FY20E	FY22E	FY17	FY20E	FY22E
Auto - OEM	33.4	46.7	54.8	33	47	55	100%	100%	100%
Auto - Repl	100.1	135.3	162.2	60	95	130	60%	70%	80%
Telecom	25.0	27.4	30.2	25	27	30	100%	100%	100%
Inverter	38.5	33.0	29.8	19	21	22	50%	65%	75%
UPS	18.0	24.0	29.0	18	24	29	100%	100%	100%
e-rickshaw	26.0	41.1	51.6	5	12	26	19%	30%	50%
Motive	1.6	13.0	27.5	2	13	28	100%	100%	100%
Others	57.3	70.2	80.4	40	53	64	70%	75%	80%
Total	**300**	**391**	**465**	**202**	**292**	**384**	**67%**	**75%**	**82%**
CAGR (%) over FY17		9.2	9.2		13.0	13.6			

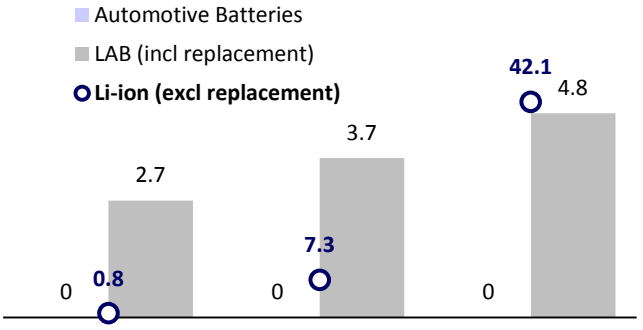
Source: MOSL

Exhibit 3: BNEF estimates battery to contribute ~20% to total cost of a small car by 2030 (% of small car cost)



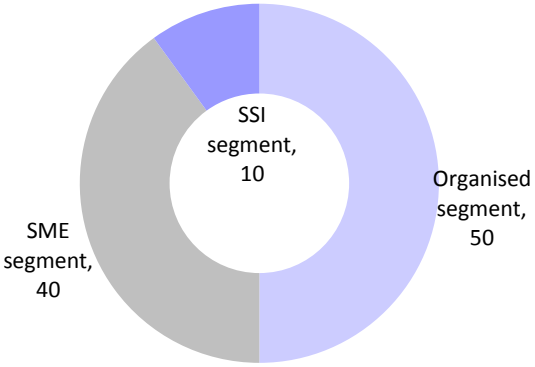
Source: BNEF, MOSL

Exhibit 4: Automotive Li-ion battery market to be USD42b by 2030 – ~9x automotive LAB market



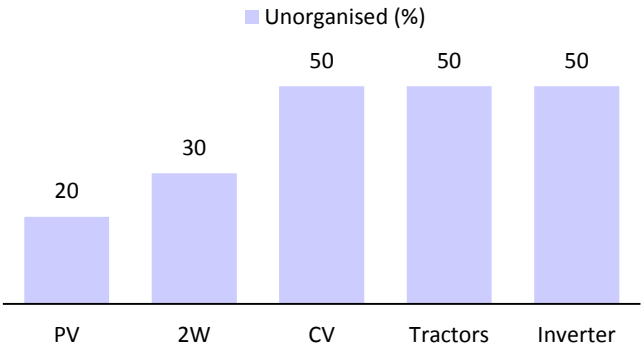
Source: MOSL

Exhibit 5: Organized segment has immense opportunity in INR300b market (%)



Source: Industry

Exhibit 6: Share of unorganized segment in tractors and CV segments as high as 50%



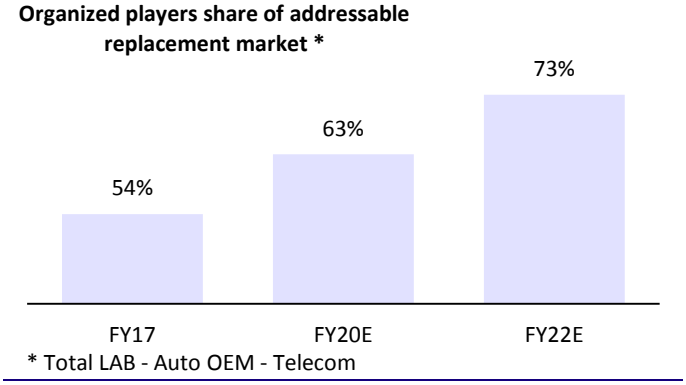
Source: Industry

Exhibit 7: Shift from unorganized to drive organized player growth to ~16.7% CAGR

INR b	FY17E	FY22E	CAGR (FY17-22E)
Total Auto Replacement Market	**100**	**162.2**	**10.1**
Organized	60	129.7	16.7
Unorganized	40	32.4	-4.1
Share (%)			
Organized	60	80	
Unorganized	40	20	

Source: Industry

Exhibit 8: Organized players to gain share in the addressable replacement market *



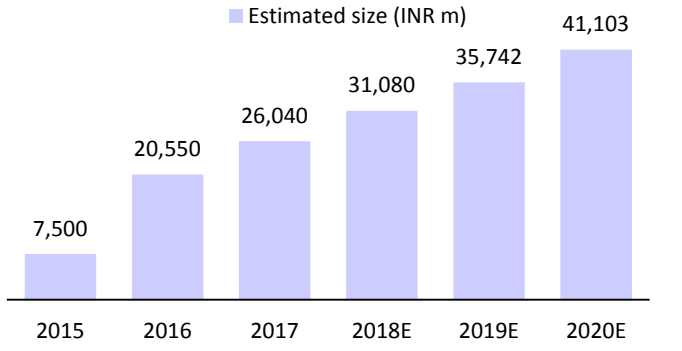
Source: Industry

Exhibit 9: Auto replacement segment to grow ~10% CAGR over FY17-22E

	FY17			FY22E			CAGR (%)
	Population ('000 units)	Avg. Price (INR/LAB)	Size (INR b)	Population ('000 units)	Avg. Price (INR/LAB)	Size (INR b)	FY17-22E
2W	142,746	833	39.6	221,454	901	66.5	10.9
3Ws	6,565	2363	5.2	8,206	2558	7.0	6.2
PVs	26,286	3370	29.5	39,721	3648	48.3	10.3
LCVs	3,728	3093	3.8	4,777	3348	5.3	6.8
M&HCVs	4,332	8754	12.6	6,662	9476	21.0	10.7
Tractors	5,118	5423	9.3	7,124	5871	13.9	8.5
Total Replacement Market INR Bn			**100**			**162.2**	**10.1**

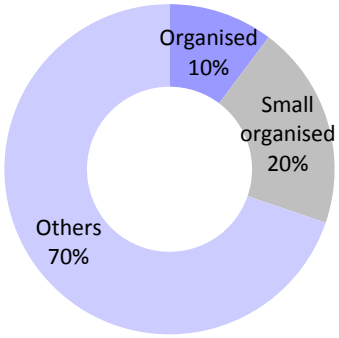
Source: MOSL

Exhibit 10: E-rickshaw batteries to grow at 16.4% CAGR



Source: Industry

Exhibit 11: E-rickshaw battery is dominated by small players



Source: Industry

Lithium-ion and lead-acid batteries to co-exist

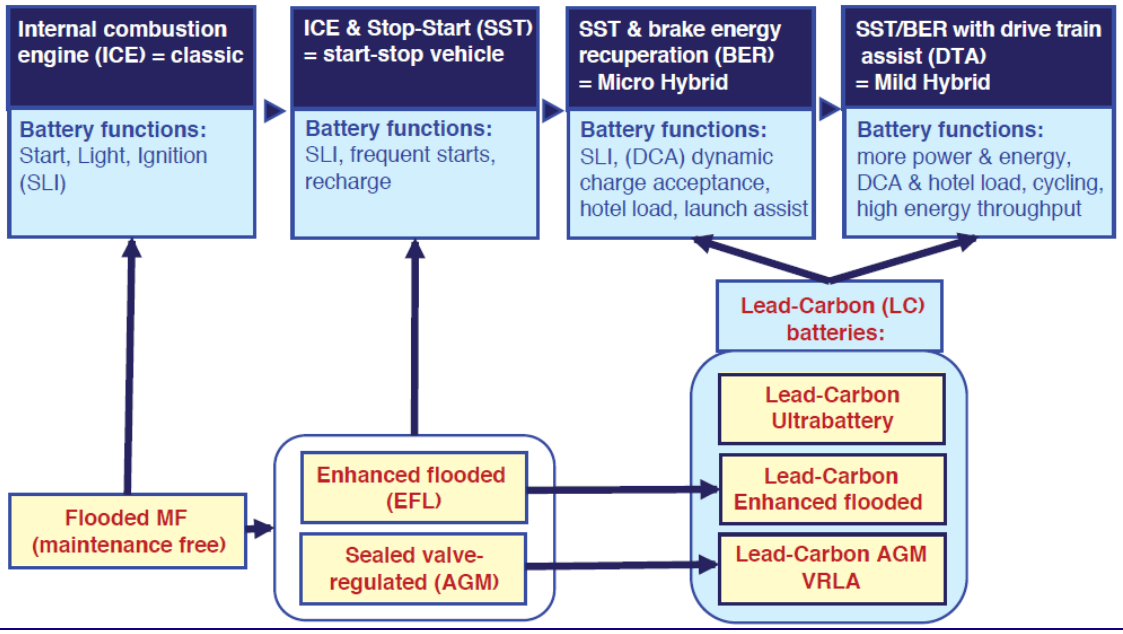
Li-ion battery manufacturing opens up addressable market of USD42b

- **Contrary to general perceptions, electric cars have a 12v lead-acid battery (LAB) as auxiliary battery for SLI (starter, lighting and ignition) applications. We believe LAB will continue to be relevant even in the EV world.**
- **We expect localization of Li-ion batteries to be the highest priority for OEMs to reduce the cost of batteries and also lower forex exposure. Given the criticality of the battery and scope of differentiation it offers, we expect OEMs to manufacture EV batteries in-house. In this case, localizing cells would be a more relevant opportunity for LAB manufactures, despite no synergies or competitive advantages.**
- **Assuming we attain the 2030 electrification targets set by NITI Aayog (40% of all private vehicle sales to be EV, 100% of all intra-city public vehicles to be EV), Li-ion batteries would be a ~USD42b opportunity (9x the automotive LAB opportunity). Based on this, the opportunity for cell manufacturing would be ~USD15b.**

Lead-acid battery evolution has kept pace with changing demand

- Lead-acid batteries have undergone remarkable evolution to keep up with changing car manufacturing technologies.
- Currently, lead-acid batteries serve all the power needs of start-stop vehicles throughout the world and are also becoming common in higher-end hybrid electric vehicles.
- According to the Advanced Lead Acid Battery Consortium (ALABC), the 12V lead-acid battery has been the mainstay of motor vehicles, and this will continue for many years to come.

Exhibit 12: Evolution of lead-acid battery



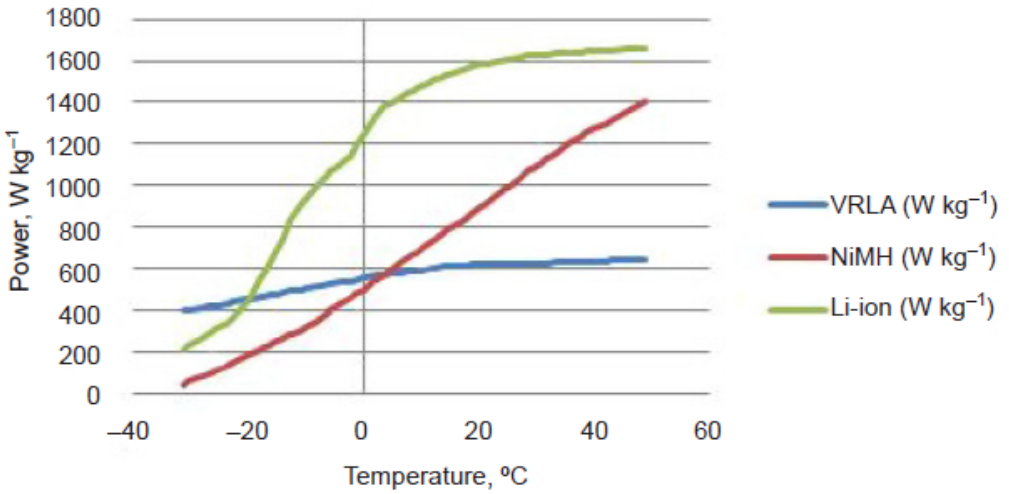
Source: The advanced lead acid battery consortium (ALABC)

Lead acid battery to remain for SLI applications in EVs

- Contrary to general perceptions, electric cars have 12v Lead Acid Battery (LAB) as auxiliary battery for SLI (Starter, Lighting and Ignition) applications – similar to ICE engine powered car.
- LAB is preferred for its ability to provide the high surge currents needed for an automobile's starter motor, making them a reliable power source at an affordable cost.
- Hence, we believe LAB will continue to remain relevant even in EV world, unless there is any significant change in technology.
- However full electric 2W and 3W vehicles don't operate on lead acid battery, hence can risk existing lead acid batteries opportunities going ahead. We estimate 2Ws and 3Ws contribution to Automotive battery segment at ~40%/~4% (including aftermarket demand).

LAB scores over Li-ion batteries in providing initial burst of power, especially in cold weather, making it preferable for SLI applications

Exhibit 13: Superior cold cranking capabilities of Lead Acid makes it apt for SLI function



Source: Johnson Matthey Battery Systems, MOSL

Exhibit 14: Use of lead-acid batteries in leading EV models across OEMs

EV make	Battery	Range km (miles)	Lead acid battery
GM Spark	21kWh	120km (75)	Yes
Fiat 500e	24kWh	135km (85)	Yes
Honda Fit	20kWh	112km (70)	Yes
Nissan Leaf	30kWh	160km (100)	Yes
Mitsubishi i-MiEV	16kWh	85km (55)	Yes
Ford Focus	23kWh	110km (75)	Yes
Smart ED	16.5kWh	90km (55)	Yes
BMW i3	22kWh	135km (85)	Yes
Tesla S 60	60kWh	275km (170)	Yes
Tesla S 85	90kWh	360km (225)	Yes
Tesla X	75kWh	472km (295)	Yes
Chevrolet Bolt EV	60kWh	380km (238)	Yes
Kia Soul EV	27kWh	211km (132)	Yes
Hyundai Ioniq EV	28kWh	200km (124)	Yes

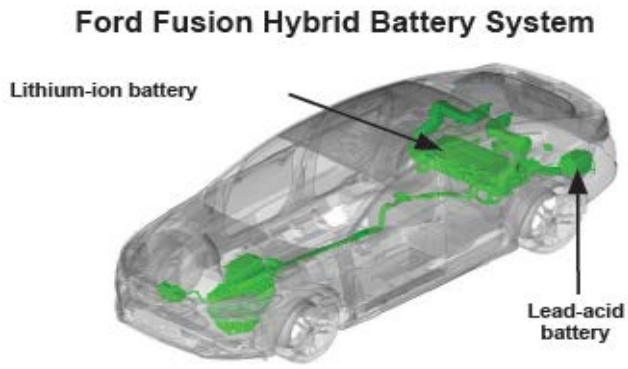
Source: Company

Exhibit 15: Hybrid vehicles that use lead-acid batteries for SLI functions

Vehicle	High voltage battery	SLI battery
Toyota Prius Liftback	201.6 Volt Nickel-metal hydride	12v Lead-acid
Toyota Camry Hybrid	244.8 Volt Nickel-metal hydride	12v Lead-acid
Ford Fusion Hybrid	300 Volt Lithium-ion	12v Lead-acid
Toyota Prius C Hybrid	201.6 Volt Nickel-metal hydride	12v Lead-acid
Ford C-Max Hybrid	300 Volt Lithium-ion	12v Lead-acid
Toyota Prius V Hybrid	201.6 Volt Nickel-metal hydride	12v Lead-acid
Hyundai Sonata Hybrid	270 Volt Lithium-ion	12v Lead-acid
Toyota Avalon Hybrid	244.8 Volt Nickel-metal hydride	12v Lead-acid
Chevrolet Malibu-Eco	130 Volt Lithium-ion	12v Lead-acid
Kia Optima Hybrid	270 Volt Lithium-ion	12v Lead-acid
Hyundai Ioniq Hybrid	240 Volt Lithium-ion	12v Lead-acid

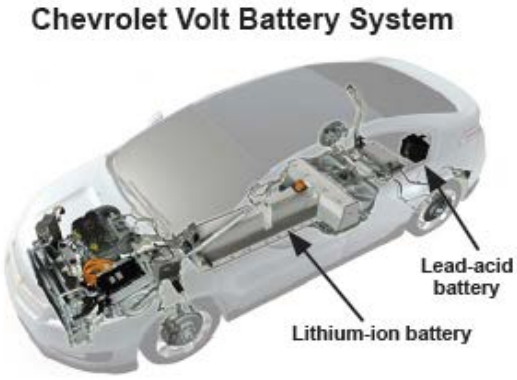
Source: ALABC.org,

Exhibit 16: Battery setup in Ford Fusion hybrid vehicle



Source: Industry

Exhibit 17: Battery setup in Chevrolet Volt hybrid vehicle

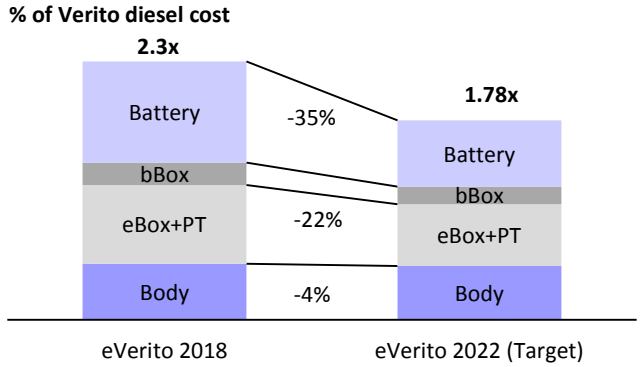


Source: Industry

Localization critical for lowering costs for EVs

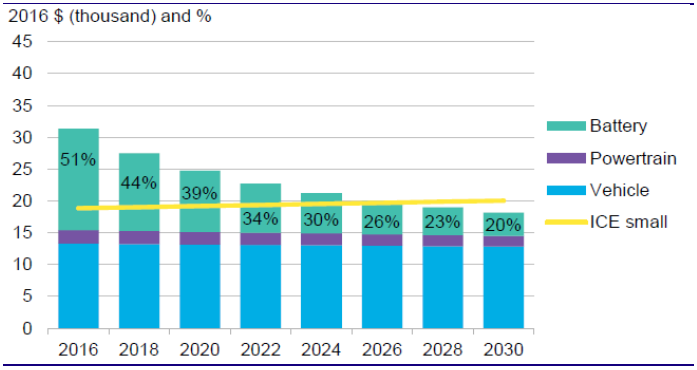
- Considering that 2/3rd of the value of an EV is currently dependent on imports (batteries, motors, electronics, chargers, etc), it is imperative for the industry to increase localization for reducing costs of EVs as well as for protecting jobs.
- Li-ion batteries would be single most expensive component of EV, with contribution pegged at 30-40% of cost of EV.
- Hence, we expect it be highest priority for OEMs to localize battery sourcing to reduce cost of batteries as well lower forex exposure. However, level of backward integration for batteries will evolve with volumes of EVs.

Exhibit 18: M&M expects battery to be ~33% of vehicle cost by 2022 (from ~40% currently)



Source: M&M, MOSL

Exhibit 19: BNEF estimates battery to contribute ~20% to total cost of a small car by 2030 (% of small car cost)



Source: BNEF

"While batteries today contribute 39% to the cost of an EV, over 9% of that is comprised by battery packaging, while remaining 30% comes from the cells itself. While we can start things by localizing 9% in India, cell technology is also changing rapidly." **Mr Anil Srivastava, Advisor (Transportation), NITI Aayog**

Localization of Li-ion battery to be gradual and progressive

- India is not only late to enter Li-ion battery manufacturing, it would also face several challenges in form of a) No/low reserves for key minerals like lithium & cobalt, b) limited tech know-how for the Li-ion batteries, c) uncertainty of technology and no clarity on policies.
- NITI Aayog has laid out roadmap for the development of India's battery manufacturing industry, with three stages for progressively capturing larger economic value at each stage.
- **Stage one:** Developing battery pack manufacturing capacity and establishing a multi stakeholder research and development consortium.
- **Stage two:** Scaling supply chain, capitalizing on research and development, and realizing the benefits of the consortium-led approach to set strategy and planning for battery cell manufacture.
- **Stage three:** Scaling end-to-end manufacturing capacity for batteries, particularly focusing on battery cell capacity, based on imported cathodes.

Exhibit 20: Stage-wise opportunity from battery manufacturing to meet India's EV ambition

Stage	Cum. battery requirements (GWh)	Total market size (INR T)	Imports	Domestic manufacturing
1	120	1.3-1.4	Complete Cells	Battery packs
2	970	6.1-8.9	Some Cells, cathodes	Battery packs + limited cell production
3	2,410	11.7-17.1	Cathodes	End-to-end battery manufacturing

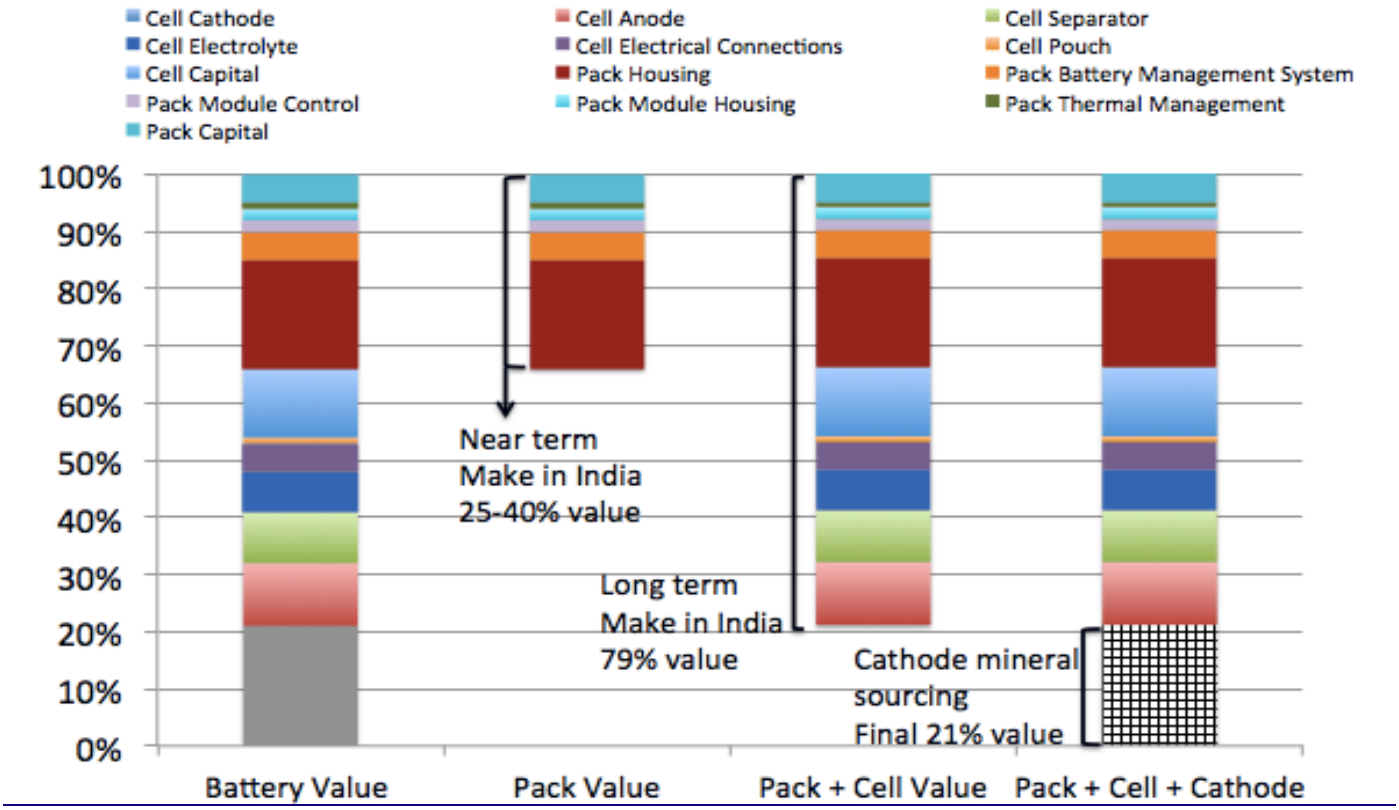
Source: NITI Aayog

"The difficulty with EVs in India is that the battery will come from China. If we find a competitive partner in India, it could be very different." **Eric Feunteun, EV Global Program Director, Groupe Renault**

Opportunity to localize battery pack and cells in EV battery

- The following exhibit 21 shows the value contribution of different battery components from Tesla's factory in the US.
- The battery cell is single largest component (in value, with 30-35% of cost of a Li-ion battery) in the manufacturing of lithium-ion batteries, followed by battery packs.
- Cathode mineral will be imported considering no/low deposits of key minerals in India. However, over period opportunity exists in locally manufacturing both battery packs (25-40% of the value) and cells (30-35% of the value).

Exhibit 21: Battery cost break-down for Tesla's gigafactory and opportunities for value capture



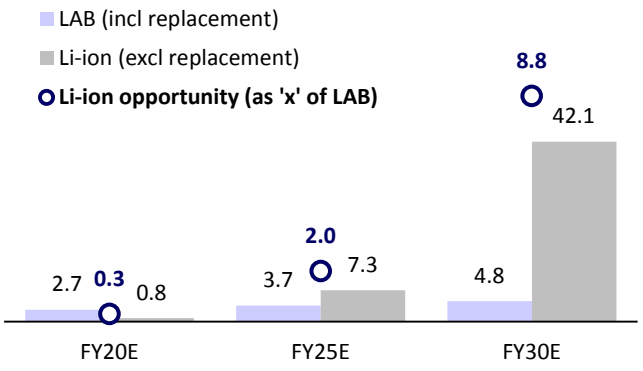
Source: NITI Aayog

EVs: Can AMRJ and EXID tap USD15b opportunity by 2030?

- NITI Aayog estimate that India would require minimum of 20 gigafactory scale battery manufacturing plants, collectively producing approximately 800 GWh of batteries per year by 2030 to support 100% EV sales across all types of PVs.
- Given that the criticality of battery and scope of differentiation it offers, we expect OEMs to manufacture EV batteries in-house. In this case, localizing cells would be a more relevant opportunity for LAB battery manufactures, though there are no synergies or competitive advantage which LAB players enjoy.
- However, foray into cell manufacturing will require a) sourcing of relevant technology, b) significant investments, c) high gestation period (2-3 years) for setting-up plant of gigafactory scale and d) ability to bear losses till adequate scale is achieved.
- Assuming we attain 2030 electrification targets set by NITI Aayog (40% of all private vehicle sales to be EV, 100% of all intra-city public vehicles to be EV), Li-ion batteries would be ~USD42b opportunity (9x of Automotive LAB opportunity). Based on this, opportunity on cell manufacturing would be ~USD15b.
- Both AMRJ and EXID are evaluating this opportunity in Li-ion battery manufacturing, though they are yet to finalize their strategy for the same.
- Exide recently entered in a JV with Chaowei Power (China) for manufacturing of Li-ion batteries. Also, as per media articles, it is also exploring sourcing of technology from German company and IIT Chennai.
- Similarly, AMRJ has option to source Li-ion technology from its partner Johnson Control (will have to enter into separate agreement) as well as source it from any other player.

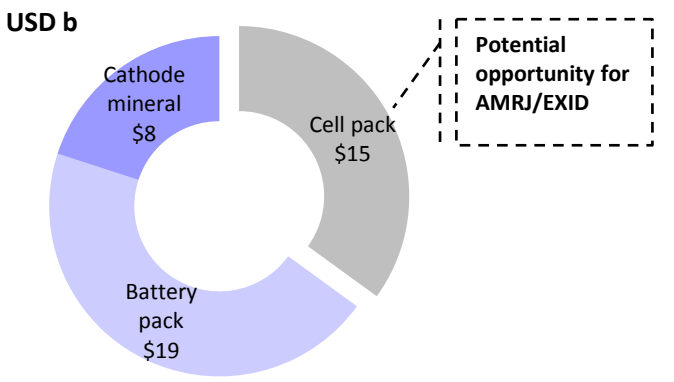
"Besides the alloy development we are also considering the alternative chemistries. The work on research, capital costs and partnerships is currently underway. We expect to finalise the technologies and the investment plans in a year or two," **Mr Ramachandra Galla, Chairman, Amara Raja**

Exhibit 22: Automotive Li-ion battery market to be USD42b by 2030 – ~9x automotive LAB market



Source: MOSL

Exhibit 23: Cell pack manufacturing opportunity to be USD15b – potential opportunity for LAB manufacturers



Source: MOSL

Exhibit 24: Sizing li-ion battery market, based on NITI Aayog's estimates for EV penetration

	FY18E	FY20E	FY25E	FY30E
Total Volumes ('000 units)				
2W	22,312	26,506	35,806	41,509
3W	823	924	1,103	1,279
4W	4,183	5,248	8,097	11,897
- of which fleet	335	472	972	1,785
- of which personal	3,849	4,775	7,125	10,113
Buses				
LCVs	51	56	75	96
M&HCVs	47	52	70	89
EV Penetration (%)				
2W		3	20	40
3W		10	30	50
4W				
- of which fleet		1	20	100
- of which personal		0	2	30
Buses				
LCVs		0	10	50
M&HCVs		0	10	50
EV Battery packs (Kwh)				
2W		3	3	3
3W		5	5	5
4W		40	40	40
- of which fleet		40	40	40
- of which personal		40	40	40
Buses				
LCVs		200	200	200
M&HCVs		320	320	320
Battery pack Price (USD/Kwh)	**302**	**262**	**182**	**156**
Li-ion Battery market size (USD b)				
2W		0.6	3.9	7.8
3W		0.1	0.3	0.5
4W		0.0	2.5	30.1
Buses		**0.0**	**0.7**	**3.7**
LCVs		0.0	0.3	1.5
M&HCVs		0.0	0.4	2.2
Total Li-ion Market (USD b)		**0.8**	**7.3**	**42.1**

Source: MOSL

GST to drive consolidation, benefitting AMRJ/EXID

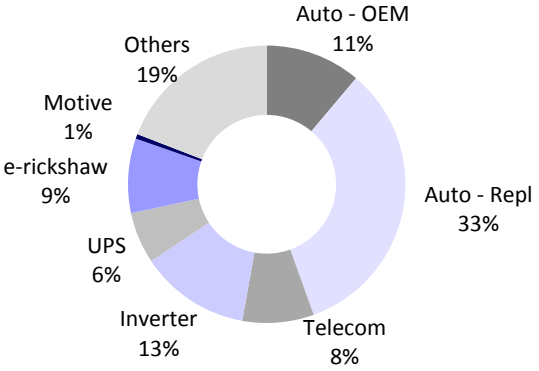
Offering lower priced brands to challenge unorganized segment

- **Our analysis suggests that non-compliant manufacturers (those who evaded excise and VAT) enjoyed price advantage as high as >20%. Post income tax (as non-compliant manufacturers would be evading of income tax as well), this could be 22-26%.**
- **The share of the unorganized segment in the replacement market has been gradually declining, but is still 40-50% according to our industry sources.**
- **While we are yet to see material change in compliance post GST implementation, the cost of doing business is expected to increase gradually for non-compliant players, as the government's focus shifts towards higher compliance.**
- **Our interactions with channel partners suggest that AMRJ and EXID are increasingly promoting competitively-priced entry-level brands with shorter warranty period.**
- **In the battery replacement market, we expect the share of unorganized players to reduce from ~45% to ~27% by FY22. Organized players like AMRJ/EXID should grow at 16.7% CAGR over FY17-22 (v/s ~10% for the industry) in the auto replacement segment.**

Unorganized/semi-organized segment accounts for 40-50% of battery industry…

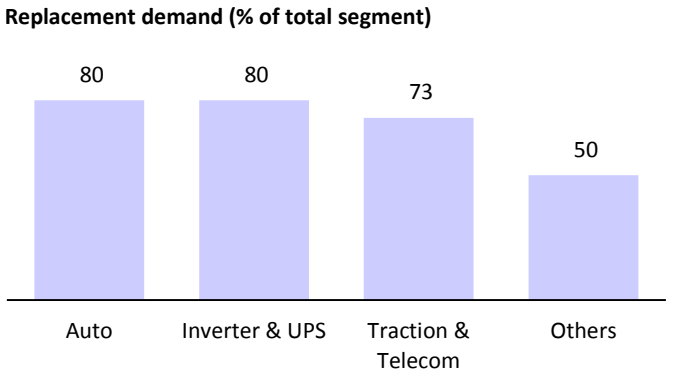
- The Indian lead acid battery industry is ~INR300b (~USD4.7b) in size and has been growing at a CAGR of 10-12%.
- In terms of application, it is equally split between Automotive segment and non-automotive segment.
- The industry is divided into three segments: (a) organized segment (INR150b market controlled by five manufacturers), (b) SME (INR100b-120b), and (c) SSI (INR30b).
- Given high share of demand from replacement demand for segments like automotive, home inverter, UPS, traction etc, share of unorganized/semi-organized players is high at ~50% of the total demand.

Exhibit 25: Indian LAB market of INR300b market is equally split between autos & non-autos segment (%)…



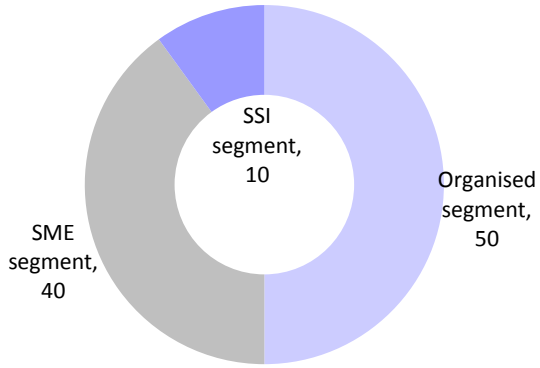
Source: Industry

Exhibit 26: …but dominated by replacement demand in most segments



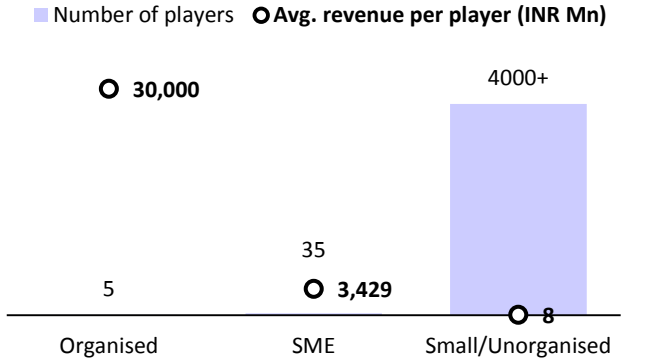
Source: Industry

Exhibit 27: Organized segment has immense opportunity in INR300b market (%)



Source: Industry

Exhibit 28: Industry is fragmented, with 4,000+ manufacturers

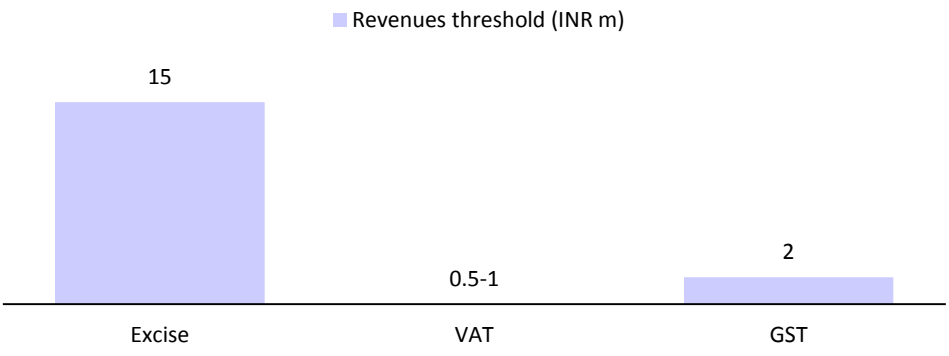


Source: Industry

…GST to bring unorganized segment under tax net…

- Excise-sales tax indirect tax regime had lower compliance due to limited inter-play between excise and sales tax. As a result evasion of sales tax was much easier despite buying excise paid input cost. Revenue threshold for excise was INR15m and for sales tax was INR0.5-1m for VAT.
- Though GST has revenue threshold of INR2m, unlike earlier regime, it captures entire value-chain in GST net thereby improving compliance.
- Considering most of the in-puts for LAB are largely supplied by the organized segment, it would be difficult for smaller/un-organized players to evade GST.
- This will bring number of small/un-organized players under the tax net, resulting in decline in price competitiveness of the small/ unorganized manufacturers.
- Our analysis suggests that non-compliant manufacturers (those who evaded excise and VAT) enjoyed price advantage as high as >20%, while post income tax (as non-compliance at indirect tax would mean evasion of income tax as well) the same can range from 22-26%.

Exhibit 29: Widening revenue threshold under GST to benefit organized players



Source: Industry

Exhibit 30: Indicative price advantage to small/unorganized manufacturers

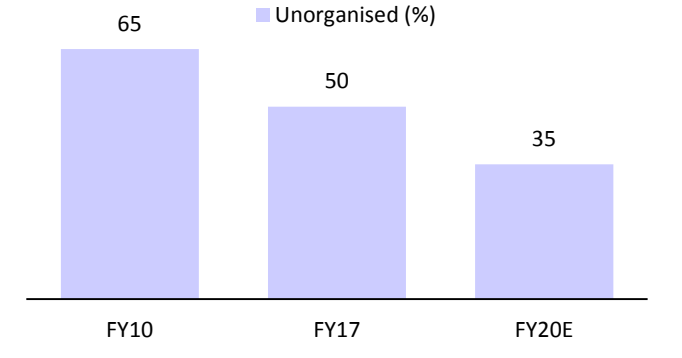
	Non-compliant	Partially compliant	Fully compliant (pre GST)	Fully compliant (post GST)
Ex-factory price (INR)	100	100	100	100
Excise @12.5%	0	0	12.5	0
Other cost	5	5	5	5
	105	105	117.5	105
Dealer Margin@13%	14	14	15	14
	119	119	133	119
VAT@12.5%	119	134	150	0
GST@28%	0	0	0	152
Price advantage for non-compliant players (%)	**21**	**11**		

Source: Company

…share of unorganized segment to recede gradually

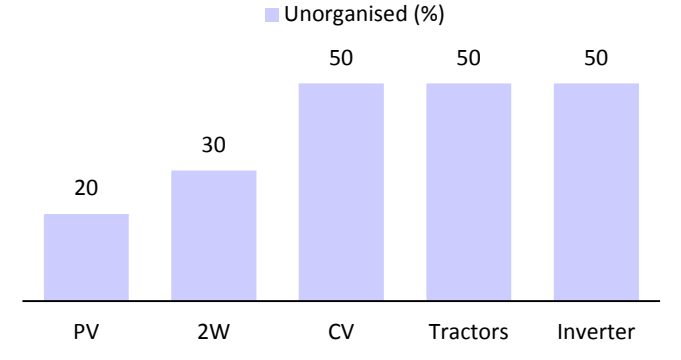
- The share of the unorganized segment in the replacement market has been gradually declining, but is still 40-50%.
- Based on our interactions with industry experts and channel partners, organized players dominate the PV and 2W segments, with 70-80% share.
- The share of unorganized/small organized players in the CV, tractors and home inverter segments is higher at 50-60%.
- While we are yet to see material change in compliance post GST implementation, cost of doing business is expected to increase for non-compliant players gradually as focus of the government shifts towards higher compliance.

Exhibit 31: Unorganized segment share to recede gradually



Source: Industry

Exhibit 32: Share of unorganized segment in tractors and CV segments as high as 50%



Source: Industry

Organized sources of key inputs to drive higher compliance under GST era

- To understand likely indirect tax evasion by the unorganized segment, we have analyzed LAB supply chain to understand areas of evasion and possibility of plugging those loop-holes under GST.
- Lead, lead separators, sulfuric acid and plastic containers are the key components of LAB.
- Earlier, unorganized players could stay out of tax net by sourcing recycled lead/plastic, separator from unorganized channel and despite buying acid from organized channel (forgoing input tax credit).

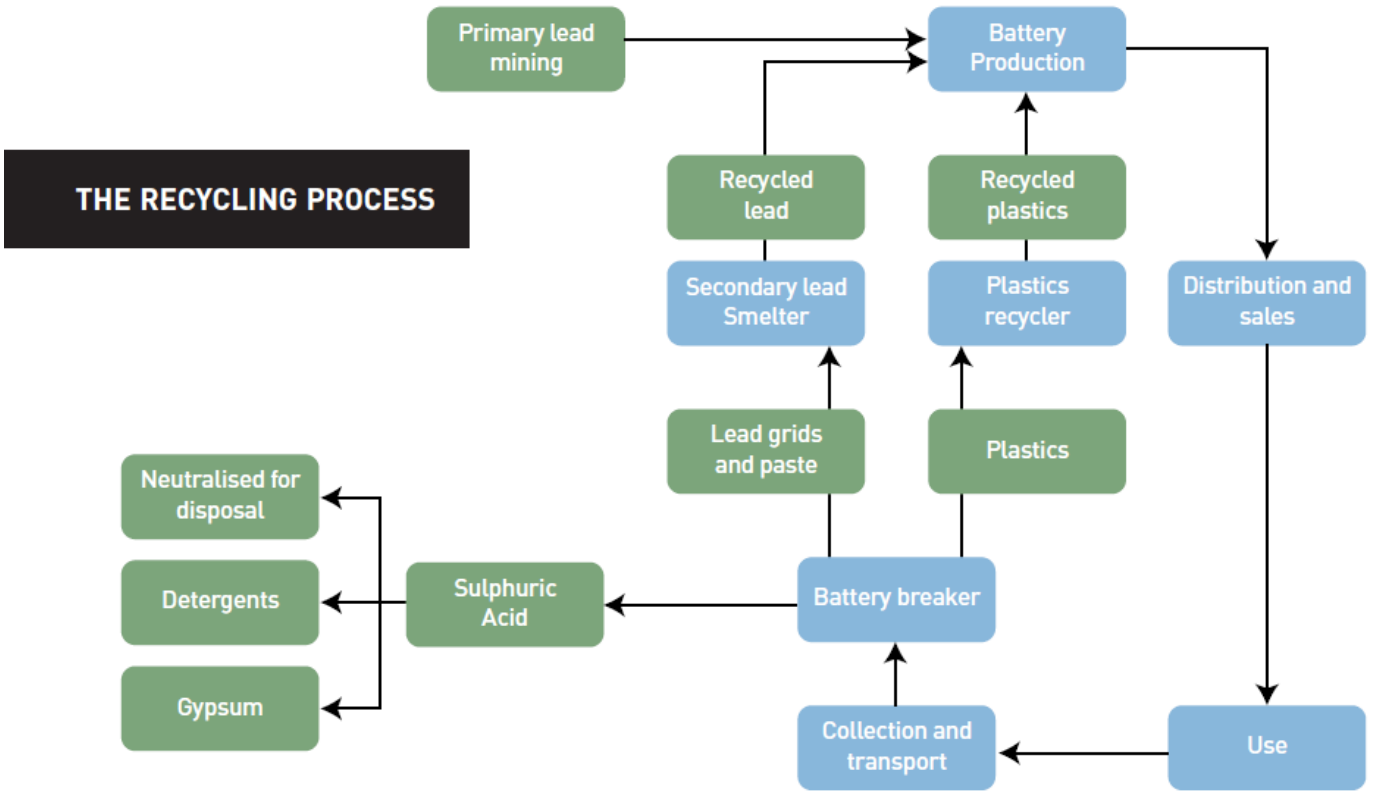
- Under GST, given scrap batteries would also be taxed (at 18% GST v/s 28% for new batteries), large part of recycled lead would also be captured in the tax net. With ability to track movement of key inputs, we see possibility of higher tax compliance under GST regime.

Exhibit 33: Analysis of supply chain for lead-acid batteries

Key raw material	Key suppliers	Remark
Lead	Hindustan Zinc	~7% of demand
	Imports	~20% of demand
	Lead smelters such as Gravita India, Nile Ltd, Tirupati Ltd etc	+200 local players
Separators	Daramic	Though Industry is fragmented, Daramic enjoys lion's share of separators
	Associated battery products	
	Microporous	
	Entek	
Containers	Manika Moulding	Industry is fragmented with 100+ players
	Anmol Plastics	
Sulfuric Acid	Dharamshi Morarjee Chemicals	Highly fragmented industry, but largely organized. Sulfuric acid from used batteries can't be reused by unorganized battery.
	Bodal Chemicals	
	Aarti Industries	
	Tata Chemicals	

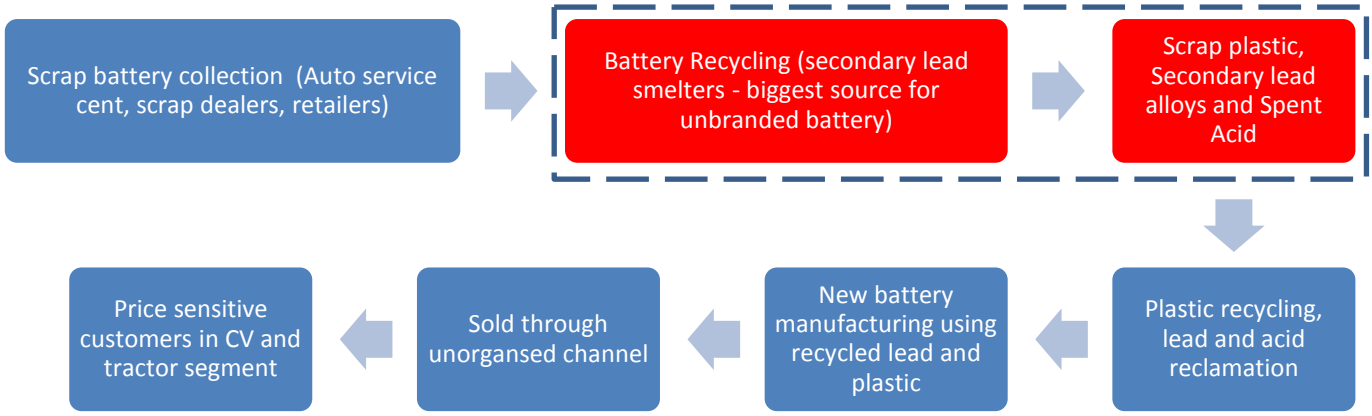
Source: Industry MOSL

Exhibit 34: Recycled battery - major source giving access to recycled lead & plastics to unorganized battery manufacturers



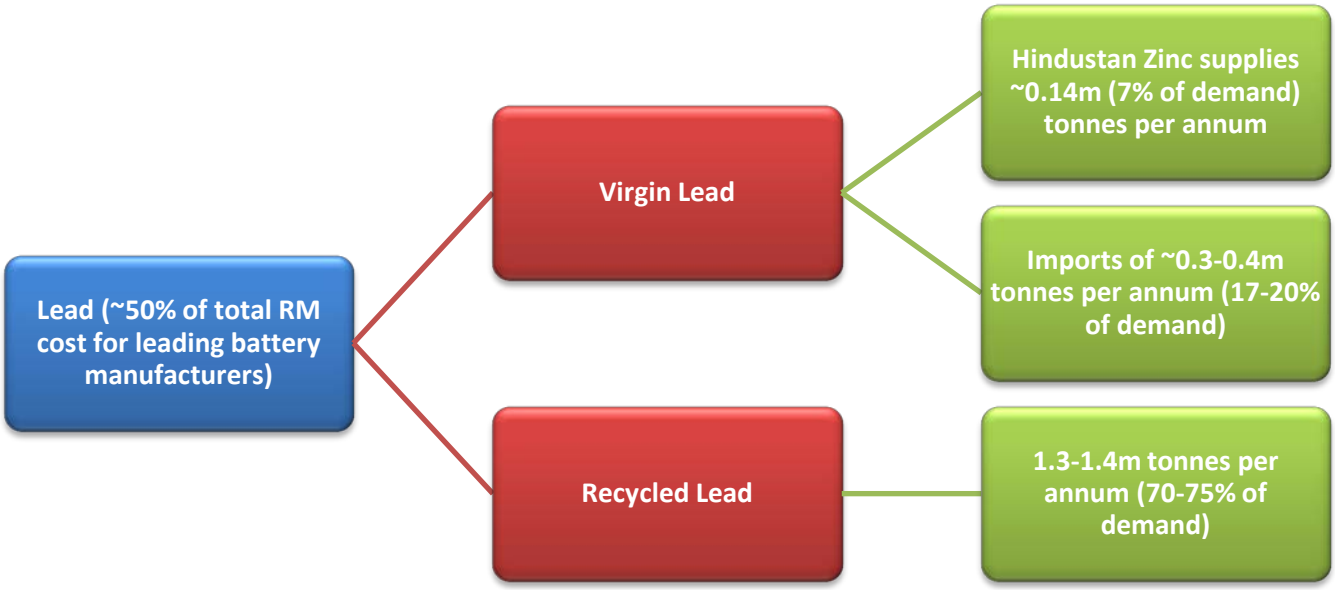
Source: Industry

Exhibit 35: Major source giving access to cheap components to unorganized battery manufacturers



Source: Industry

Exhibit 36: Lead source flow chart



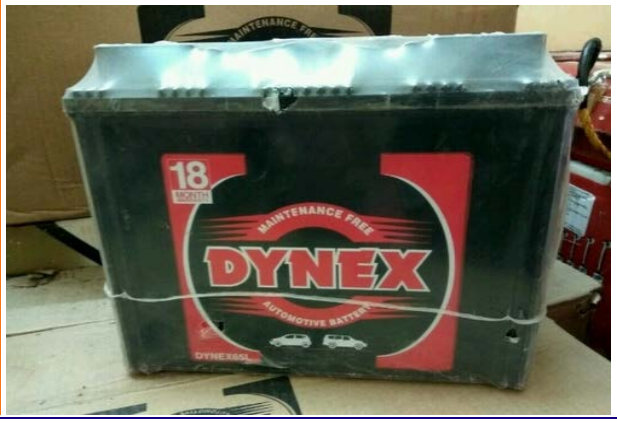
Source: Industry

Exide is looking to sell at least one million Dynex batteries in the current financial year

What large organized players are doing to take on smaller players?

- Our interactions with channel partners suggest that both AMRJ and EXID are increasingly promoting entry level brands at competitive pricing and shorter warranty period.
- EXID is offering brands such as *Dynex* and *SF Sonic* with limited warranty period and lower price to compete against local brands.
- AMRJ is aggressively targeting expansion and distribution of its *powerZONE* brand in metropolitan/tier-I cities to compete against local brands/products.
- Expanding distribution network in the semi-urban and rural markets would help AMRJ and EXID to gain market share from unorganized/local brands.

Exhibit 37: PowerZone and Dynex are lower-tier brands from AMRJ and EXID, targeted at the value segment



Source: Industry

Exhibit 38: Price comparison across brands – 35AH petrol for 4W

Category	Ampere	Type	Brand	Price	Warranty
Exide	**35**	**EQIP35L**	**Exide Eqip**	**5,997**	**72 months**
	35	MT35L	Exide Matrix	5,712	60 months
	35	MI35L	Exide Mileage	4,884	48 months
	35	EZ35L	Exide Ezzy	4,071	36 months
	35	EXLC35L	Exide Little Champ	3,741	24 months
	35	GOLD35L	Exide Gold	3,980	18 months
Amaron	35	50B20R	Amaron Pro	5,310	60 months
	35	42B20R	Amaron Flo	4,716	48 months
	35	38B20R	Amaron Go	4,284	36 months
	35	BL400RMF	Amaron Black	3,753	18 months
	35	FR400RMF	Amaron Fresh	3,504	12 months
Powerzone	35	PZ3500R	Amararaja Powerzone	3,368	18 months
	35	PZ350MF	Amararaja Powerzone	3,280	12 months
Dynex	35	DMA 44B20L	Exide Dynex Matrix	3,410	18 months
	35	DMX 40B24L	Exide Dynex Max	3,264	12 months
Local brands	35	35AH Petrol	Gowell	3,284	12 months
	35	35AH Petrol	Electra	3,310	12 months
	35	35AH Petrol	E-Mark	3,254	12 months

Source: Industry, MOSL

Shift from unorganized to drive stronger growth for AMRJ/EXID

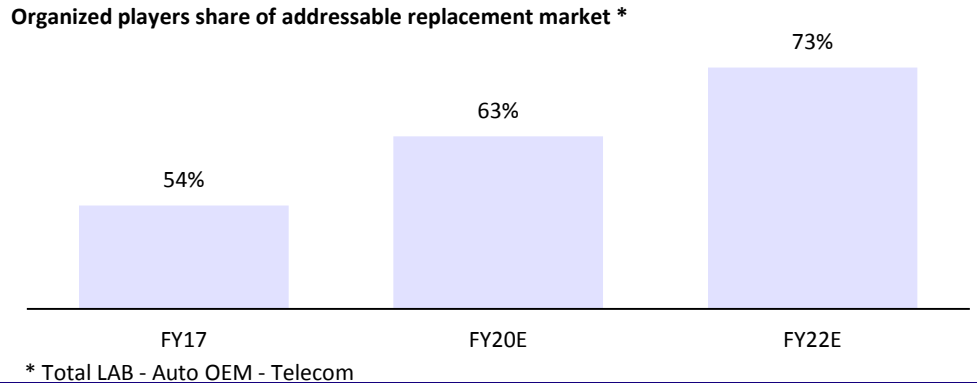
- We estimate auto replacement segment to grow ~10% CAGR over FY17-22E.
- We expect gradual shift from unorganized players to benefit AMRJ/EXID, with share of unorganized in autos reducing from ~40% currently to ~20% by FY22E.
- In overall battery replacement market, we estimate share of unorganized to reduce from ~45% to ~27% by FY22E.
- As a result, we expect organized players like AMRJ/EXID to grow faster in auto replacement segment at ~16.7% CAGR over FY17-22E (v/s ~10% for the industry).

Exhibit 39: Shift from unorganized to drive organized player growth to ~16.7% CAGR

INR b	FY17E	FY20E	FY22E	CAGR (FY17-22E)
Total Auto Replacement Market	**100**	**135.3**	**162.2**	**10.1**
Organized	60	94.7	129.7	16.7
Unorganized	40	40.6	32.4	-4.1
Share (%)				
Organized	60	70	80	
Unorganized	40	30	20	

Source: MOSL

Exhibit 40: Organized players to gain share in the addressable replacement market *



* Total LAB - Auto OEM - Telecom

Source: MOSL

Auto replacement offers secular profitable growth

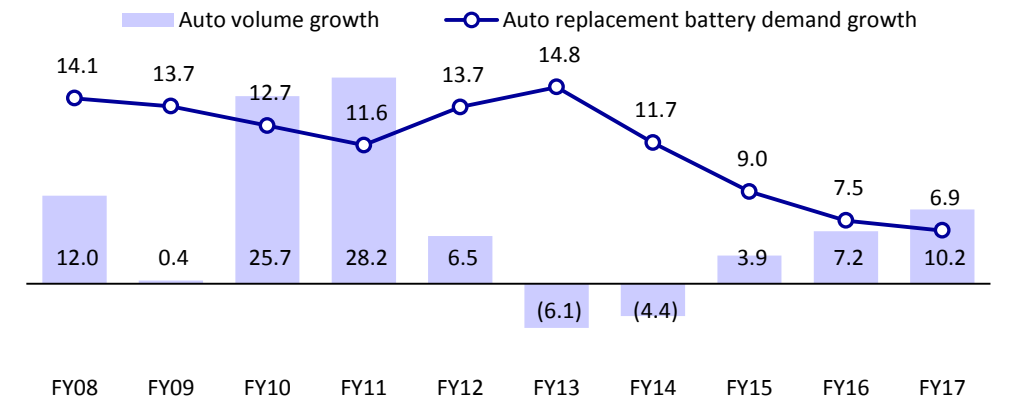
AMRJ/EXID to grow faster on share gain from unorganized players

- **The automotive replacement battery segment offers a secular and profitable growth opportunity, especially for market leaders like AMRJ/EXID, driven by (a) increasing penetration of automobiles driving expansion in automobile population, and (b) GST-led consolidation.**
- **The auto replacement segment enjoys the highest profitability due to (a) B2C nature of the business, (b) high pricing power with diffused customer base, and (c) low competitive intensity.**
- **In FY17, the unorganized segment is estimated to account for 35-40% of the automobile battery replacement market, with over 50% share in CVs and tractors. In the replacement market, AMRJ and EXID have been able to gain substantial market share by (a) launching entry-level products, (b) widening the distribution network, (c) increasing marketing initiatives, and (d) improving service levels.**
- **AMRJ and EXID should outperform the industry, with revenue CAGR of 16-17% (on the back of ~10% industry growth), driven by market share gains from unorganized players. This is based on the expectation that the share of unorganized players would decline from ~40% in FY17 to ~20% by FY22.**

Replacement segment offers secular & profitable growth opportunity

- Automotive replacement battery segment offers secular and profitable growth opportunity, especially for market leaders like AMRJ/EXID.
- Auto replacement segment enjoys highest profitability in the battery industry due to a) B2C nature of business, b) high pricing power with diffused customer base, c) low competitive intensity.
- New vehicle volume grew at a CAGR of 9.7% over FY08-17. This augurs well for demand in the replacement market, which is driven by factors such as number of vehicles in use, average battery life and average age of vehicles.
- An automobile battery's life of 3-3.5 years translates into linear replacement demand from the existing vehicle population.
- Considering strong structural growth story of Indian automotive industry, we believe LAB players are very good proxy to play this growth. We estimate automotive population to improve at ~8.7% CAGR over FY17-22E.

Exhibit 41: We estimate 8.8% CAGR in auto replacement battery revenue over FY13-17 v/s auto sales volume CAGR of 4%

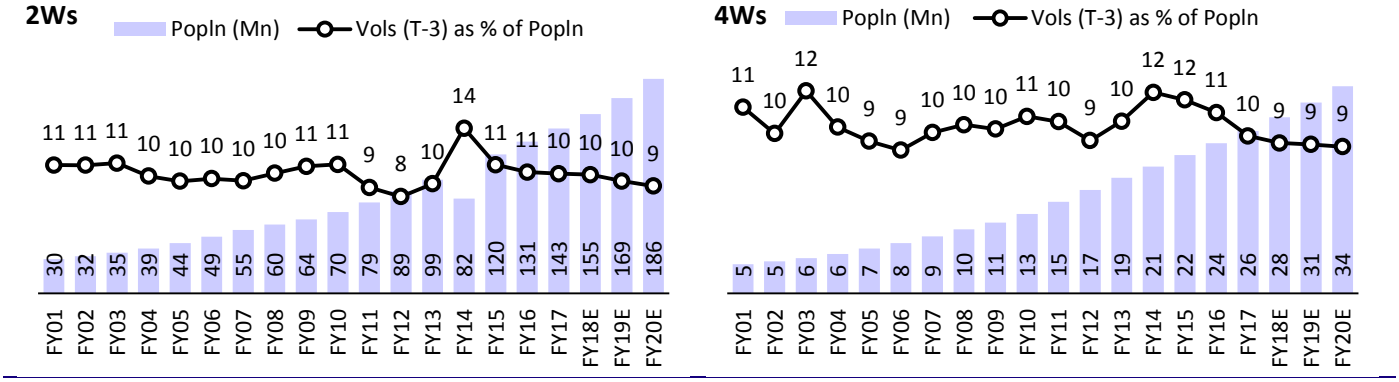


Source: SIAM, MOSL

Auto replacement segment revenues to grow at 10% CAGR over FY17-22

- As per our estimates, the replacement segment contributed 65-70% of auto segment revenues for AMRJ and EXID in FY17.
- We believe the tepid growth in auto OEM volume at 4.3% CAGR over FY14-17 (PV volume grew at 7% CAGR) would have limited impact over next couple of years, as new vehicles constitute only ~10% of the total replacement population.
- We expect auto replacement segment revenue for the battery industry to grow at 10% CAGR over FY17-22E.

Exhibit 42: Slowdown during FY14-17 in 2W and 4W OEM volumes to have marginal impact on replacement population



Source: SIAM, MOSL

Exhibit 43: Auto replacement segment to grow ~10% CAGR over FY17-22E

	FY17			FY22E			CAGR (%)
	Population ('000 units)	Avg. Price (INR/LAB)	Size (INR b)	Population ('000 units)	Avg. Price (INR/LAB)	Size (INR b)	FY17-22E
2W	142,746	833	39.6	221,454	901	66.5	10.9
3Ws	6,565	2363	5.2	8,206	2558	7.0	6.2
PVs	26,286	3370	29.5	39,721	3648	48.3	10.3
LCVs	3,728	3093	3.8	4,777	3348	5.3	6.8
M&HCVs	4,332	8754	12.6	6,662	9476	21.0	10.7
Tractors	5,118	5423	9.3	7,124	5871	13.9	8.5
Total Replacement Market INR Bn			**100**			**162.2**	**10.1**

Source: MOSL

AMRJ and EXID to gain market share from unorganized segment

- In FY17, the unorganized segment is estimated to account for 35-40% of the automobile battery replacement market, with over 50% share in CVs and tractor segment.
- The replacement market is highly fragmented, especially for commercial vehicles and tractors. Unorganized manufacturers are also strong players in cost conscious rural markets.
- In the replacement market, AMRJ and EXID have been able to gain substantial market share through (a) launching entry level products, (b) widened distribution network, (c) increased marketing initiatives and (d) improved service levels.
- AMRJ and EXID should outperform the industry, with revenue CAGR of 16-17%, driven by market share gains from the unorganized players. This is based on

expectation of share of unorganized players falling from ~40% in FY17 to ~20% by FY22E.

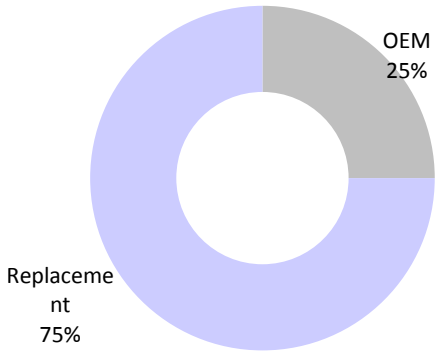
- Further, AMRJ and EXID's ability to pass on lead inflation through price hikes also offers value growth opportunity during the period.

Exhibit 44: Shift from unorganized to drive organized player growth to ~16.7% CAGR

INR b	FY17E	FY20E	FY22E	CAGR (FY17-22E)
Total Auto Replacement Market	**100**	**135.3**	**162.2**	**10.1**
Organized	60	94.7	129.7	16.7
Unorganized	40	40.6	32.4	-4.1
Share (%)				
Organized	60	70	80	
Unorganized	40	30	20	

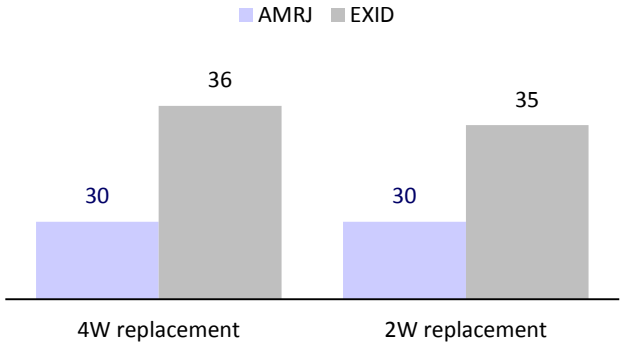
Source: MOSL

Exhibit 45: Automotive battery segment mix



Source: Industry, MOSL

Exhibit 46: AMRJ/EXID control 2/3rd of the 4W and 2W replacement market



Source: Industry, MOSL

Auto OEM: Auto volume recovery to drive growth

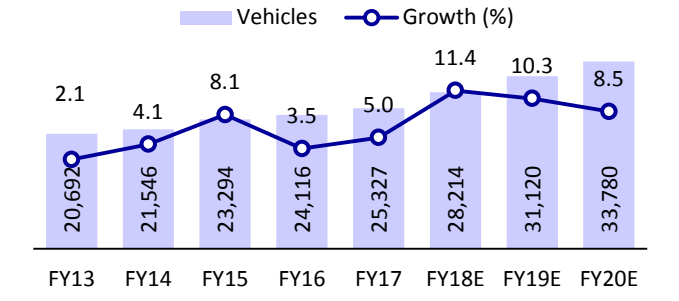
Stronger growth in CVs and PVs could drive faster growth for OEM segment

- **Auto volumes are on the recovery path since FY18, after tepid CAGR of ~4.5% over FY12-17. We expect 9.5% CAGR in automobile industry volumes over FY17-22.**
- **Recovery in auto OEM volumes, which contribute ~30% to the automotive battery segment (~15% to total revenues), is likely to significantly benefit AMRJ and EXID, as between them they enjoy over 90% share of the auto OEM segment.**
- **We expect battery demand from the auto OEM segment to also recover and grow at a CAGR of 10.5% over FY17-20.**

OEM on recovery path; to aid battery demand from this segment

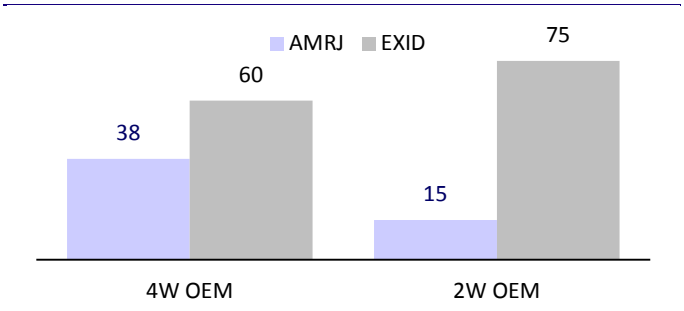
- Auto volumes are on recovery path since FY18, after tepid growth of ~4.5% CAGR over FY12-17.
- Auto industry is back on growth path after series of regulatory action impacting demand since 3QFY17 (in form of demonetization, confusion over transition to BSIV, GST implementation).
- We expect automobile industry volume to grow at a CAGR of 10.2% over FY17-20E.

Exhibit 47: Expect 10.2% CAGR in industry volume over FY17-20



Source: SIAM, MOSL

Exhibit 48: EXID continues to dominate OEM market



Source: Company, MOSL

OEM segment revenues to grow at 10.5% CAGR over FY17-22E

- Volume recovery in the auto OEM volumes, which contributes ~30% to automotive battery segment (~15% to total revenues), is likely to significantly benefit AMRJ and EXID, as between them they enjoy over 90% share of the auto OEM segment.
- We expect battery demand from the auto OEM segment to also recover and grow at a CAGR of 10.5% over FY17-20.
- Faster growth in PVs and CVs along with pass through of lead price inflation with a lag could further drive growth in this segment.

Exhibit 49: Auto OEM segment revenues to grow 10.5% CAGR (FY17-22E)

	FY17			FY22E			
	Vols ('000 units)	Avg Price (INR/LAB)	Size (INR b)	Vols ('000 units)	Avg Price (INR/LAB)	Size (INR b)	CAGR (%)
2W	19,921	708	14.1	31,260	740	23.1	10.4
3Ws	784	2009	1.6	1,009	2101	2.1	6.1
PVs	3,803	2865	10.9	6,320	2996	18.9	11.7
LCVs	473	2629	1.2	768	2749	2.1	11.2
M&HCVs	346	7441	2.6	454	7780	3.5	6.5
Tractors	661	4610	3.0	1,026	4820	4.9	10.2
Total			**33.4**			**54.8**	**10.4**

Source: SIAM, MOSL

E-rickshaw, Motive power, Solar: New avenues…

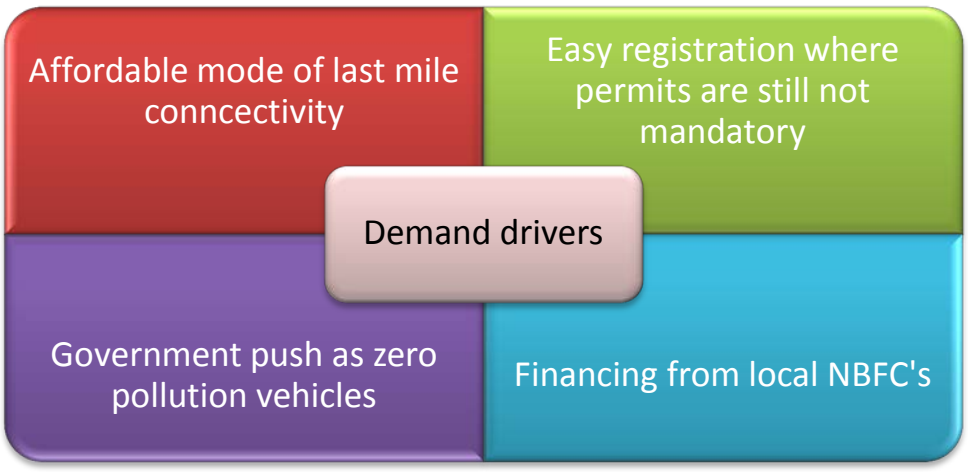
…can drive growth in industrial sector, despite weak inverter segment

- **E-rickshaw is an exciting opportunity for LAB players, as one e-rickshaw has a pack of four big lead-acid batteries, with a replacement cycle of 6-9 months. The e-rickshaw battery segment is estimated to grow at ~16% CAGR over FY17-20 to ~INR41b.**
- **Both AMRJ and EXID have been late entrants in this segment. However, both these players are now heavily focused on this fast growing and lucrative segment. Our interactions with AMRJ and EXID's channel partners indicate that both are aggressively promoting their brands to tap a large share from local battery manufacturers. Further, EXID and AMRJ are also offering high warranty period products (up to 12 months warranty against the standard 6 months) in this price-conscious segment.**
- **Motive power accounted for ~34% of the global industrial battery market in 2016 as against ~1% in India. The GST-led consolidation of warehouses should boost the demand for forklifts, pallet trucks, stackers, order pickers, reach trucks, etc. Assuming motive power contributes ~15% to the industrial segment by FY22, this segment offers an opportunity of INR25b-30b as against <INR2b currently.**

E-rickshaw market has come to the fore; expect CAGR of 15-20% (FY17-20E)

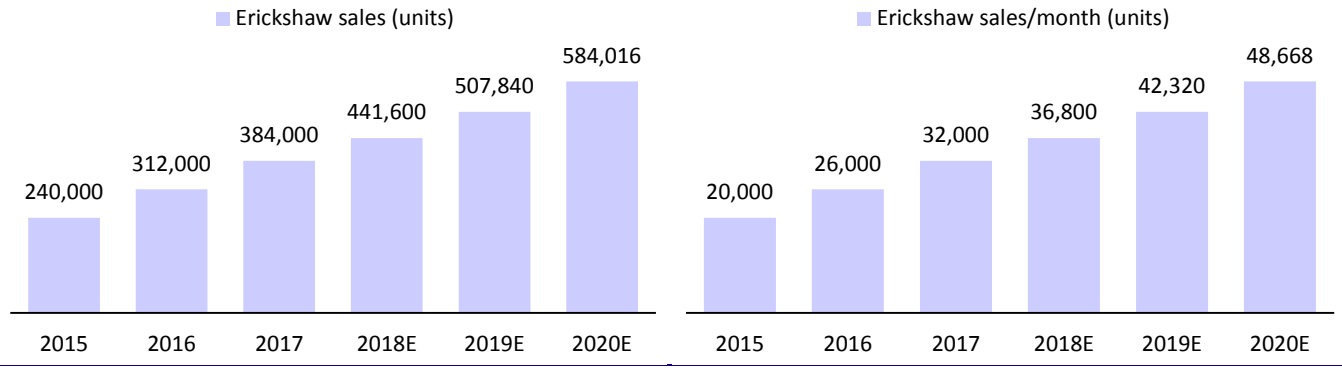
- Despite making an entry in India only a few years ago, with imports from China, electric three-wheelers have been gaining significant traction in tier-2 cities as a replacement of cycle rickshaw used for last mile connectivity.
- E-rickshaw benefits from a) no permit requirement (unlike auto rickshaw), b) subsidies from the state government due to zero tail-pipe emissions and c) low operating cost.
- E-rickshaw sales are estimated at 30k-35k units per month, and growing rapidly with estimated growth of 15-20% CAGR over FY17-20E. Currently, there is population of 1-1.3m e-rickshaw.
- Currently, unorganized and small organized players account for ~85% of e-rickshaw production. However, organized OEMs (like M&M, Lohia Auto, Kinetic group etc) are now entering this fast growing segment.
- These manufacturers currently install lead acid batteries imported from China or sourced from local manufacturers, which is priced cheaper by INR1k-1.5k.

Exhibit 50: Factors driving demand for e-rickshaws



Source: Industry

Exhibit 51: E-rickshaw sales expected to grow at a CAGR of 15-20% over FY17-20



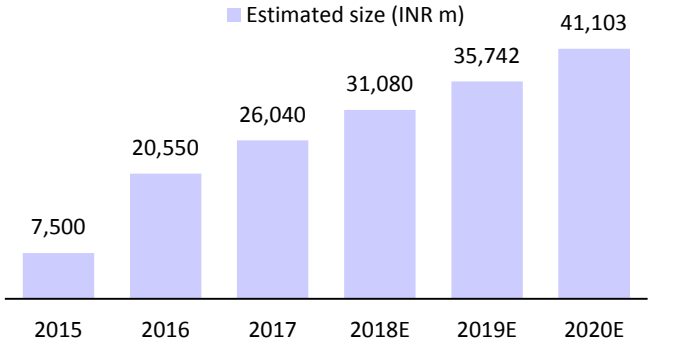
Source: Industry

"It's such an abusive segment that each battery lasts 9-12 months and there are three replacement cycles. So one e-rickshaw is 30 times that of a car. This market will erupt," **Mr Gautam Chatterjee, MD, Exide Industries**

E-rickshaw batteries segment estimated at ~INR31b and growing fast

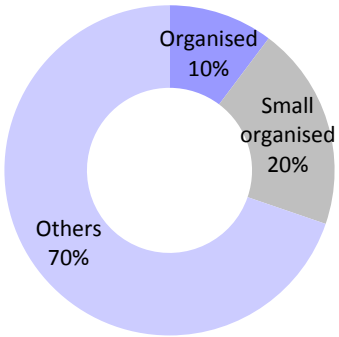
- E-rickshaw is very exciting opportunity for LAB players as one e-rickshaw has a pack of 4 big lead acid batteries.
- Unlike normal SLI application, LAB is used for traction in e-rickshaws with driving range of upto 80Kms per charge. This results in very high drain of 80%, resulting in short life of 6-9 months.
- With life of e-rickshaw at ~2 years, it has 3 replacement cycles. Each e-rickshaw battery pack (consisting of 4 LAB batteries) cost INR20-28k.
- This implies e-rickshaw battery market size of ~INR31b in FY18E, which should grow to ~INR41b by FY20E (~16% CAGR).
- This segment is currently dominated by regional and unorganized players.

Exhibit 52: E-rickshaw battery market to grow at 16.4% CAGR over FY17-20



Source: Industry

Exhibit 53: Estimates of market share in e-rickshaw battery segment



Source: Industry

Exhibit 54: Battery revenue opportunity from e-rickshaw segment – current and potential by FY20

Battery opportunity	2015E	2016E	2017E	2018E	2019E	2020E	CAGR (FY17-20E)
Erickshaw sales (units)	240,000	312,000	384,000	441,600	507,840	584,016	15.0
OE (INR m)	4,800	6,240	7,680	8,832	10,157	11,680	15.0
Replacement (INR m)	2,700	14,310	18,360	22,248	25,585	29,423	17.0
Estimated size (INR m)	7,500	20,550	26,040	31,080	35,742	41,103	16.4

Source: MOSL, Company

E-rickshaw batteries by EXID and SF

Source: Industry

EXID and AMRJ late entrants; focusing big on the segment

- Both AMRJ and EXID have been late entrants in this segment due to a) high share of unorganized players in e-rickshaws and b) sudden rise in this segment. This segment would be contributing <5% of revenues for these players.
- However, both these players are heavily focused on this fast growing and lucrative segment.
- Entry of organized OEMs would help LAB players like AMRJ and EXID to gain share of OEM e-rickshaw batteries due to existing relationships and established quality standards.
- Our interactions with AMRJ's and EXID's channel partners indicate that both players are aggressively promoting their brands to tap a large share from local battery manufacturers.
- EXID has launched the *E-RiDE* brand, and its associate, SF Sonic Batteries has launched the *Vahak* brand.
- Further, EXID and AMRJ are also offering high warranty period products (upto 12 months warranty, as against standard of 6 months) in this price conscious segment.

Exhibit 55: E-rickshaw battery price comparison – local products cheaper by ~20%

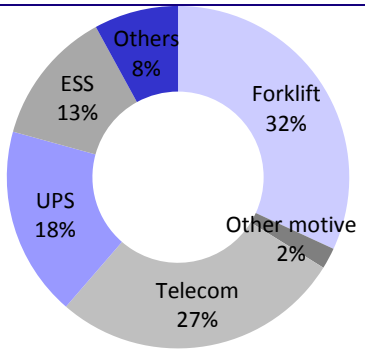
Capacity	Brand	Price	Warranty
100 AH	Exide E-RiDE	6,800	6 months
88 AH	Exide E-RiDE	5,500	6 months
80 AH	SF Sonic Vahak	7,527	6 months
100 AH	SF Sonic Vahak	7,548	6 months
120 AH	SF Sonic Vahak	8,800	6 months
95 AH	Amaron	6,450	6 months
105 AH	Amaron	6,750	6 months
110 AH	J P Minda	5,765	6 months
100 AH	Livguard	6,125	6 months
100 AH	Extra Power	5,100	6 months
100 AH	Telgo	5,200	6 months

Source: Company, MOSL

Motive power: ~34% of world's industrial battery market, but small in India

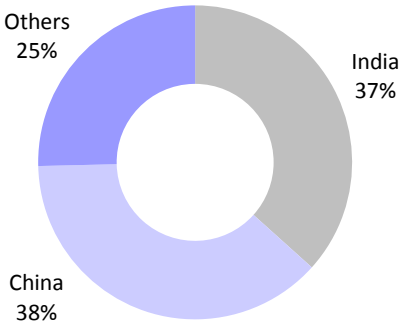
- Motive power batteries provide power for imparting motion to machinery. The battery usage in motive power is miniscule in India compared to the global average. Motive power accounted for ~34% of the global industrial battery market in 2016 as against ~1% in India.
- Although India accounts for ~37% of Asia's reserve power market, its share in the motive power market is still nascent at ~3.5%, indicating significant opportunity going forward.
- Enersys, the world's largest industrial battery manufacturer (market share of ~22%), believes that battery requirement for the motive power segment offers a significant opportunity in developing markets like India and China.

Exhibit 56: Forklifts account for ~32% of the global industrial battery segment



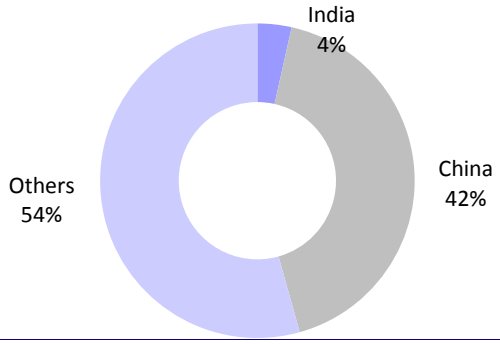
Source: Enersys, MOSL

Exhibit 57: India is sizeable player in Asia's reserve power market …



Source: Enersys, MOSL

Exhibit 58: …but nascent in Asian motive power market

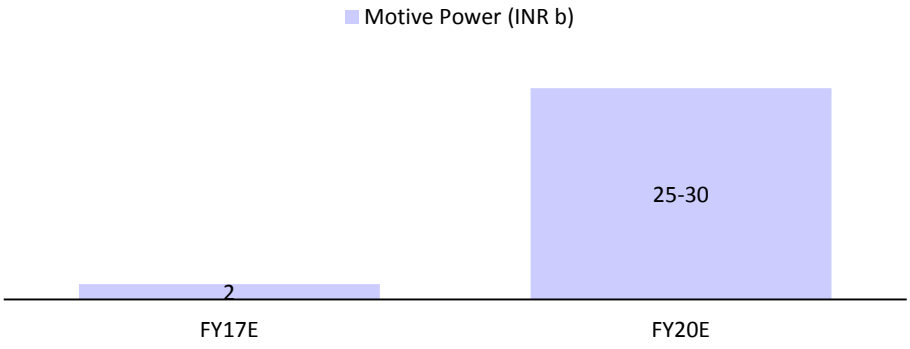


Source: Enersys, MOSL

GST to drive consolidation of warehouses needing automation in material handling

- Warehousing and Material Handling industry in India is still in a nascent stage and carries a potential for an exponential growth.
- With GST in place, uniformity in taxes would curtail the need to build multiple warehouses in different states, in turn leading to consolidation of warehouses.
- This will boost the demand for forklifts, pallet trucks, stackers, order pickers, reach trucks etc.
- Assuming motive power contributes ~15% to the industrial segment by FY22E, this segment offer opportunity of INR25-30b as against <INR2b currently.

Exhibit 59: Motive power can potentially grow to INR25-30b market by FY22E



Source: MOSL

Exhibit 60: Applications that drive demand for motive power batteries

Source: Industry

Industrial segment to stabilize over 6-9 months

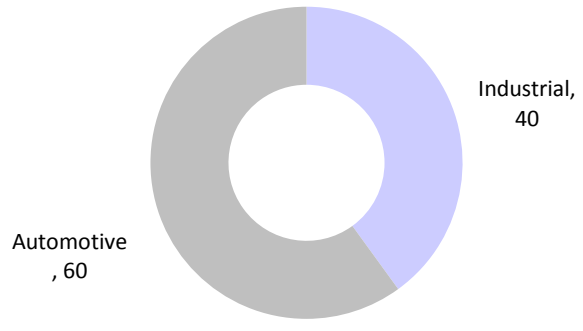
Telecom – low tower additions, lithium-ion threat to moderate OEM sales

- **The telecom tower battery segment has witnessed several challenges in the last 12-18 months, which has not only impacted segment growth but also pricing and competitive positioning. Demand from this segment is expected to recover led by increase in tenancy ratio from 2.3x in FY17 to 2.45x in FY20E. Also, stabilization in competitive intensity can support full pass-through of lead cost inflation. We expect normalcy in the telecom battery segment only by 2HFY19.**
- **Our interactions with industry participants indicate 8-10% CAGR in the UPS market over the past few years and similar growth expectations over the next few years, driven by digitalization, automation, and smart city and security (CCTV) applications.**
- **The conventional industrial segment (ex e-rickshaw, motive power and solar) is likely to stabilize from 2HFY19 and grow from FY20, driven by 8-10% CAGR in UPS, stabilization in telecom segment (from 2HFY19), and continued weakness in inverters. The home inverter segment should also witness a shift from unorganized players (>50%), benefitting AMRJ/EXID.**

Industrial segment to stabilize as growth in UPS off-set weak telecom, inverter segment

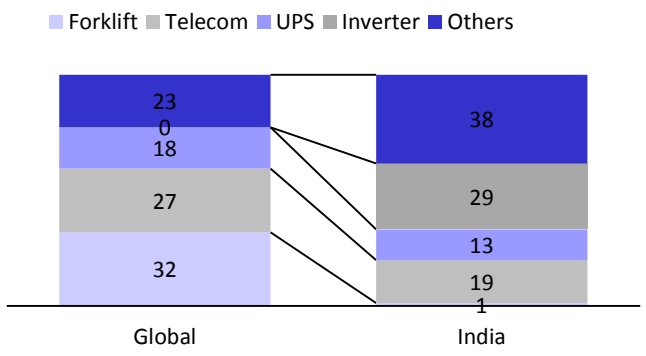
- Telecom, UPS and Inverters are the largest sub-segments in the industrial battery segment, accounting for 45% of the global and 60% of India's demand for industrial batteries.
- In FY17, demand from the industrial segment remained healthy, as increase in demand from UPS, Inverter, solar power and motive power offset the moderation in demand from telecom.
- Currently, AMRJ and EXID together control 50-60% of India's INR150b industrial battery market.
- Conventional industrial segment (ex e-rickshaw, motive power and solar) is estimated to stabilize from 2HFY19 and grow from FY20, driven by 8-10% CAGR growth in UPS, stabilization in Telecom segment (from 2HFY19) and continued weakness in inverters.
- Home inverter segment should also witness shift from unorganized (>50%), benefitting AMRJ/EXID.

Exhibit 61: Industrial segment accounts for 40% of battery industry



Source: Industry

Exhibit 62: Inverter/UPS and Telecom are the largest segments



Source: Industry

Telecom segment: Endured several headwinds in last 12-18 months…

- Telecom tower batteries segment has witnessed several challenges in last 12-18 months, which not only impacted segment growth but also pricing and competitive positioning. This segment was impacted by:
- **Reliance Jio driven pricing pressure and consolidation in the telecom industry**: Since the launch of RJio, the telecom industry witnessed a downward spiral in ARPU, leading to continuous decline in revenue and cashflows of the incumbents. Industry gross revenues have declined 8% YoY in FY18. Further, the IUC cut had only amplified the impact. The next 1-2 years would see extensive capex by incumbents to accommodate high data volume growth and match RJio's data capabilities. We believe the industry will consolidate to 3 players (Bharti, Idea-Vodafone and RJio) over the next 12 months.
- **Decline in new tower additions**: The pace of setting up new towers has significantly slowed down in recent times. Tower additions increased at a CAGR of 3.5% over FY10-16, but the pace has declined to 0.1% CAGR over FY13-16. However, due to expansion of 2G, 3G and internet-enabled services, tenancy grew at a CAGR of 6% over FY10-16 and 3.2% over FY13-16, driving demand for batteries, despite muted tower additions.
- **Competition from lithium-ion powered batteries**: While telecom towers in India have been primarily using DG sets and lead-acid batteries, Reliance Jio opted for lithium-ion batteries. Our interactions with sector experts indicate that ~95% of Reliance Jio's owned towers operate on lithium-powered batteries, which are sourced primarily from China. While lithium-ion batteries are significantly expensive than DG sets and LAB, it offers much compact footprint and hence used by Jio in its pole towers. We don't see widespread switchover to li-ion due to a) improving power availability will reduce the need of back-up power, which doesn't justify high cost li-ion backup power and b) Tier-3 cities and below, shift from DG power would be difficult due to threat from 'diesel mafia' who control diesel supply for DG sets.
- **Increase in competitive intensity in telecom battery segment**: Apart from demand side pressures, this segment also witnessed significant supply side pressures due to increase in competitive intensity from players like Exide, HBL, NED Energy etc. This resulted in high pricing pressure along with limited ability to pass through lead price inflation. This is reflected in market share loss of 8-10pp for the market leader AMRJ to 40% now.

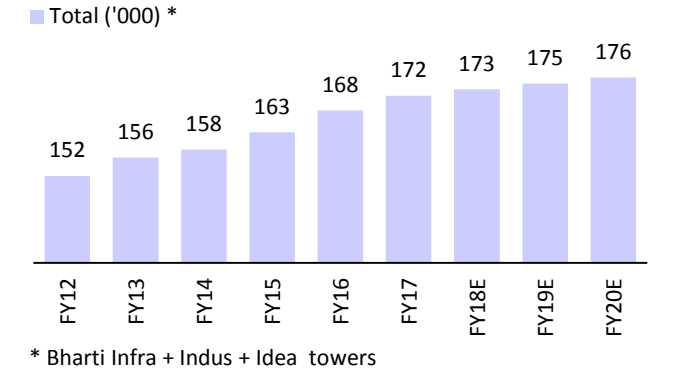
Pole type Reliance Jio tower

Source: Industry

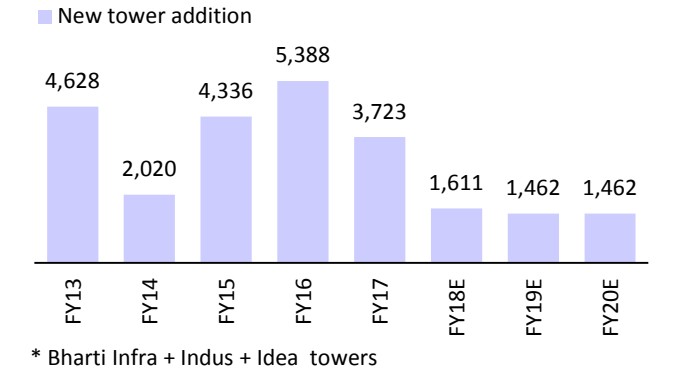
…but demand bottoming out, competition peaking out

- Our telecom sector team estimates ~1% growth in new telecom towers due to on-going consolidation in the telecom industry and focus on investments towards technology.
- With a battery life of about three years, replacement demand is likely to be healthy. Further, the tenancy ratio is also expected to increase from 2.3x in FY17 to 2.45x in FY20E (after stable tenancies in FY18/19), led by expansion of 3G and 4G networks across the country. This would boost demand for new batteries.
- Also, stabilization in competitive intensity can help to full pass-through of lead cost inflation.
- We expect normalcy to restore in telecom battery segment only by 2HFY19.

Exhibit 63: Expect slower pace of new tower addition

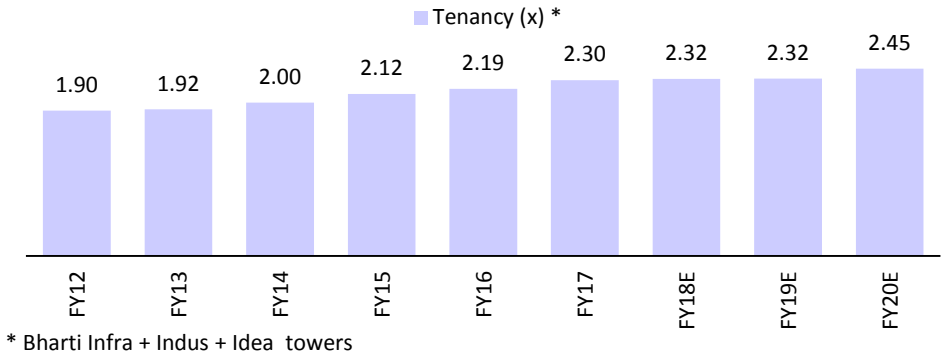


Source: Industry



Source: Industry

Exhibit 64: Gradual increase in tenancy ratio to drive demand for new batteries



Source: MOSL

Tower companies focusing on going green, evaluating new solutions

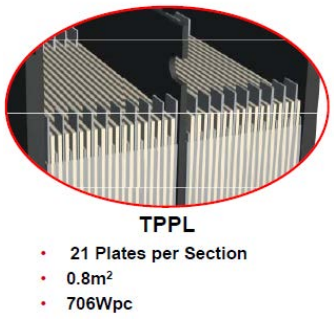
- **Hybrid solution based on Li-ion+LAB:** Considering higher upfront cost of Li-ion, global players have developed hybrid solutions using Li-ion and LAB, thereby reducing capex cost, lowering dependence on DG set and emissions.
- **Next gen Thin Plate Pure Lead (TPPL) battery:** Our interaction with a leading global battery manufacturer indicated that battery manufacturers are considering advanced TPPL batteries to fight increasing adoption of lithium-ion batteries in Telecom. The advanced TPPL almost doubles the energy density and more than double the cycle life compared to the traditional TPPL. Telecom tower operators in India, including Reliance Jio, ~95% of whose towers are on lithium-ion batteries, are in initial stage of considering TPPL.
- Bharti Infratel, India's largest telecom tower company is also considering li-ion and high-end VRLA batteries, and a combination of both (hybrids) to institutionalize its 'Green Towers P7' program, aimed at minimizing dependency on diesel, and thereby, reducing its carbon footprint. As at the end of FY17, ~43% of the company's towers across the network were converted to green towers, which use hybrid battery solutions.

Exhibit 65: Hybrid v/s VRLA

Parameter	Hybrid (Lithium ion + VRLA)	VRLA
Capacity	225Ah Lithium + 600Ah VRLA	1000Ah
Charging current	120 Ampere	150 Ampere
Backup Hours	3hrs with Lithium, 7hrs with VRLA	10 hrs
Charging time	2hrs Lithium, 4hrs VRLA	8hrs VRLA
Life Expectancy	4 years	2 years
DG run	on standby	>2hrs a day

Source: Coslight

Exhibit 66: Advanced TPPL v/s traditional TPPL

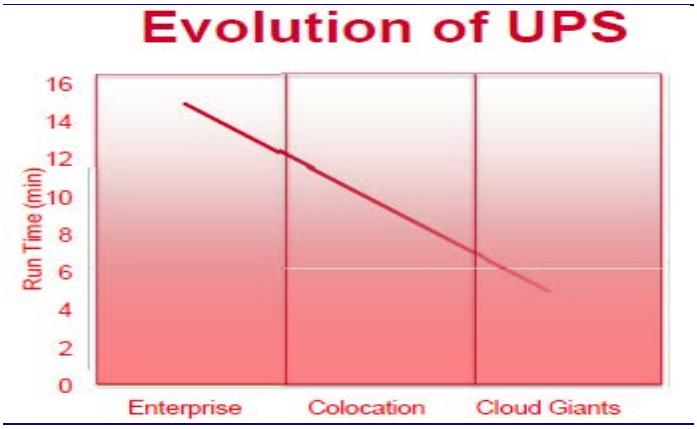
Property	Traditional TPPL	Advanced TPPL
Energy Density	34 Wh/Kg	53 Wh/Kg
Power Density	730 Wh/Kg	1200 Wh/Kg
Cycle Life	300 cycles	780 cycles
Vibration Life	10-30 hrs	620 hrs
Difference		
Price	Li-ion is 3x traditional TPPL	Next Gen TPPL is 1x of traditional TPPL

Source: Enersys

UPS – On secular growth path driven by digitalization

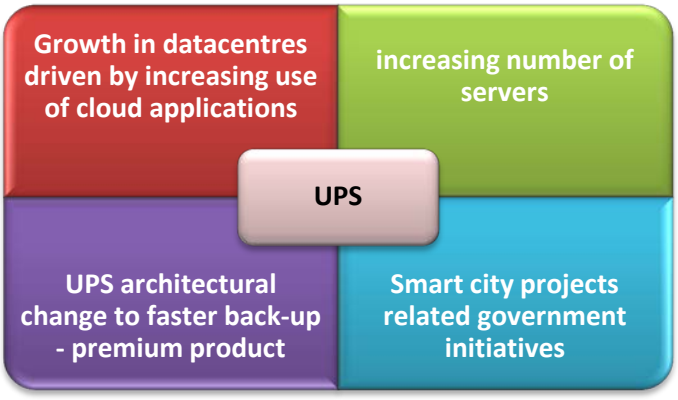
- UPS is third-largest segment in industrial battery application globally and accounted for ~18% of the market in CY16.
- Growth in the UPS segment is traditionally driven by IT hardware business growth (primarily servers), e-commerce, power backups and addition to ATM network of banks.
- New opportunities such as smartphones, social networking platforms, cloud applications and smart city projects have resulted in increased usage of data and need for data centers.
- Our interactions with industry participants indicate 8-10% CAGR in UPS market over the past few years and similar growth expectations over the next few years, driven by digitalization, automation, smart city and security (CCTV) applications.
- As per interactions with industry participants, the size of the battery market for UPS (including home inverter) is INR60b-75b, with estimated average battery life of 3-4 years, providing significant replacement potential. Commercial UPS segment is estimated to be ~INR18b market size.
- EXID and AMRJ together account for ~60% of the commercial UPS market. Other manufacturers account for 25% of the balance, and imports for the rest. AMRJ and EXID are benefiting from declining imports from China.
- 35-40% of UPS battery demand is contributed by the OEM segment and 60% comes from the replacement market.

Exhibit 67: UPS architectural change needs more advanced battery backup



Source: Industry

Exhibit 68: Key growth drivers of UPS/inverter segment in India



Source: Industry

Valuation and view – concerns overplayed

Organized players to grow revenues at 13-14% CAGR over five years

- **We remain positive on the long-term growth prospects of the auto industry and believe the duopolistic battery segment is a good proxy on the same.**
- **We believe concerns over electrification are overdone, with opportunity for LAB players to play a part in the Li-ion battery supply chain.**
- **The weakness in industrial batteries will be partly reversed, as the telecom tower battery segment stabilizes post consolidation in the telecom industry. We see several new/emerging growth avenues in e-rickshaw, motive power and solar applications, which would more than make up for the pressure in the inverter segment.**
- **For the overall LAB industry, we estimate revenue CAGR of ~9% over FY17-22, driven by ~10% growth in the auto and UPS segments, 15% growth in e-rickshaw batteries, and strong traction in nascent motive power batteries.**
- **We expect organized players to gain share at the expense of unorganized players, resulting in 13-14% revenue CAGR for organized players. This would imply organized players' share increasing to ~82% of the total LAB market by FY22 (v/s ~67% in FY17).**
- **Over FY18-20, we expect earnings CAGR of 19%/23% for AMRJ/EXID, driven by revenue CAGR of 15%. In our view, the key revenue drivers are: (a) strong demand visibility in the auto OEM segment, (b) market share gains in the replacement segment from unorganized and small organized players post GST, and (c) emerging opportunities in e-rickshaw, motive power and solar, offsetting pressure in the telecom and inverter segments in industrial batteries.**
- **Over the last couple of years, the operating performance gap between AMRJ and EXID has converged, driven by (a) several new initiatives taken by the new CEO of EXID, and (b) inflation in lead prices (less negative for EXID due to captive smelters). This has partly reflected in EXID significantly outperforming AMRJ over the last two years.**
- **We like both AMRJ and EXID, especially considering that (a) there is little difference between AMRJ and EXID in terms of operating performance, and (b) they are valued attractively relative to their auto component peers.**
- **However, EXID (ex-Insurance) is trading at over 30% discount to AMRJ, which should narrow, considering the convergence of operating performance. We prefer EXID over AMRJ due to relatively cheaper valuations.**

Exhibit 69: LAB Industry revenue model – Organized player to grow 13-14% CAGR on back of ~9% industry growth

(INR b)	Industry			Organized players			Organized (% of total)		
	FY17	FY20E	FY22E	FY17	FY20E	FY22E	FY17	FY20E	FY22E
Auto - OEM	33.4	46.7	54.8	33	47	55	100%	100%	100%
Auto - Repl	100.1	135.3	162.2	60	95	130	60%	70%	80%
Telecom	25.0	27.4	30.2	25	27	30	100%	100%	100%
Inverter	38.5	33.0	29.8	19	21	22	50%	65%	75%
UPS	18.0	24.0	29.0	18	24	29	100%	100%	100%
e-rickshaw	26.0	41.1	51.6	5	12	26	19%	30%	50%
Motive	1.6	13.0	27.5	2	13	28	100%	100%	100%
Others	57.3	70.2	80.4	40	53	64	70%	75%	80%
Total	**300**	**391**	**465**	**202**	**292**	**384**	**67%**	**75%**	**82%**
CAGR (%) over FY17		9.2	9.2		13.0	13.6			

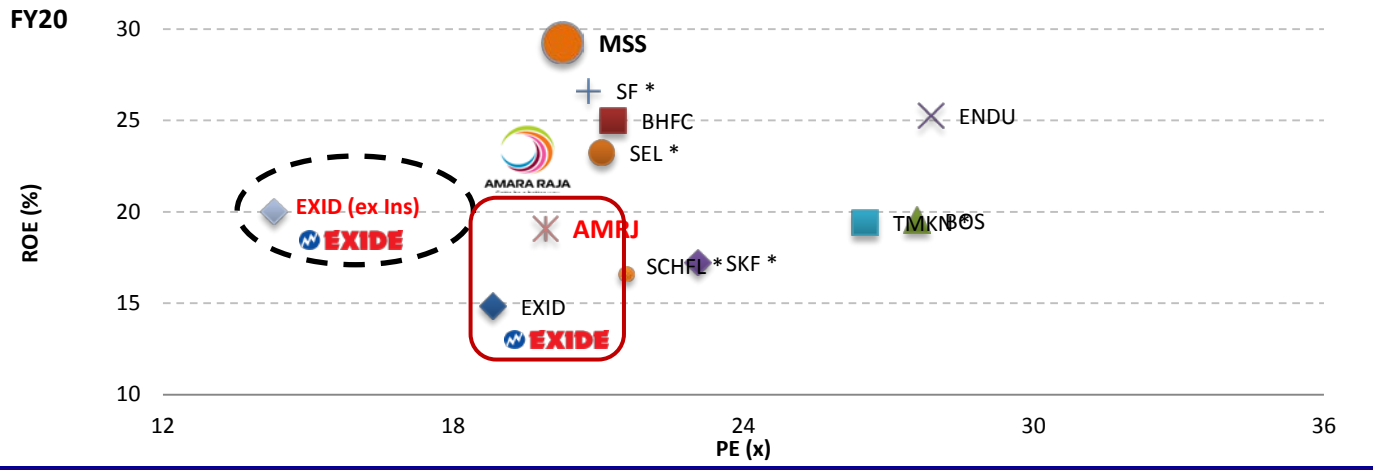
Source: MOSL

Exhibit 70: Key performance indicators - EXID has caught-up with AMRJ in last 2 years

	FY13	FY14	FY15	FY16	FY17
EBITDA Margins (%)					
AMRJ	15.2	16.3	16.7	17.8	16.0
EXID	12.9	13.7	13.3	14.9	14.3
EXID (incl Cap. Smelters)	13.7	13.9	13.4	15.4	14.9
EBIT Margins (%)					
AMRJ	13.0	14.4	13.5	14.8	12.4
EXID	11.0	11.6	11.3	12.6	11.6
EXID (incl Cap. Smelters)	11.7	11.7	11.3	13.0	12.1
RoCE Post Tax (%)					
AMRJ	28.0	28.0	24.2	23.9	19.4
EXID	16.1	13.6	14.0	14.4	14.2
EXID (Ex Insurance)	22.4	20.3	21.2	21.2	19.0
RoIC (%)					
AMRJ	40.6	40.9	29.4	26.4	21.7
EXID	28.5	27.1	27.3	30.1	29.7
P/E (x)			**FY18E**	**FY19E**	**FY20E**
AMRJ			27.7	23.0	19.6
EXID			26.4	21.4	17.5
EXID (Ex Insurance)			22.3	17.6	13.9
P/B (x)					
AMRJ			4.5	3.9	3.3
EXID			3.3	3.0	2.7
EXID (Ex Insurance)			2.8	2.5	2.1

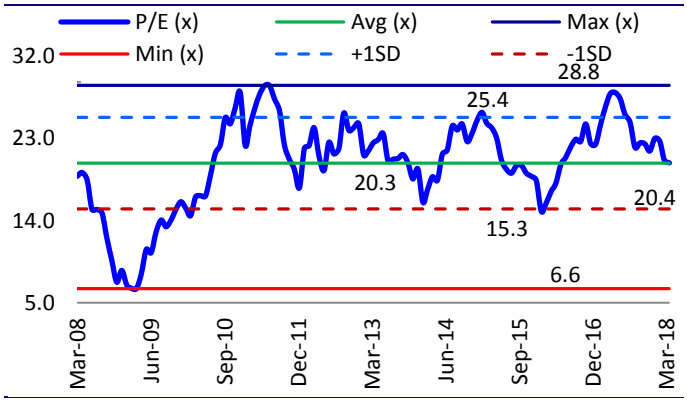
Source: Company, MOSL

Exhibit 71: EXID and AMRJ among the cheapest stocks in the auto component universe



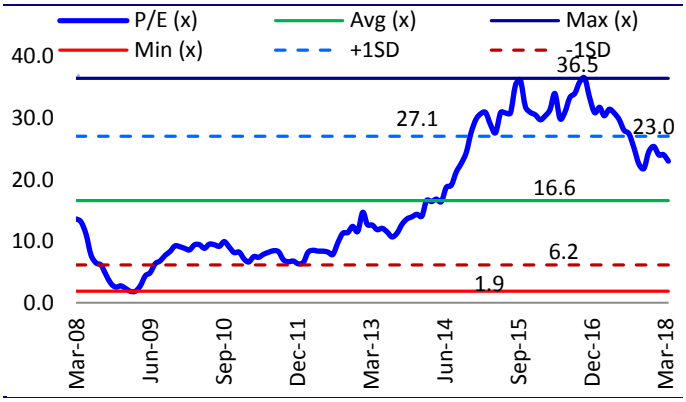
Source: Bloomberg, MOSL

Exhibit 72: EXID trading at par with historical band



Source: Bloomberg, MOSL

Exhibit 73: AMRJ trades significantly below peak valuations



Source: Bloomberg, MOSL

Exhibit 74: Comparative valuations

	EPS CAGR	PE (x)			EV/EBITDA (x)			P/BV (x)			ROE (%)		
	(FY17-20E)	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E	FY18E	FY19E	FY20E
Local Peers													
AMRJ	12.6	27.7	23.0	19.6	14.5	11.7	9.8	4.5	3.9	3.3	17.3	18.0	18.3
EXID	14.3	26.4	21.4	17.5	15.0	12.3	10.2	3.3	3.0	2.7	12.6	14.0	15.3
BHFC	39.1	35.1	26.5	20.1	19.4	15.5	12.4	6.8	5.7	4.7	21.0	23.5	25.5
BOS	15.6	39.0	30.1	24.5	23.3	17.8	14.5	5.7	5.1	4.5	15.2	17.9	19.6
ENDU	29.8	42.7	31.2	23.4	19.1	15.2	12.0	8.2	6.8	5.7	21.0	23.9	26.5
MSS	31.4	37.8	24.4	17.5	13.2	8.9	6.3	6.8	5.7	4.7	19.2	25.4	29.3
Global Peers													
Johnson Control *	L2P	13.0	12.0	10.7	9.4	8.8	8.4	1.7	1.6	1.5	11.6	12.7	11.7
Camel Group *	22.5	18.2	14.6	11.9	13.5	11.4		2.1	1.9		11.9	13.2	15.0
Chaowei Power *	19.1	7.3	6.3	5.2	7.1	6.3	5.4	1.2	1.0	0.9	17.5	17.1	17.8
Dynavolt Renew *	75.2	34.9	17.3	14.4				3.0	2.0	1.6	8.4	10.3	11.9

*Bloomberg Consensus; Source: Bloomberg, MOSL

Companies

BSE Sensex: 32,997 **S&P CNX: 10,124** **March 2018**

Exide Industries

BSE SENSEX	S&P CNX
32,997	10,124

CMP: INR212 **TP: INR 286 (+35%)** **Buy**

Leader making a comeback…

…driven by initiatives at market place, technology and focus on efficiencies

- **Our interactions with channel partners indicate that EXID has recovered a major chunk of the market share it had lost in the automotive replacement segment. This is on the back of price actions and improvement in service offerings.**
- **Being the leader, EXID is well placed to take advantage of OEM demand recovery and replacement demand. Traction in e-rickshaw and aggression in telecom would drive the industrial battery business, offsetting the weak inverter business.**
- **High focus on driving efficiencies in operations through investments in technology and sourcing over 40% of lead requirement from the captive smelter would drive stronger profitability vis-à-vis competition.**
- **We expect EXID's revenue to grow at a CAGR of ~15% over FY18-20, resulting in ~80bp margin expansion and ~23% PAT CAGR. The stock trades at attractive valuations of 21.4x FY19E and 17.5x FY20E EPS. Adjusted for insurance business value (of INR38/44 for FY19/20E), the stock is quite cheap at 17.6x/13.9x FY19/20E EPS.**

Regaining lost ground; leadership intact

Our interactions with channel partners indicate that EXID has recovered lost ground in the replacement segment, aided by (a) improvement in service infrastructure, (b) narrowing the price gap with AMRJ (though EXID still enjoys 5% price premium), (c) technological upgrades (more products using punch grid technology), (d) introduction of HIT dealerships, and (e) brands like *Dynex* targeted at the value segment.

Technology upgrade to provide competitive edge

The company recently started using punched grid technology, which helps to produce more resistant, rigid and longer-life batteries. EXID is developing advanced automotive battery solutions suitable for start-stop and micro hybrid applications. Further, EXID has developed advanced tubular gel-based products for solar and telecom applications. Lastly, Exide has tied-up with Ecoult Energy for manufacturing and distribution of UltraBattery technology in India and South Asia. UltraBattery technology balances the dependable storage capabilities of lead-acid cells with the quick charge acceptance, power discharge, and longevity of an ultracapacitor. This technology has application in telecom tower batteries, renewable energy, hybrid EVs, UPS etc.

Focus on new segments to keep leadership intact

EXID has launched a range of batteries for e-rickshaw applications, both in tubular and flat plate design, to suit different road conditions. It aims to launch products for e-buses and e-vans, too. In the domestic market, EXID is witnessing robust demand for solar batteries. Similarly, recently it renewed its focus on telecom tower batteries and aggressively bided to get new business and drive market share.

Stock Info

Bloomberg	EXID IN
Equity Shares (m)	285.0
52-Week Range (INR)	250 / 193
1, 6, 12 Rel. Per (%)	3/-7/-15
M.Cap. (INR b)	181.9
M.Cap. (USD b)	2.8
Avg Val, INRm	441.0
Free float (%)	54.0

Financials Snapshot (INR b)

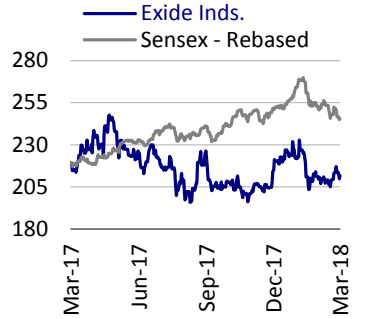
Y/E MARCH	2018E	2019E	2020E
Net Sales	91.3	105.0	121.1
EBITDA	12.1	14.5	17.1
Adj. PAT	6.8	8.4	10.3
Adj. EPS (INR)	8.0	9.9	12.1
EPS Gr. (%)	-1.3	23.3	22.5
BV/Sh. (INR)	63.5	70.8	79.1
RoE (%)	12.6	14.0	15.3
RoCE (%)	12.8	14.4	15.8
P/E (x)	26.4	21.4	17.5
P/BV (x)	3.3	3.0	2.7

Shareholding pattern (%)

As On	Dec-17	Sep-17	Dec-16
Promoter	46.0	46.0	46.0
DII	19.5	18.3	24.6
FII	13.7	13.8	8.8
Others	20.7	21.9	20.6

FII Includes depository receipts

Stock Performance (1-year)



Entering lithium-ion, though strategy yet to be firmed up

In FY17, EXID signed a technology cooperation agreement with China-based Zhejiang Chaowei Chuangyuan Shieye group to design and develop lithium-ion products. According to the company's annual report for FY17, the technology transfer is yet to happen. Also, as per media articles, it is also exploring sourcing of technology from German company and IIT Chennai.

Targeting export markets aggressively

In FY17, exports constituted 5% of revenue and grew 39%, led by growth in both the automotive and industrial segments. The double-digit growth in automotive segment exports was led by entry into four-wheeler battery markets such as Uzbekistan, Indonesia, Gulf counties, and select African markets like Mozambique and Angola. In the industrial segment, growth was led by entry into new markets like Spain, Italy, Greece, Germany, Chile, Vietnam and Zambia. It has identified partners in export markets such as Zimbabwe, Thailand and Bahrain to sell batteries for solar applications. Apart from the *EXIDE* brand, the company also sells *SF Sonic, Index, Dynex* and *CEIL* in export markets.

Lead from captive smelters (~40% of requirement) gives cost advantage

EXID currently sources lead through imports (50%) and by recycling lead/lead-based products (50%). It has been increasingly expanding collection of used lead, which is 90% recoverable for further use. EXID's wholly owned subsidiary operates two smelting plants and has acquired two smelting units in FY17 for captive consumption. It is also setting-up third lead smelter at Haldia. Currently, over 40% of EXID's lead requirement is meet through captive smelters, giving it cost advantage in inflationary period. Captive smelters would add another 50-60bp to EXID's standalone margins.

Margin improvement led by cost efficiencies and captive lead

We expect the management's renewed focus on technology, internal cost controls and manufacturing efficiencies would aid margin expansion, despite lead price inflation. Given over 40% of lead is sourced from captive smelters, it is relatively less exposed to lead price inflation. We estimate margins to improve 80% over FY18-20E to 14.1%. These margins are excluding profitability of captive smelters, which would result in accretion of 50-60bp.

Valuation and view

EXID's operational performance improved from FY16/FY17, with EBITDA margin at 14.9%/14.3% (v/s 13.3% in FY13-15). With OEM demand and replacement demand likely to improve, coupled with contribution from the industrial segment, we expect EXID to see higher growth. We factor in revenue CAGR of 15%, EBITDA margin expansion by 80bp and EPS CAGR of 23% over FY18-20E. EXID (ex Insurance) is trading at 17.6/13.9x FY19/20E, which is over 30% discount to AMRJ, which should narrow down considering convergence of operating performance. Buy with a target price of INR286 (valuing core business at 20x March 2020E EPS, 20% discount to 25x target multiple for AMRJ + value of insurance business at INR44/share).

Scenario analysis indicates favorable risk-reward

Bull-case upside of 68%, bear-case has downside of 12%

Bull case

- ☑ Our bull case analysis assumes continuous market share gains and healthy double-digit growth in revenues. We also factor in margin expansion, given EXID's ability to increase prices to pass on lead inflation.
- ☑ Our sensitivity analysis suggests that in the bull case, EXID could generate EPS of INR10.8/13.9 in FY19/20E (v/s INR9.9/12.1 in base case). Valuing EXID at 23x FY20E consolidated EPS (at 10% discount to AMRJ) yields INR312 for core business and INR44 for insurance business, giving total fair value of INR356 (v/s base TP of INR286), implying upside of ~68% from CMP.

Bear case

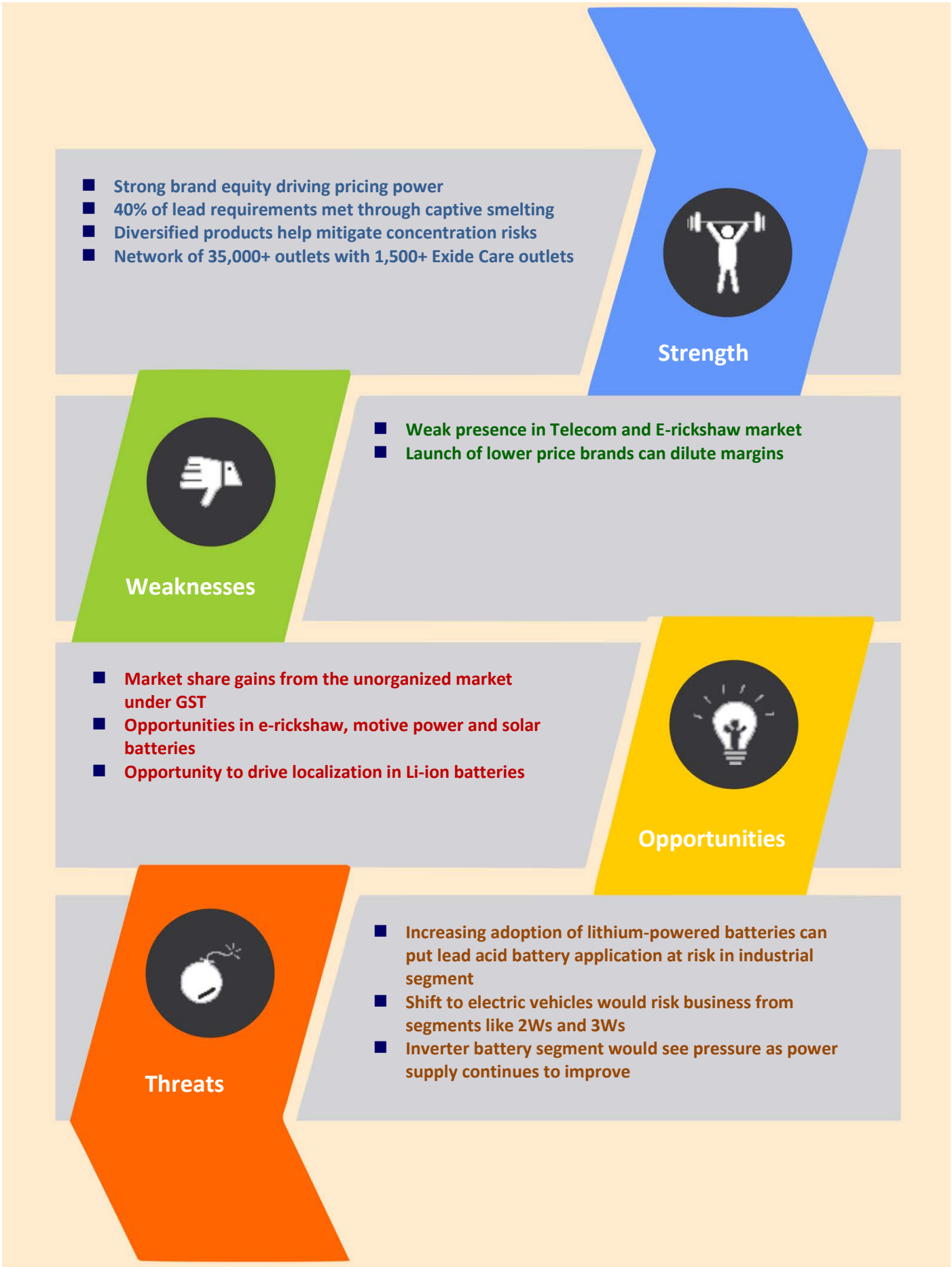
- ☑ Our bear case analysis factors in decline in market share in both automotive and industrial business due to competition. Further, we also factor in contraction in EBITDA margin due to lead inflation and inability to raise prices.
- ☑ Our sensitivity analysis suggests that in the bear case, EXID could generate EPS of INR7.9/9.0 in FY19/20E (v/s INR9.9/12.1 in base case). Valuing EXID at 16x FY20E consolidated EPS yields INR144 for core business and INR44 for insurance business, giving total fair value of INR187 (v/s base TP of INR286), implying downside of ~12% from CMP.

Exhibit 75: Scenario analysis

	Bear Case			Base Case			Bull Case		
(INR mn)	**FY18**	**FY19**	**FY20**	**FY18**	**FY19**	**FY20**	**FY18**	**FY19**	**FY20**
Revenues	91,488	97,838	105,003	91,488	105,158	121,271	91,488	109,732	132,032
Revenue growth (%)	19.8	6.9	7.3	19.8	14.9	15.3	19.8	19.9	20.3
EBITDA	12,143	12,020	13,222	12,143	14,497	17,090	12,143	15,676	19,266
EBITDA Margin (%)	13.3	12.3	12.6	13.3	13.8	14.1	13.3	14.3	14.6
Depreciation	2,453	2,747	2,967	2,453	2,747	2,967	2,453	2,747	2,967
EBIT	9,690	9,273	10,255	9,690	11,750	14,123	9,690	12,929	16,299
Reported PAT	6,533	6,715	7,624	6,533	8,399	10,293	6,533	9,201	11,795
Adjusted PAT	6,814	6,715	7,624	6,814	8,399	10,293	6,814	9,201	11,795
EPS (INR)	8.0	7.9	9.0	8.0	9.9	12.1	8.0	10.8	13.9
Target multiple (x)		16	16		20	20		23	23
Price		126	144		198	242		244	312
Insurance Value		38	44		38	44		38	44
Target price (x)		**164**	**187**		**236**	**286**		**282**	**356**

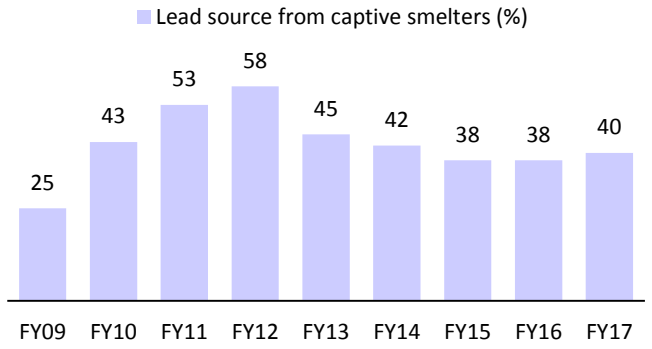
Source: Company, MOSL

SWOT analysis



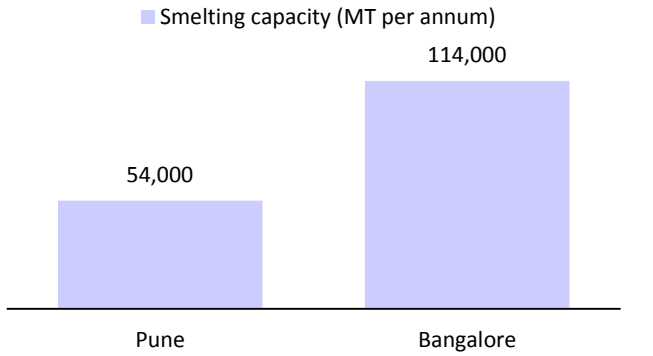
Story in charts – EXID key beneficiary of improving OEM demand

Exhibit 76: Higher sourcing from captives to help mitigate volatility in international lead prices



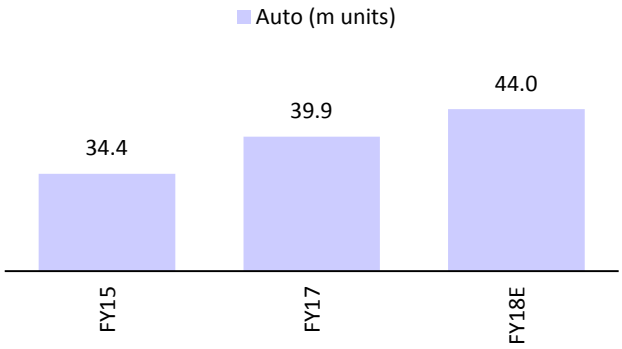
Source: MOSL, Company

Exhibit 77: Smelting capacity as of FY17



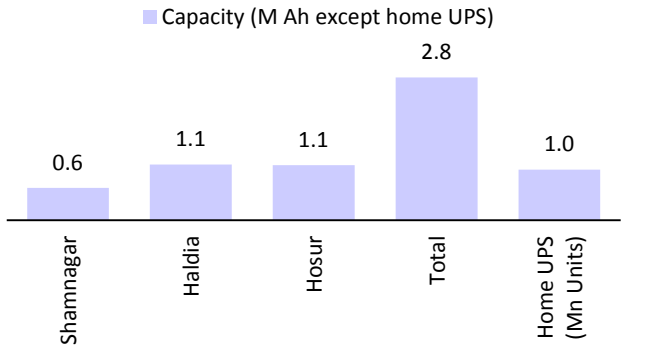
Source: MOSL, Company

Exhibit 78: Greenfield expansion at Haldia drive capacity



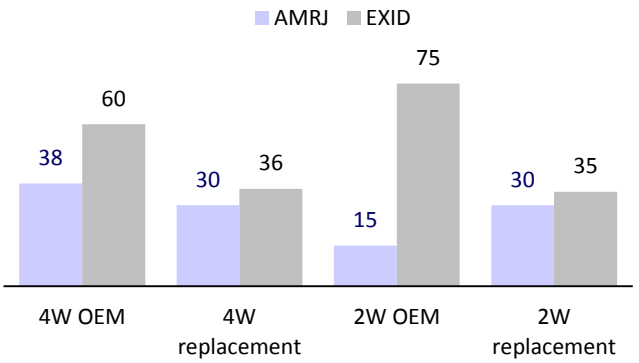
Source: MOSL, Company

Exhibit 79: Industrial battery manufacturing capacity



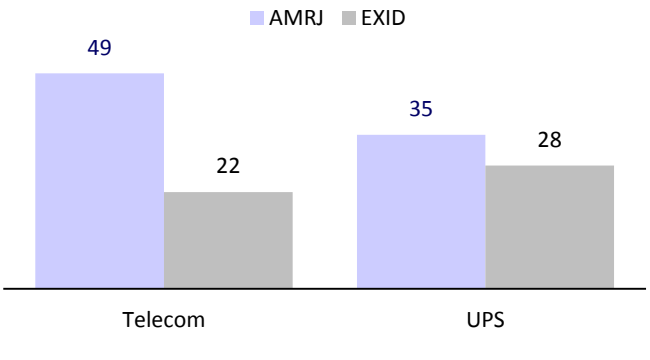
Source: MOSL, Company

Exhibit 80: EXID's leadership remains intact in automotive segment…



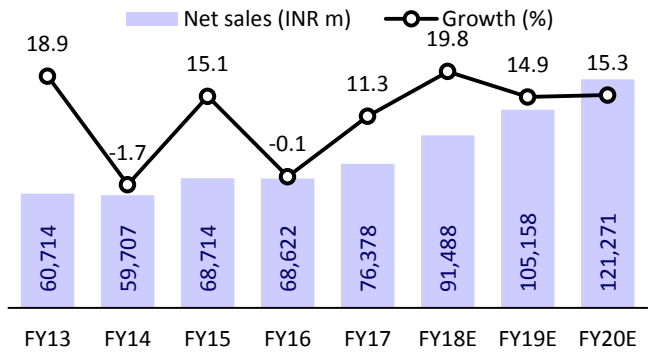
Source: MOSL, Company

Exhibit 81: …while relatively weaker position in industrial segment



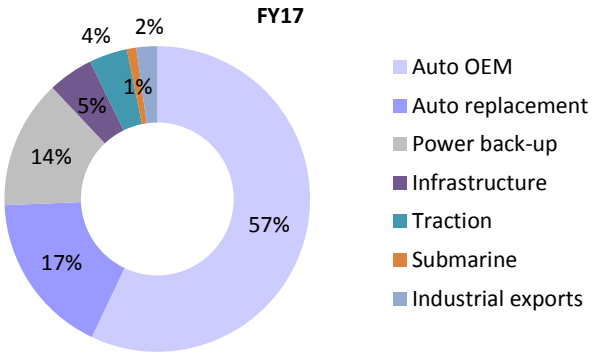
Source: MOSL, Company

Exhibit 82: Revenue to grow at CAGR of 15% over FY18-20E



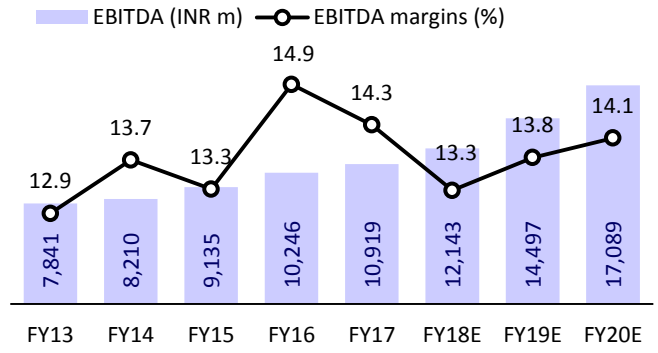
Source: MOSL, Company

Exhibit 83: Estimated revenue share (%)



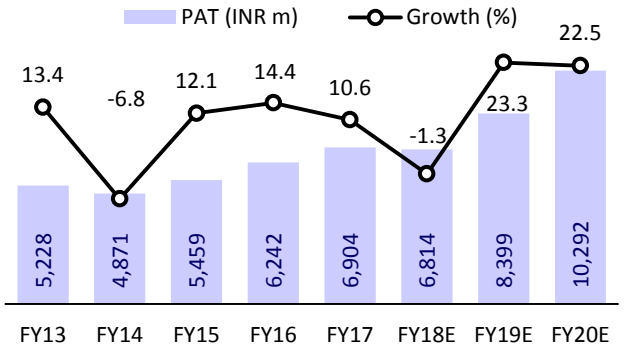
Source: MOSL, Company

Exhibit 84: Margins to expand by 80bp, led by cost control efforts



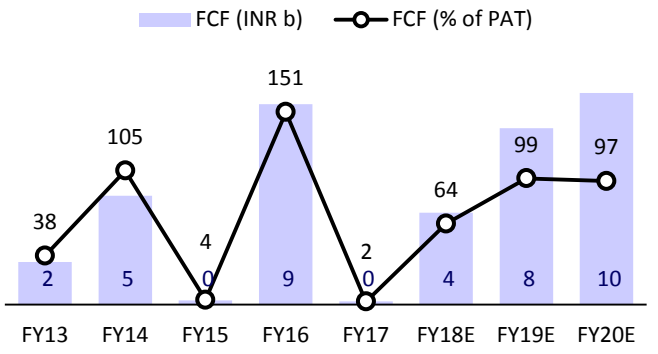
Source: MOSL, Company

Exhibit 85: Consequently, PAT to grow at CAGR of 23% over FY18-20E



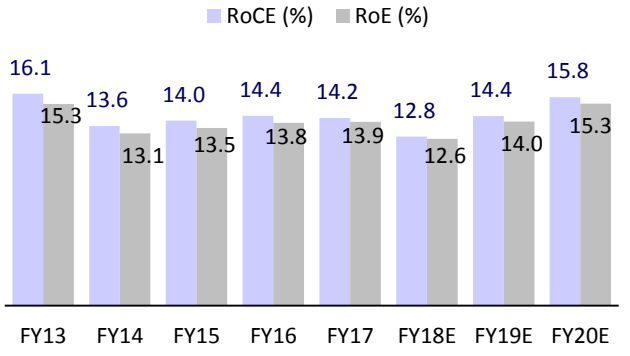
Source: MOSL, Company

Exhibit 86: FCF to be stronger on moderating capex



Source: MOSL, Company

Exhibit 87: Return ratios to improve on strong earnings growth



Source: MOSL, Company

Exhibit 88: Exide has multiple brands to cater to different requirement of customers

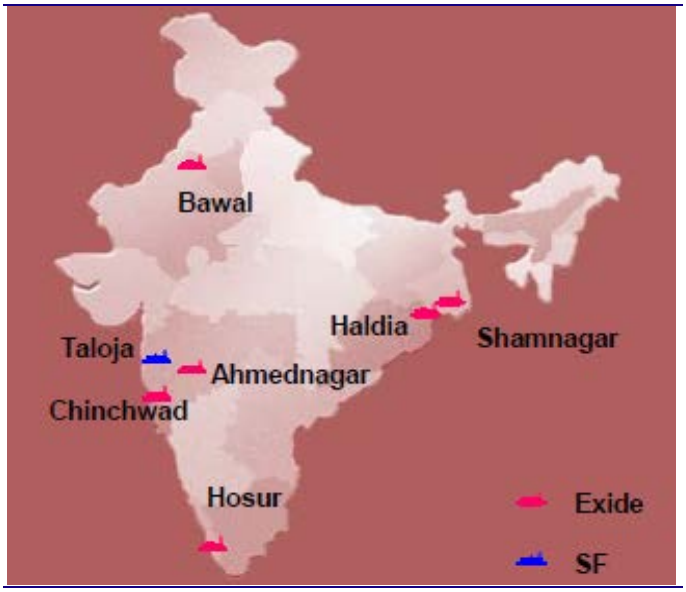
EXIDE	CHLORIDE	DYNEX	INDEX	TUDOR	SF SONIC
• DOMESTIC • EXPORT* • Available in some countries	• DOMESTIC • EXPORT* • Available in some countries	• DOMESTIC • EXPORT	• DOMESTIC • EXPORT	• DOMESTIC	• DOMESTIC • EXPORT
Flagship brand of the company catering to auto and industrial applications in domestic and exports markets	*Chloride* is the premium global brand for storage power solution	*Dynex* caters to value segment in auto space targeting unorganized/ small players	*Index* focus on key global markets in auto segment	*Tudor* brand come from Prestolite. It sells products for industrial energy solutions	*SF sonic* is an acquired brand. It has wide product range for auto and non-auto

Source: Company, MOSL

Exhibit 89: Extensive brand portfolio across segments

Source: Company, MOSL

Exhibit 90: Multi-locational manufacturing facilities



Source: MOSL, Company

Exhibit 91: Global presence across 37 countries

Source: MOSL, Company

Financials and valuations

Income Statement								(INR Million)
Y/E March	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Total Income	**60,714**	**59,707**	**68,714**	**68,622**	**76,378**	**91,488**	**105,158**	**121,271**
Change (%)	18.9	-1.7	15.1	-0.1	11.3	19.8	14.9	15.3
Total Expenditure	**52,873**	**51,497**	**59,579**	**58,376**	**65,459**	**79,345**	**90,661**	**104,181**
EBITDA	**7,841**	**8,210**	**9,135**	**10,246**	**10,919**	**12,143**	**14,497**	**17,090**
EBITDA Margins (%)	12.9	13.7	13.3	14.9	14.3	13.3	13.8	14.1
Change (%)	14.6	4.7	11.3	12.2	6.6	11.2	19.4	17.9
Depreciation	1,135	1,256	1,395	1,579	2,063	2,453	2,747	2,967
EBIT	**6,706**	**6,954**	**7,740**	**8,666**	**8,856**	**9,690**	**11,750**	**14,123**
Interest & Finance Charges	42	12	17	3	30	60	60	60
Other Income	759	289	262	416	899	539	662	854
Non-recurring Exp/(Inc)	-	-	-	-	-	418	-	-
Forex Gain / (Loss)	-	-	-	-	-	-	-	-
PBT	**7,423**	**7,231**	**7,985**	**9,080**	**9,725**	**9,751**	**12,352**	**14,916**
Tax	2,195	2,360	2,526	2,837	2,821	3,218	3,953	4,624
Effective Rate (%)	29.6	32.6	31.6	31.2	29.0	33.0	32.0	31.0
Rep. PAT	**5,228**	**4,871**	**5,459**	**6,242**	**6,904**	**6,533**	**8,399**	**10,292**
Change (%)	13.4	-6.8	12.1	14.4	10.6	-5.4	28.6	22.5
% of Net Sales								
Adj. PAT	**5,228**	**4,871**	**5,459**	**6,242**	**6,904**	**6,814**	**8,399**	**10,292**
Change (%)	13.4	-6.8	12.1	14.4	10.6	-1.3	23.3	22.5

Balance Sheet								(INR Million)
Y/E March	**2013**	**2014**	**2015**	**2016**	**2017**	**2018E**	**2019E**	**2020E**
Share Capital	850	850	850	850	850	850	850	850
Reserves	33,386	36,465	39,696	44,264	48,786	53,131	59,342	66,425
Net Worth	**34,236**	**37,315**	**40,546**	**45,114**	**49,636**	**53,981**	**60,192**	**67,275**
Loans	71	58	176	1,025	1,702	1,702	1,702	1,702
Deferred Tax Liability	977	1,051	1,259	1,270	1,552	1,844	2,215	2,662
Capital Employed	**35,284**	**38,423**	**41,981**	**47,409**	**52,890**	**57,528**	**64,110**	**71,640**
Application of Funds								
Gross Fixed Assets	19,002	20,145	22,261	14,206	19,058	23,972	25,972	27,972
Less: Depreciation	9,058	10,164	11,359	1,551	3,598	6,051	8,798	11,765
Net Fixed Assets	**9,944**	**9,980**	**10,902**	**12,654**	**15,460**	**17,921**	**17,174**	**16,207**
Capital WIP	588	510	1,002	1,858	1,414	1,000	1,000	1,000
Investments	16,401	19,670	18,957	26,978	26,755	29,255	31,755	34,255
Curr.Assets, L & Adv.	**18,550**	**19,406**	**23,166**	**20,680**	**24,128**	**27,246**	**34,426**	**44,548**
Inventory	11,671	11,856	15,228	11,335	15,274	17,762	20,134	23,556
Sundry Debtors	5,092	5,166	5,550	6,039	6,217	6,781	7,571	9,535
Cash & Bank Balances	748	1,200	298	738	196	-223	3,357	7,577
Loans & Advances	998	1,173	2,077	228	235	281	324	373
Other Current Assets	41	12	13	2,340	2,207	2,645	3,041	3,507
Current Liab. & Prov.	**10,200**	**11,143**	**12,046**	**14,762**	**14,866**	**17,893**	**20,245**	**24,369**
Sundry Creditors	5,604	6,530	6,479	7,449	7,679	9,201	10,578	12,202
Other Liabilities	2,625	2,485	2,740	4,184	4,541	5,504	6,328	7,299
Provisions	1,971	2,129	2,827	3,129	2,647	3,189	3,338	4,868
Net Current Assets	**8,351**	**8,263**	**11,121**	**5,918**	**9,262**	**9,353**	**14,181**	**20,178**
Application of Funds	**35,284**	**38,423**	**41,980**	**47,409**	**52,890**	**57,528**	**64,110**	**71,640**

E: MOSL Estimates

Financials and valuations

Ratios

Y/E March	2013	2014	2015	2016	2017	2018E	2019E	2020E
Basic (INR)								
EPS	**6.2**	**5.7**	**6.4**	**7.3**	**8.1**	**8.0**	**9.9**	**12.1**
Cash EPS	7.5	7.2	8.1	9.2	10.5	10.9	13.1	15.6
EPS Growth (%)	13.4	-6.8	12.1	14.4	10.6	-1.3	23.3	22.5
Book Value per Share	40.3	43.9	47.7	53.1	58.4	63.5	70.8	79.1
DPS	1.6	1.8	2.2	2.4	2.4	2.2	2.2	3.2
Payout (Incl. Div. Tax) %	26.0	31.4	34.3	32.7	29.5	27.4	22.3	26.4
Valuation (x)								
P/E			33.0	28.8	26.1	26.4	21.4	17.5
Cash P/E			26.3	23.0	20.1	19.4	16.1	13.6
EV/EBITDA			17.6	15.0	14.2	12.6	10.1	8.2
EV/Sales			2.3	2.2	2.0	1.7	1.4	1.2
Price to Book Value			4.4	4.0	3.6	3.3	3.0	2.7
Dividend Yield (%)			1.0	1.1	1.1	1.0	1.0	1.5
Profitability Ratios (%)								
RoE	15.3	13.1	13.5	13.8	13.9	12.6	14.0	15.3
RoCE	16.1	13.6	14.0	14.4	14.2	12.8	14.4	15.8
RoIC	28.5	27.1	27.3	30.1	29.7	25.0	28.8	34.3
Turnover Ratios								
Debtors (Days)	31	32	29	32	30	27	26	29
Inventory (Days)	70	72	81	60	73	71	70	71
Creditors (Days)	34	40	34	40	37	37	37	37
Working Capital (Days)	67	64	76	53	66	61	59	63
Gross Fixed Asset Turnover (x)	3.2	3.0	3.1	4.8	4.0	3.8	4.0	4.3
Leverage Ratio								
Debt/Equity (x)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Cash Flow Statement

(INR Million)

Y/E March	2013	2014	2015	2016	2017	2018E	2019E	2020E
OP/(Loss) before Tax	7,423	7,238	7,985	9,019	9,757	9,690	11,750	14,122
Interest/Dividends Received	-663	-234	-223	-413	-898	539	662	854
Depreciation & Amortisation	1,135	1,256	1,395	1,579	2,063	2,453	2,747	2,967
Direct Taxes Paid	-1,950	-2,258	-2,475	-2,684	-2,812	-2,925	-3,582	-4,177
(Inc)/Dec in Working Capital	-2,352	474	-3,457	5,783	-3,840	-928	-1,248	-1,777
CF from Oper. Activity	**3,597**	**6,476**	**3,245**	**13,398**	**4,311**	**8,829**	**10,328**	**11,989**
CF after EO Items	**3,597**	**6,476**	**3,245**	**13,398**	**4,311**	**8,829**	**10,328**	**11,990**
(Inc)/Dec in FA+CWIP	-1,587	-1,346	-3,050	-3,948	-4,158	-4,500	-2,000	-2,000
Free Cash Flow	**2,010**	**5,130**	**195**	**9,450**	**153**	**4,329**	**8,328**	**9,989**
(Pur)/Sale of Invest.	-214	-2,996	920	-7,512	1,086	-2,500	-2,500	-2,500
CF from Inv. Activity	**-1,801**	**-4,343**	**-2,130**	**-11,460**	**-3,072**	**-7,000**	**-4,500**	**-4,500**
Interest Rec./(Paid)	-47	-14	-12	-13	-37	-60	-60	-60
Dividends Paid	-1,578	-1,661	-2,180	-2,334	-2,417	-2,188	-2,188	-3,210
CF from Fin. Activity	**-1,625**	**-1,675**	**-2,016**	**-1,497**	**-1,782**	**-2,248**	**-2,248**	**-3,270**
Inc/(Dec) in Cash	**171**	**458**	**-901**	**441**	**-543**	**-419**	**3,580**	**4,221**
Add: Beginning Balance	577	748	1,200	298	738	196	-223	3,357
Closing Balance	**748**	**1,206**	**298**	**739**	**195**	**-223**	**3,357**	**7,578**

E: MOSL Estimates

Amara Raja Batteries

BSE SENSEX	S&P CNX
32,997	10,124

CMP: INR783 **TP: INR 1,000 (+28%)** **Buy**

Strong #2, continuously challenging leader…

…led by strong parentage, efficient operations and capacity addition

- **New capacity additions, product differentiation and best-in-class quality have enabled AMRJ to gain market share in the OEM segments (4W: 38% and 2W: 15%), and replacement segments (4W: 30% and 2W: 30%). This coupled with potential shift from unorganized to organized players due to GST should drive stock re-rating.**
- **AMRJ's telecom tower battery business has endured challenging times over the last 12-18 months, impacted by a double-whammy of weak demand and heightened competitive intensity. However, we are seeing initial signs of demand bottoming and competition peaking. Further, we expect weakness in the telecom battery business to be more than made up by (a) strong growth in UPS, (b) ramp-up in e-rickshaw batteries, and (c) inverter batteries (driven by captive tubular battery plant).**
- **Entering and strengthening presence in new segments like e-rickshaws, motive power, solar and exports should drive growth for AMRJ.**
- **Steady competitive environment, recovery in OEM demand and strong growth in replacement would drive ~15% CAGR (FY18-20E) in revenues, ~70bp EBITDA margin expansion and PAT CAGR of ~19%. The stock trades at 23/19.6x FY19/20E EPS.**

Entry into new segments to drive growth

AMRJ's outperformance over last many years was driven by technological innovation (maintenance-free, factory-charged, extended-warranty batteries) and unique distribution model (franchisee-based), supported by operational efficiency-led competitive pricing. AMRJ is gearing to be a leader, having entered segments such as home inverter, e-rickshaw, motive power and solar segment. We estimate revenue to grow at 15% CAGR over FY18-20E.

Capacity additions and GST to drive market share

Ongoing brownfield expansion in the 4W (2.25m units in addition to 10.5m) and 2W (4m addition by March 2018 to 15m) segments should drive share gains. Further, shift towards the organized segment due to GST would also drive market share. AMRJ aims to increase its share in the OEM (from 30% to 40%) and replacement (from 24% to 30%) segments over the medium term.

2W segment – high focus area with plans to more than double capacity

AMRJ is working towards improving its positioning in 2W segment, particularly in OEM segment. It has announced plans to increase 2W battery capacities from 11m units to 29m units over next 5 years in phased manner. The first phase of 5m batteries has started operations in Dec-17. To further boost its position in the 2W OEM segment, AMRJ has garnered business with HMCL and supply is expected to start soon.

Stock Info

Bloomberg	AMRJ IN
Equity Shares (m)	170.8
52-Week Range (INR)	955 / 665
1, 6, 12 Rel. Per (%)	-1/-1/-22
M.Cap. (INR b)	137.6
M.Cap. (USD b)	2.1
Avg Val, INRm	468.0
Free float (%)	47.9

Financials Snapshot (INR b)

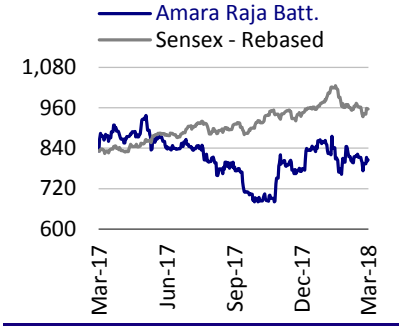
Y/E MARCH	2018E	2019E	2020E
Sales	59.9	69.2	79.4
EBITDA	9.1	10.9	12.6
NP	4.8	5.8	6.8
EPS (INR)	28.3	34.0	40.0
EPS Gr. (%)	0.9	20.3	17.6
BV/Sh. (INR)	175	203	235
RoE (%)	17.3	18.0	18.3
RoCE (%)	16.5	17.1	17.3
P/E (x)	27.7	23.0	19.6
P/BV (x)	4.5	3.9	3.3

Shareholding pattern (%)

As On	Dec-17	Sep-17	Dec-16
Promoter	52.1	52.1	52.1
DII	13.1	12.1	8.0
FII	16.7	17.9	21.7
Others	18.2	17.9	18.3

FII Includes depository receipts

Stock Performance (1-year)



Exports – a volume driver

AMRJ is targeting the Indian Ocean rim (Eastern Africa, ME, SE Asia and South Asia) for exports. Exports are core to its strategy and would be a volume driver. Each of these markets has different competitive dynamics, but AMRJ's product fit gives it an advantage and a premium positioning. It already has distribution presence in these markets, and will look at brand development, product promotion and channel development as it scales up. In FY17, exports increased by 48% to INR5.2b.

Quanta – multiple demand drivers

Quanta is AMRJ's leading brand in the UPS segment and is comfortably challenging various other brands. EXID and AMRJ together account for ~60% of the market, with AMRJ's share at ~35%, other manufacturers' share at ~25%, and imports accounting for the balance. One of the factors to which the growth of AMRJ and EXID can be attributed is declining imports from China. Led by growth in data centers and increasing digitalization, growth in the UPS segment is expected to be healthy.

Telecom segment – worst seems to be over

AMRJ's telecom tower battery business has endured challenging times over last 12-18 months, impacted by double whammy of weak demand environment and heightened competitive intensity. This resulted in AMRJ losing 8-10pp market share in Telecom battery segment to ~40%. However, we are seeing initial signs of demand bottoming out and competition peaking out. Further, we expect weakness in telecom battery business to be more than made-up by a) strong growth in UPS, b) ramp-up in fast growing e-rickshaw batteries, and c) inverter (driven by captive tubular battery plant).

EBITDA margins to expand 70bp to 15.8%

Over FY16-18E, AMRJ's EBITDA margins contracted by 270bp impacted by a) lead cost inflation, b) weakness in telecom segment and c) pricing pressure in telecom segment. Lead cost inflation has been broadly passed through, though with lag, in most of the segment except telecom. Also, telecom segment pricing is stabilizing, after spurt in competitive intensity led by EXID. Hence, we expect AMRJ's EBITDA margins to expand ~70bp to 15.8% over FY18-20E (as against ~17.8% margins in FY16).

Valuation and view

With stable competitive environment and recovery in demand, revenue/EBITDA/PAT CAGR would be 15%/18%/19% over FY17-20E. Considering quasi duopolistic nature of the LAB industry, we expect both AMRJ and EXID to benefit from further industry consolidation. The stock trades at 23x/19.6x FY19/20E EPS. Maintain **Buy** with a target price of ~INR1000 (25x March 2020E EPS – in-line with last 5 years average multiple).

Scenario analysis indicates favorable risk-reward

Bull-case upside of 48% v/s bear-case downside of ~6%

Bull case

- ☑ Our bull case analysis assumes healthy growth in revenues, led by strong volume growth due to increase in capacities and market share gains.
- ☑ We also factor in marginal expansion in margins, led by improvement in operating efficiencies and product mix.
- ☑ Our sensitivity analysis suggests that in the bull case, AMRJ could generate EPS of INR37.1/46.4 in FY19/20E (v/s INR34/40 in base case).
- ☑ Valuing AMRJ at 25x FY20E consolidated EPS yields a fair value of INR1,161 (v/s base TP of INR1,000), implying upside of ~48% from CMP.

Bear case

- ☑ Our bear case analysis factors in unfavorable product mix and increasing pressure in telecom business, where AMRJ has ~40% market share.
- ☑ Consequently, we factor in 100bp contraction in EBITDA margin from the base case. Further, we also factor in lead inflation impacting EBITDA, as AMRJ's ability to pass on higher costs remains restricted with increasing competition.
- ☑ Our sensitivity analysis suggests that in the bear case, AMRJ could generate EPS of INR29.5/32.8 in FY19/20E (v/s INR34/40 in base case).
- ☑ Valuing AMRJ at 22.5x FY20E consolidated EPS yields a fair value of INR738 (v/s base TP of INR1,000), implying downside of 6% from CMP.

Exhibit 92: Scenario analysis

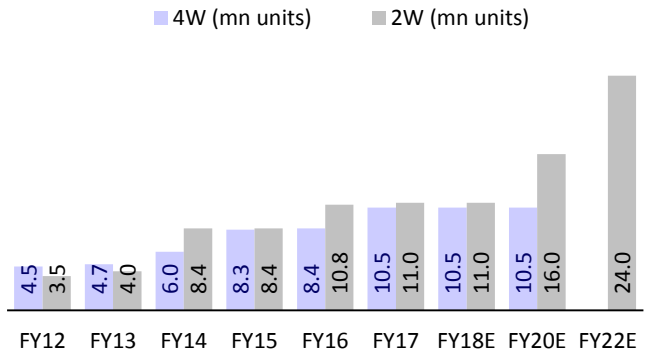
	Bear Case			Base Case			Bull Case		
(INR m)	**FY18**	**FY19**	**FY20**	**FY18**	**FY19**	**FY20**	**FY18**	**FY19**	**FY20**
Revenues	**59,893**	**66,214**	**72,668**	**59,893**	**69,209**	**79,415**	**59,893**	**72,802**	**87,907**
Revenue growth (%)	12.6	10.6	9.7	12.6	15.6	14.7	12.6	21.6	20.7
EBITDA	9,052	9,723	10,781	9,052	10,855	12,577	9,052	11,637	14,185
EBITDA Margin (%)	15.1	14.7	14.8	15.1	15.7	15.8	15.1	16.0	16.1
Depreciation	2,371	3,003	3,558	2,371	3,003	3,558	2,371	3,003	3,558
EBIT	6,682	6,719	7,223	6,682	7,851	9,018	6,682	8,633	10,627
Reported PAT	4,828	5,044	5,601	4,828	5,808	6,831	4,828	6,336	7,933
Adjusted PAT	**4,828**	**5,044**	**5,601**	**4,828**	**5,808**	**6,831**	**4,828**	**6,336**	**7,933**
EPS (INR)	**28.3**	**29.5**	**32.8**	**28.3**	**34.0**	**40.0**	**28.3**	**37.1**	**46.4**
Target multiple (x)		23	23		25	25		25	25
Target price (x)		**665**	**738**		**850**	**1000**		**927**	**1161**

Source: Company, MOSL

SWOT analysis

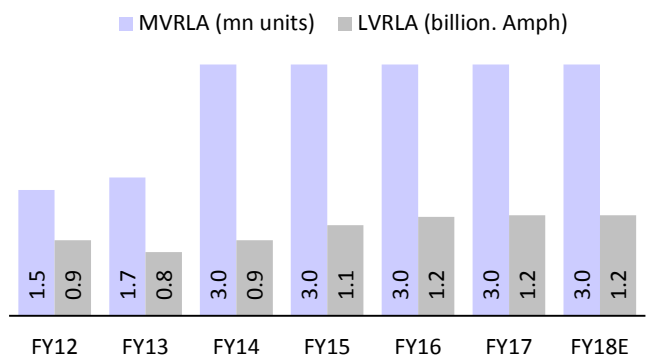
Story in charts – Healthy financial performance to continue

Exhibit 93: Persistent capacity expansion in auto segment drive growth and market share



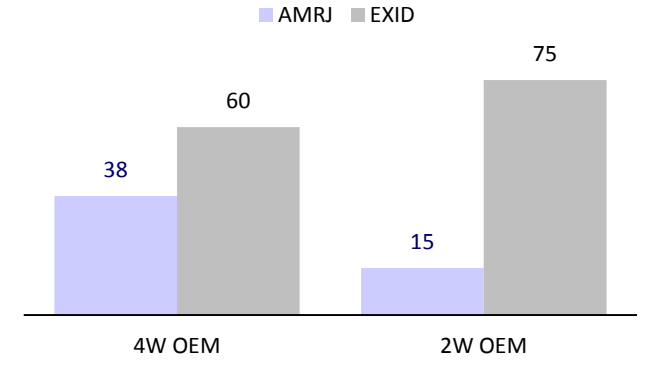
Source: MOSL, Company

Exhibit 94: Capacity addition at industrial side remain static in the recent past



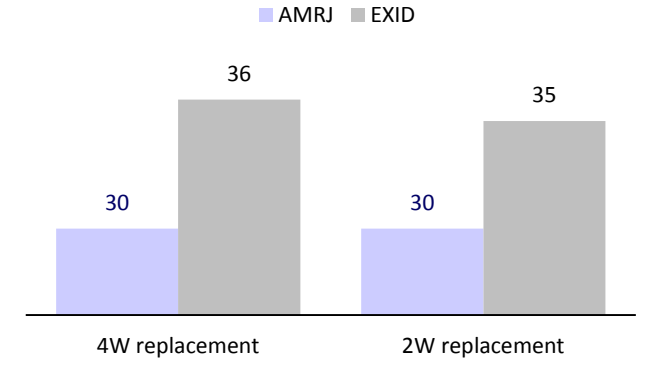
Source: MOSL, Company

Exhibit 95: Entry with HMCL to drive 2W OEM market share (%)



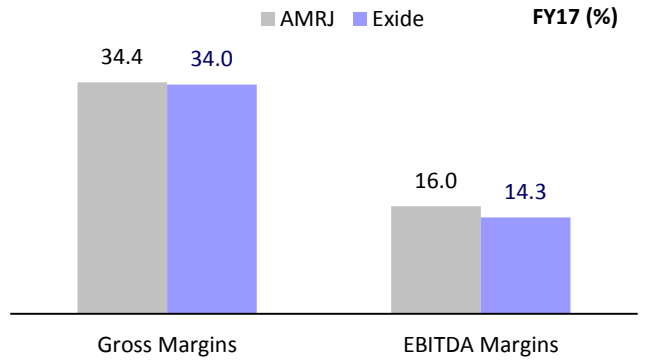
Source: MOSL, Company

Exhibit 96: Gained significant share in auto replacement segment (%)



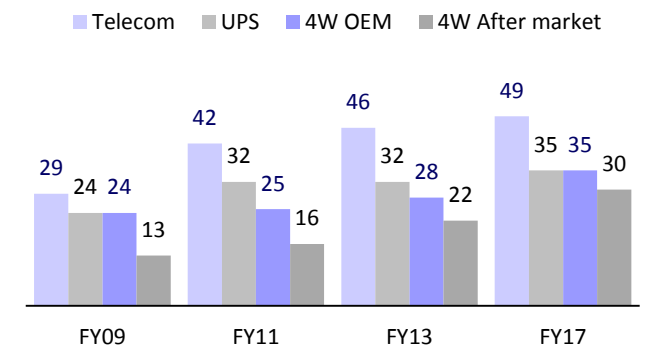
Source: MOSL, Company

Exhibit 97: EBITDA margin higher than EXID (%)



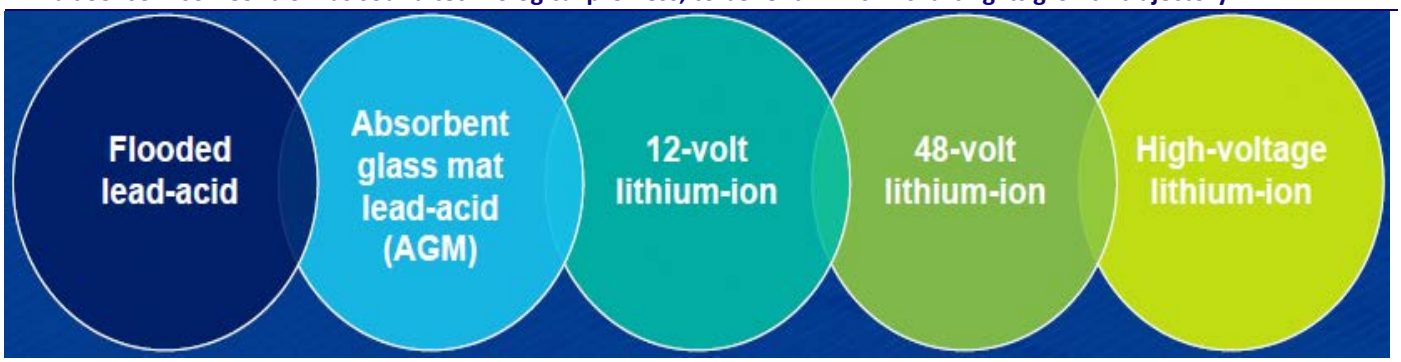
Source: MOSL, Company

Exhibit 98: Leader in telecom and UPS segments (%)



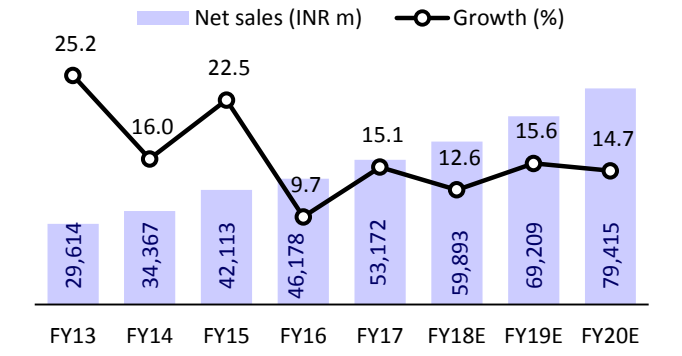
Source: MOSL, Company

Exhibit 99: Johnson Control has sound technological prowess; to benefit AMRJ in charting its growth trajectory



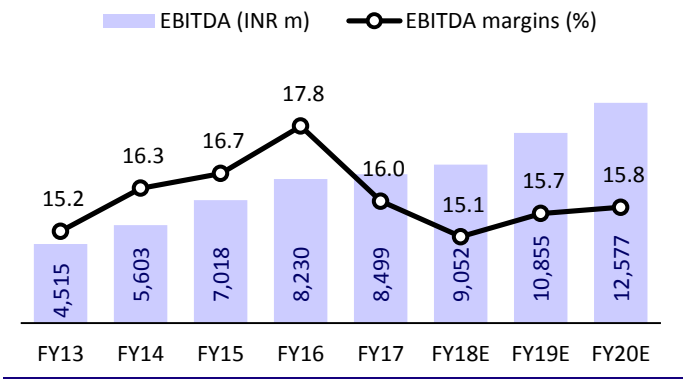
Source: Johnson Control investor presentation

Exhibit 100: Expect revenue CAGR of 15.1% over FY17-20



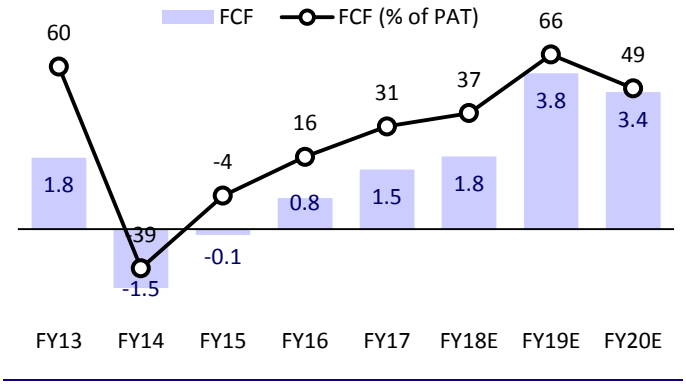
Source: MOSL, Company

Exhibit 101: EBITDA margin to expand to 15.8% by FY20E



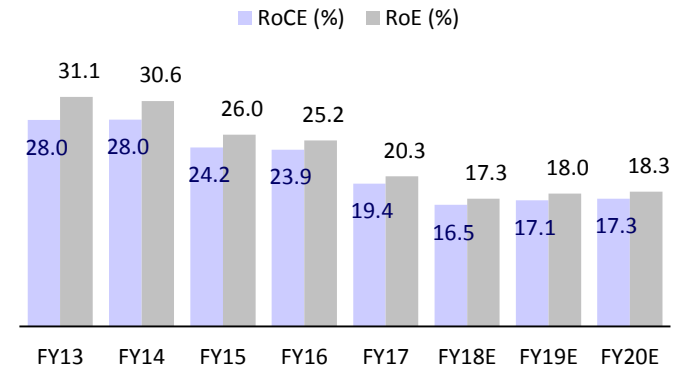
Source: MOSL, Company

Exhibit 102: Expect FCF of INR9b over FY18-20E



Source: MOSL, Company

Exhibit 103: Return ratios to remain healthy



Source: MOSL, Company

Financials and valuations

Standalone - Income Statement (INR Million)

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Gross Revenues	33,110	38,372	46,372	51,843	59,814	67,081	77,514	88,945
Less: Excise Duty	3,496	4,005	4,258	5,666	6,642	7,187	8,305	9,530
Net Sales	**29,614**	**34,367**	**42,113**	**46,178**	**53,172**	**59,893**	**69,209**	**79,415**
Change (%)	25.2	16.0	22.5	9.7	15.1	12.6	15.6	14.7
Gross operating income	**33,110**	**38,372**	**46,372**	**51,843**	**59,814**	**67,081**	**77,514**	**88,945**
Total Expenditure	25,099	28,764	35,095	37,948	44,672	50,841	58,354	66,838
EBITDA	**4515**	**5603**	**7018**	**8,230**	**8,499**	**9,052**	**10,855**	**12,577**
Margin (%)	15.2	16.3	16.7	17.8	16.0	15.1	15.7	15.8
Depreciation	661	646	1,340	1,407	1,912	2,371	3,003	3,558
EBIT	**3,854**	**4,957**	**5,678**	**6,823**	**6,587**	**6,682**	**7,851**	**9,018**
Int. and Finance Charges	10	7	2	55	58	51	46	46
Other Income - Rec.	466	455	423	459	492	575	800	1,000
PBT bef. EO Exp.	**4,310**	**5,405**	**6,099**	**7,226**	**7,022**	**7,205**	**8,605**	**9,972**
EO Expense/(Income)	92	39	73	0	0	0	0	0
PBT after EO Exp.	**4,218**	**5,367**	**6,026**	**7,226**	**7,022**	**7,205**	**8,605**	**9,972**
Current Tax	1,376	1,580	1,910	2,310	2,237	2,162	2,495	2,792
Deferred Tax	-25	112	80	0	0	216	301	349
Tax Rate (%)	32.0	31.5	33.0	32.0	31.9	33.0	32.5	31.5
Reported PAT	**2,867**	**3,674**	**4,036**	**4,916**	**4,785**	**4,828**	**5,808**	**6,831**
PAT Adj for EO items	**2,929**	**3,701**	**4,084**	**4,916**	**4,785**	**4,828**	**5,808**	**6,831**
Change (%)	36.2	26.3	10.4	20.4	-2.7	0.9	20.3	17.6
Margin (%)	9.9	10.8	9.7	10.6	9.0	8.1	8.4	8.6

Standalone - Balance Sheet (INR Million)

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Equity Share Capital	171	171	171	171	171	171	171	171
Total Reserves	10,427	13,456	17,674	20,988	25,760	29,699	34,439	40,013
Net Worth	**10,598**	**13,627**	**17,845**	**21,159**	**25,931**	**29,870**	**34,610**	**40,184**
Deferred Liabilities	195	301	368	538	815	1,031	1,332	1,681
Total Loans	881	843	741	725	690	725	725	725
Capital Employed	**11,674**	**14,772**	**18,954**	**22,421**	**27,436**	**31,626**	**36,667**	**42,590**
Gross Block	6,803	9,955	12,434	14,851	18,156	24,558	29,558	34,558
Less: Accum. Deprn.	3,214	3,860	2,989	1,330	3,257	5,627	8,631	12,189
Net Fixed Assets	**3,589**	**6,096**	**9,444**	**13,520**	**14,899**	**18,931**	**20,927**	**22,369**
Capital WIP	1,030	1,447	863	1,229	2,403	1,000	1,000	1,000
Total Investments	**161**	**161**	**189**	**200**	**1,467**	**1,467**	**1,467**	**1,467**
Curr. Assets, Loans&Adv.	**12,925**	**13,691**	**13,394**	**14,559**	**17,077**	**19,703**	**24,173**	**30,095**
Inventory	2,929	3,350	4,181	6,016	8,170	8,205	7,585	8,703
Account Receivables	3,807	4,528	5,541	5,922	5,705	6,426	7,426	8,521
Cash and Bank Balance	4,108	2,946	2,222	1,503	1,709	3,390	7,218	10,641
Loans and Advances	2,082	2,867	1,450	1,119	1,494	1,682	1,944	2,231
Curr. Liability & Prov.	**6,030**	**6,623**	**4,935**	**7,087**	**8,410**	**9,475**	**10,900**	**12,341**
Account Payables	1,577	1,577	2,660	3,493	4,184	4,713	5,446	6,250
Other Current Liabilities	1,960	1,858	1,458	2,665	3,285	3,700	4,275	4,906
Provisions	2,493	3,188	817	929	941	1,061	1,178	1,186
Net Current Assets	**6,895**	**7,068**	**8,459**	**7,472**	**8,667**	**10,229**	**13,273**	**17,754**
Appl. of Funds	**11,674**	**14,771**	**18,955**	**22,421**	**27,436**	**31,626**	**36,667**	**42,590**

E: MOSL Estimates

Financials and valuations

Ratios

Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Basic (INR)								
EPS	**17.2**	**21.7**	**23.9**	**28.8**	**28.0**	**28.3**	**34.0**	**40.0**
Cash EPS	21.0	25.4	31.8	37.0	39.2	42.1	51.6	60.8
BV/Share	62.0	79.8	104.5	123.9	151.8	174.9	202.6	235.3
DPS	2.5	3.6	3.6	4.3	4.25	4.3	5.2	6.1
Payout (%)	17.6	19.3	18.4	17.7	18.2	18.4	18.4	18.4
Valuation (x)								
P/E			32.7	27.2	28.0	27.7	23.0	19.6
Cash P/E			24.7	21.2	20.0	18.6	15.2	12.9
P/BV			7.5	6.3	5.2	4.5	3.9	3.3
EV/Sales			3.1	2.9	2.5	2.2	1.8	1.6
EV/EBITDA			18.8	16.2	15.6	14.5	11.7	9.8
Dividend Yield (%)			0.5	0.5	0.5	0.6	0.7	0.8
Return Ratios (%)								
RoE	31.1	30.6	26.0	25.2	20.3	17.3	18.0	18.3
RoCE	28.0	28.0	24.2	23.9	19.4	16.5	17.1	17.3
RoIC	40.6	40.9	29.4	26.4	21.7	18.8	20.1	21.9
Working Capital Ratios								
Gross Fixed Asset Turnover (x)	4.4	3.5	3.4	3.1	2.9	2.4	2.3	2.3
Inventory (Days)	36.1	35.6	36.2	47.6	56.1	50.0	40.0	40.0
Debtor (Days)	42	43	44	42	35	35	35	35
Creditor (Days)	19	17	23	28	29	29	29	29
Working Capital Turnover (Days)	34	44	54	47	48	42	32	33
Growth (%)								
Sales	25.2	16.0	22.5	9.7	15.1	12.6	15.6	14.7
EBITDA	33.0	24.1	25.3	17.3	3.3	6.5	19.9	15.9
PAT	36.2	26.3	10.4	20.4	-2.7	0.9	20.3	17.6
Leverage Ratio (x)								
Current Ratio	2.1	2.1	2.7	2.1	2.0	2.1	2.2	2.4
Debt/Equity	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0

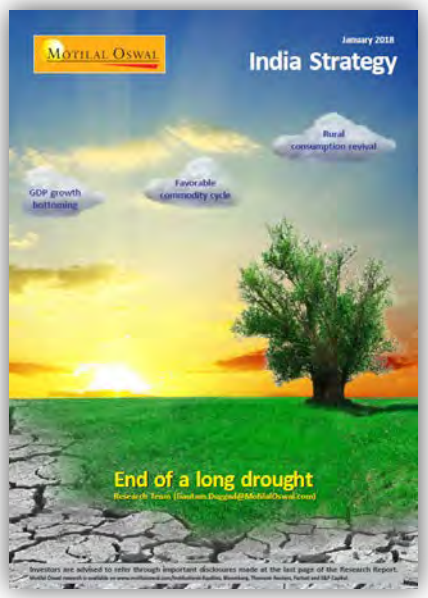
Standalone - Cash Flow Statement **(INR Million)**

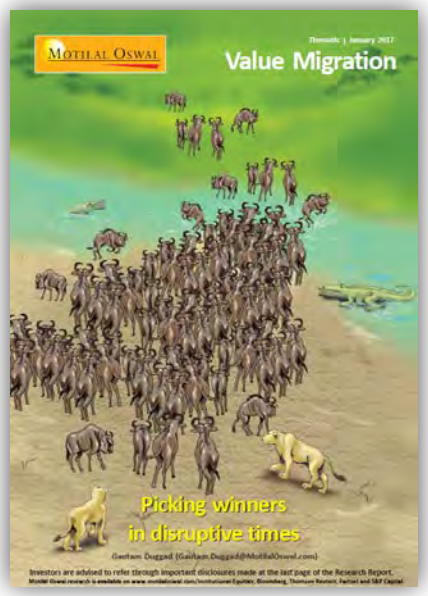
Y/E March	FY13	FY14	FY15	FY16	FY17	FY18E	FY19E	FY20E
Net P/L Before Tax and E/O Items	4,218	5,366	6,099	7,226	7,022	7,205	8,605	9,972
Depreciation	577	637	1,245	1,407	1,912	2,371	3,003	3,558
Interest & Finance Charges	-110	-808	-29	-43	-3	-524	-754	-954
Direct Taxes Paid	1,366	1,606	1,922	2,181	2,024	2,378	2,797	3,141
(Inc)/Dec in WC	-94	-1,315	-1,475	-738	-1,137	120	784	-1,059
CF from Operations	**3,225**	**2,273**	**3,917**	**5,672**	**5,771**	**6,794**	**8,842**	**8,376**
(inc)/dec in FA	-1,463	-3,731	-4,062	-4,904	-4,305	-5,000	-5,000	-5,000
Free Cash Flow	**1,892**	**-943**	**-180**	**637**	**1,224**	**1,794**	**3,842**	**3,376**
Others	269	294	176	24,156	27,395	575	800	1,000
CF from Investments	**-1,194**	**-3,437**	**-3,886**	**-3,938**	**-5,294**	**-4,425**	**-4,200**	**-4,000**
(Inc)/Dec in Debt	3	-99	-36	772	748	251	301	349
Interest Paid	-17	-14	-84	-5	-3	-51	-46	-46
Dividend Paid	-323	-430	-552	-1,614	0	-888	-1,069	-1,257
CF from Fin. Activity	**-336**	**-543**	**-672**	**-847**	**745**	**-689**	**-814**	**-954**
Inc/Dec of Cash	**1,825**	**-1,192**	**-675**	**757**	**981**	**1,681**	**3,828**	**3,422**
Add: Beginning Balance	2,283	4,138	2,897	746	784	1,709	3,390	7,218
Closing Balance	**4,108**	**2,946**	**2,222**	**1,503**	**1,765**	**3,390**	**7,218**	**10,640**

E: MOSL Estimates

NOTES

THEMATIC/STRATEGY RESEARCH GALLERY





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UNDER REVIEW	Rating may undergo a change
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