



KB Securities

Dry Cell & Storage Battery JSC (HoSE: PAC)

Lacking supportive elements for short-term growth

15th, October 2018
(COMPANY FULL REPORT)

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RECOMMENDATION: BUY		TRADING DATA		PERFORMANCE				
Target Price	VND52,000	Outstanding shares	46,471,707	(%)	1T	3T	6T	12T
Upside/Downside	+20%	Avg Daily Vol (3M, shares)	23,847	PAC	10.5	17.6	16.2	-6.8
Current Price (Oct 15 th , 2018)	VND44,200	Foreign Ownership	28.7%	VN-Index	-4.0	5.9	-18.9	16.2
Market Cap (Bn.)	VND2,054	Major shareholders	VINACHEM – 51.4% Fukurawa – 10.5%					

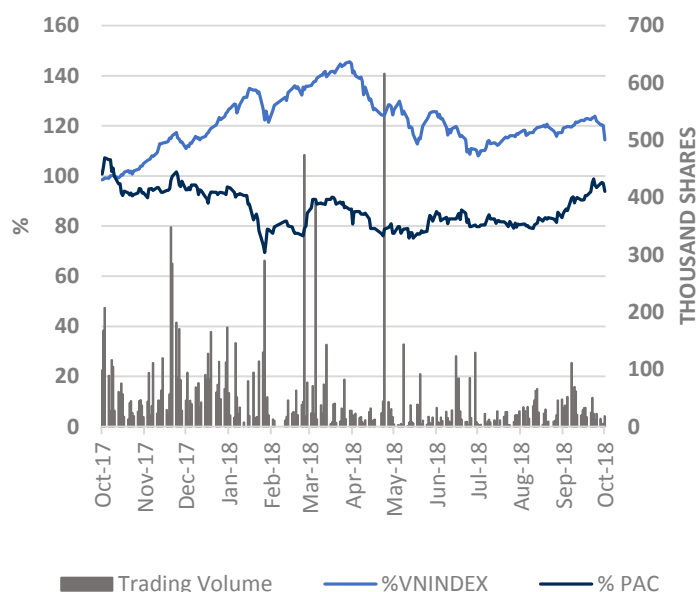
Source: PINACO, KBSV Research

Income Statements	2017A	2018F	2019F
Revenue (VND Bn.)	2,613	3,250	3,713
COGS (VND Bn.)	2,294	2,836	
Gross Profit (VND Bn.)	319	414	
GPM (%)	12.20	12.70	
NPAT (VND Bn.)	136	146	166
Growth (%)	-39.20	7.20	14.20
Shares (Mil.)	46.5	46.5	46.5
EPS (VND)	3,037	3,132	3,579

VALUATION:

PINACO is trading at 12M-trailing P/E of 19x, equal to battery industry P/E and above battery industry P/B of 2.5x. With 2018 forecasted net profit of VND 145.5 billion (+14.2% YoY) and 2019 forecasted net profit of VND 166 billion (+15% YoY), KBSV recommends **BUY** with an estimate of PINACO' fair value at VND 52,000 per share. Respectively, the 2018 target P/E is 17.2x.

Price History & Volume



I. WORLD BATTERY INDUSTRY OUTLOOK

1. Overview

Electric battery is a device that consists of one or more electrochemical cells with external connections that are supplied to power devices such as flashlights, smartphones and electric vehicles. When the battery is powered, its positive terminal is *cathode* and its negative terminal is *anode*. When a battery is connected to an external circuit, electrolytes are able to move as ions within, allowing the chemical reactions to be completed at the separate terminals and so deliver energy to the external circuit. The term "battery" specifically referred to a device composed of multiple cells.

According to *Automotive Battery Market Size Report 2017 (Grand View Reseach)*, the worldwide automotive battery industry was valued at USD 48.7 billion in 2016, with an annual growth rate of 7% until 2025.

Batteries have much lower specific energy (energy per unit mass) than common fuels such as gasoline. Today, higher efficiency electric motors are used instead of internal combustion engines.

Batteries come in many shapes and sizes, from miniature cells used to power hearing aids and wristwatches to small, thin cells used in smartphones, to large lead acid batteries used in cars and trucks, and at the largest extreme, huge battery banks the size of rooms that provide standby or emergency power for telephone exchanges and computer data centers.

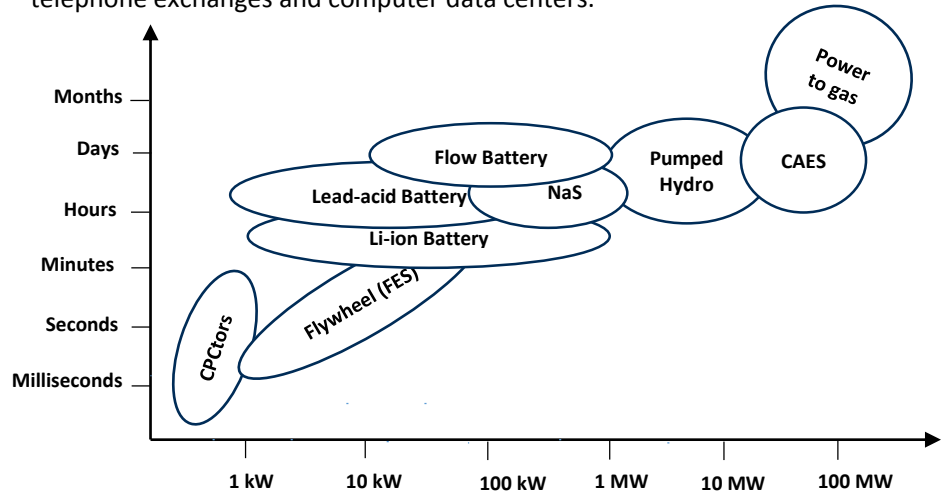


Figure 1. Characteristics of different energy storage technologies

• CAES = Compressed air energy storage, NaS = Sodium – Sulfur Battery

Source: Adaptation from Sterner energy report (2015), KBSV Research

At present, electrochemical storage devices (batteries, batteries) are the most suitable technology to provide backup power in terms of technology, simple operation mode.

2. Principle of operation

Batteries convert chemical energy directly to electrical energy. A battery consists of some number of voltaic cells. Each cell consists of two half-cells connected in series by a conductive electrolyte containing anions and cations. One half-cell includes electrolyte and the negative electrode, the electrode to which anions (negatively charged ions) migrate; the other half-cell includes electrolyte and the positive electrode to which cations (positively charged ions) migrate. Redox reactions power the battery. Cations are reduced (electrons are added) at the cathode during charging, while anions are oxidized (electrons are removed) at the anode during charging.

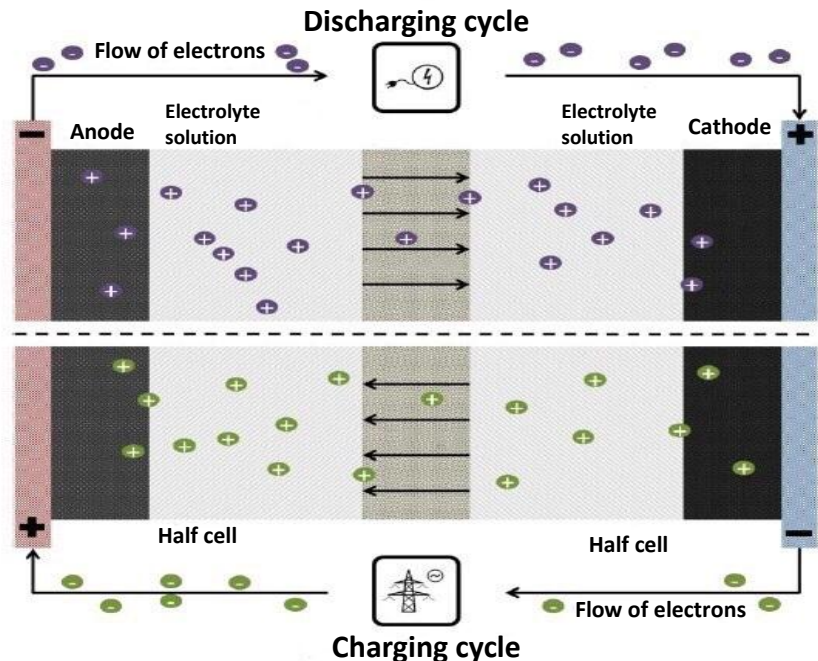


Figure 2. Scheme of a battery cell

Source: Market potential for battery storage, Strauch (2011), KBSV Research

During discharge, the process is reversed. The electrodes do not touch each other, but are electrically connected by the electrolyte. Some cells use different electrolytes for each half-cell. A separator allows ions to flow between half-cells, but prevents mixing of the electrolytes.

3. Types of batteries

Batteries are classified into *primary and secondary forms*:

Primary batteries are designed to be used until exhausted of energy then discarded. Their chemical reactions are generally not reversible, so they cannot be recharged. When the supply of reactants in the battery is exhausted, the battery stops producing current and is useless. Common types of disposable batteries include zinc-carbon batteries and alkaline batteries.

Secondary batteries can be recharged; that is, they can have their chemical reactions reversed by applying electric current to the cell. This regenerates the original chemical reactants, so they can be used, recharged, and used again multiple times.

The oldest form of rechargeable battery is the *lead-acid battery*, which are widely used in automotive and boating applications. This technology contains liquid electrolyte in an unsealed container with low manufacturing cost and its high surge current levels.

Cell type:

- ***Wet cell***

A wet cell battery has a liquid electrolyte. Wet cells are still used in automobile batteries and in industry for standby power for switchgear, telecommunication or large uninterruptible power supplies, but in many places batteries with gel cells have been used instead. These applications commonly use lead-acid or nickel-cadmium cells.

- ***Dry cell***

A dry cell uses a paste electrolyte, with only enough moisture to allow current to flow. A standard dry cell comprises a zinc anode and a carbon cathode. The electrolyte is ammonium chloride in the form of a paste. In some designs, the ammonium chloride is replaced by zinc chloride.

- ***Fuel cell***

A fuel cell is an electrochemical cell that converts the chemical energy from a fuel into electricity through an electrochemical reaction of hydrogen fuel with oxygen or another oxidizing agent. Fuel cells are different from batteries in requiring a continuous source of fuel and oxygen (usually from air) to sustain the chemical reaction, whereas in a battery the chemical energy comes from chemicals already present in the battery. Fuel cells can produce electricity continuously for as long as fuel and oxygen are supplied.

- ***Other...***

There are many other types of batteries that are less common: molten salt batteries, water-activated batteries...

4. Capacity

- ***Capacity and discharge***

A battery's capacity is the amount of electric charge it can deliver at the rated voltage. A battery rated at 100 AH can deliver 5A over a 20-hour period at room temperature.

The C-rate is a measure of the rate at which a battery is being charged or discharged. A 1C discharge rate on a 1.6 Ah battery means a discharge current of 1.6 A. A 2C rate would mean a discharge current of 3.2 A.

- ***Fast-charging, large and light batteries***

As of 2012, lithium iron phosphate (LiFePO₄) battery technology was the fastest-charging/discharging, fully discharging in 10–20 seconds.

TECHNICAL PARAMETERS	LEAD-ACID BATTERIES	LITHIUM-ION BATTERIES
Energy density (Wh/kg)	20 – 45	100 – 200
Power density (W/kg)	100 – 200	200 – 4,000
Life-time (years)	3 – 10	10 – 15
Capital expenditures USD/Kwh	290 – 580	930 – 1,850

Source: MoEE, Germany (2015), KBSV Research

- **Future trends for battery storage technologies**

Among all types of electrochemical storage technologies, Lithium-ion batteries have reached the most advanced stage of maturity. It is not expected that further significant advancements in terms of technical performance (Eg. energy density) will be reached within the near future.

However, it is projected that investment costs for Lithium-ion batteries will be further reduced. According to a study by McKinsey, focusing on automotive applications costs are expected to reach the benchmark of USD 300/Kwh already by 2020. Cost reductions are based on technical advances in cathodes, anodes and electrolytes (40%), manufacturing productivity improvements (40%) and decreasing costs of raw materials (20%).

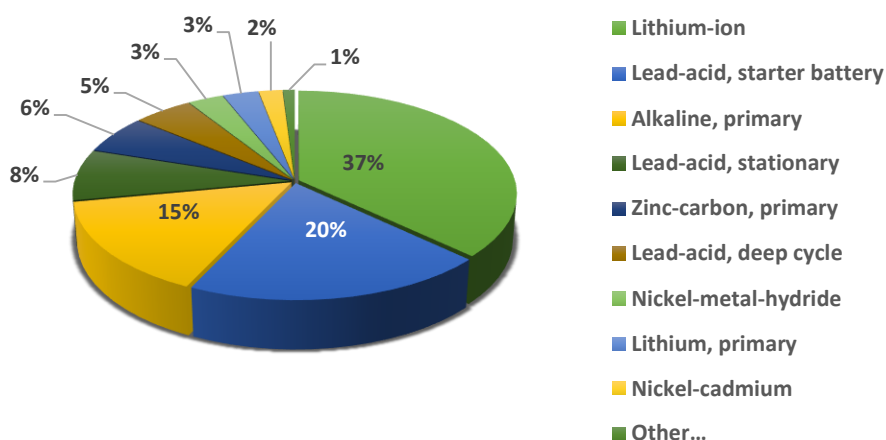
5. Development

- **Electronic equipment market**

The development of electrochemical power in the near future 2020 and the period from 2020 to 2030 will depend on the following main markets:

The increasing popularity of consumer electronics on a global level is forecasted to lead to high demand for Lithium-ion batteries in the coming years. In particular, high demand for hand-held electronic devices, such as smartphones, LCDs, tablets and hand-held devices (eg: health watch) will contribute to the growth of the global dry cell and battery market. However, although most of electronic devices use batteries, but this field of application does not bring high income so does not occupy a large battery market share.

Global revenue contributions by different battery chemistries



Source: Frost & Sullivan (2017), KBSV Research

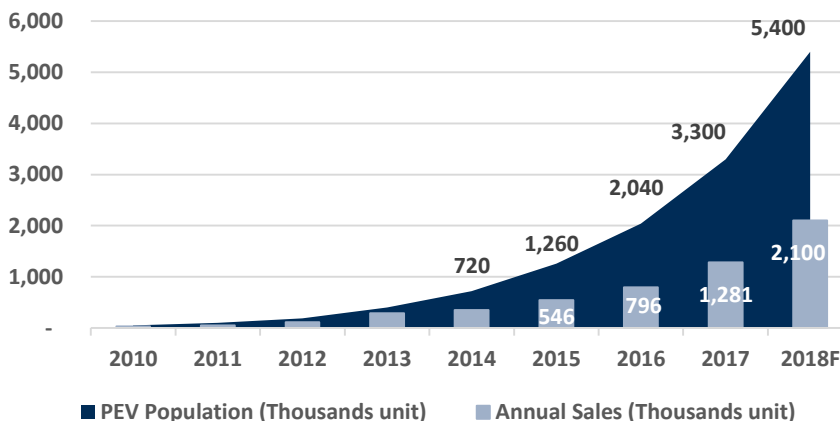
The issue of recovery and recycling of post-consumer electrolysis products must also be addressed in the same way as electronic waste disposal. The current problem is that the technology of battery recycling after use is as expensive as new production.

- **Automotive starting (SLI: Starting, Lighting, Ignition) battery market**

Thanks to the growing demand of the civil and the economic use, the industry of electric cars and hybrid cars has become the largest application area for dry cell and battery products. In addition to providing clean energy, SLI applications (startup, lighting, ignition) in cars also contribute to the high demand for batteries and accumulators.

Global Plug-in Electric Vehicles (PEV)

Source: EVvolumes (2018), KBSV Research



In the context of fossil fuel reserves running out, and at the same time high CO₂ emissions are causing concern about the greenhouse effect and climate change, the favorable policies of the governments towards non-polluting transportation is expected to support the market for electric cars and the rechargeable battery market in the coming years.

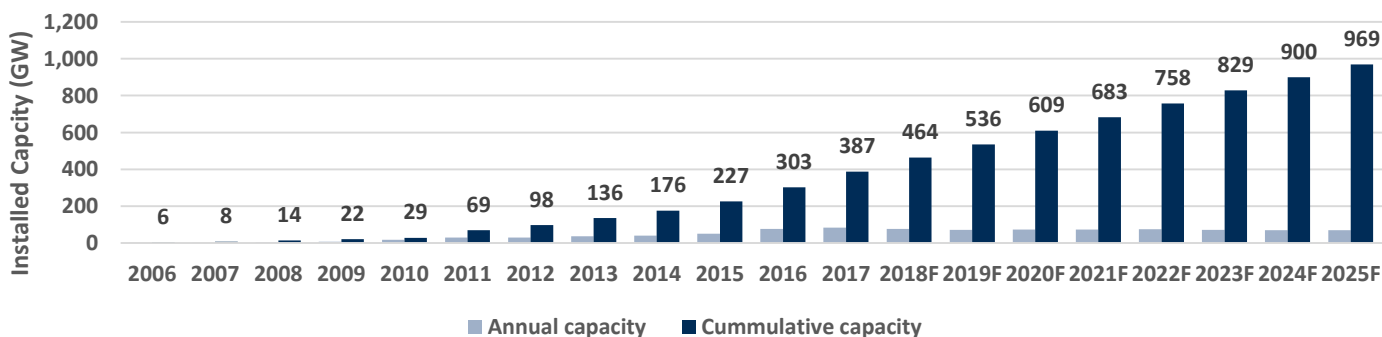
With efforts to reduce costs and promote global marketing, electric car manufacturers are encouraging people to adopt and use non-polluting vehicles to help protect the environment. By 2015, the price of batteries used for electric vehicles by **Tesla and Nissan** companies has dropped sharply to just USD 300/Kwh, so the cost of driving electric cars shall be equal the running cost of vehicles powered by fossil fuel (Eg. gasoline)

- **Battery for Solar Storage**

Storage of solar, wind energy plays an increasingly important role. Photovoltaic conversion systems along with wind motors provide ever higher conversion efficiency. This potential depends on the energy structure of each country. Electrochemical batteries, however, are still the only means of storing electricity. The national grid requires battery stations for load-leveling purposes.

Global photovoltaic energy system 2006 - 2025

Source: GlobalData, KBSV Research



- **Objectives and roadmap for development**

For developing countries with outdated technology, to actively integrate and innovate technology, there is no other way than the form of joint venture. The most popular mode of Joint venture is to keep the original genuine design to enjoy the brand reputation (OEM) and bring new products to market soon.

II. VIETNAM BATTERY INDUSTRY OUTLOOK

1. Production of dry cell and batteries of Vietnam National Chemical Corporation (VINACHEM)

According to data from Planning – Market Department of VINACHEM, the production of dry cell and batteries of 4 companies (PINACO, TIBACO, Hanoi Battery and Vinh Phu Battery) in 2017 as follows:

- Dry cell: 2017 output of ~325 million units (Total design capacity of 500 million units)
- Battery: 2017 output of 2 million Kwh (Total design capacity of 2.8 million Kwh)

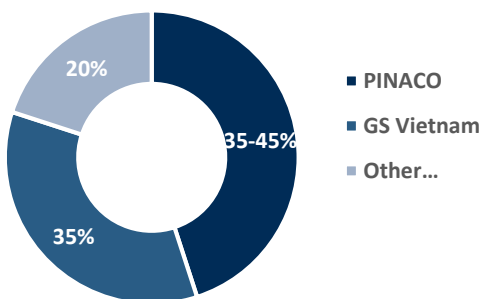
The growth rate of the products reached 3-8% in recent years, the revenue occupied 7-10% of industrial production value of VINACHEM, meeting 50% of the domestic market demand for dry cells and 40% for batteries.

VINACHEM's traditional products are wet batteries, dry batteries, lead-acid batteries for motorcycle, automobile starting, civil and mining. A small percentage of exports to neighboring countries such as Cambodia, Middle East and some other countries.

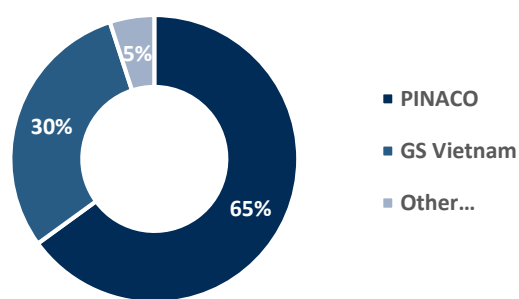
2. Current technology and inadequacies

VINACHEM's battery & dry cell manufacturing systems are now mostly over 40 years-old with original production lines and equipments of the 1960s. Technological innovation efforts in the last few years just improved inline production, increased capacity & productivity. Due to capital constraints, the overall efficiency has not been improved, the cost of production is still high with vast energy consumption, and the products had low competitiveness (for example, start-up batteries account for 40% of the market but only initially entered the assembly industry of high quality cars, the battery meets 50% of the market demand for "light - radio" but turnover value is low and there is no place in the market of wireless electrical equipment (smartphone...)).

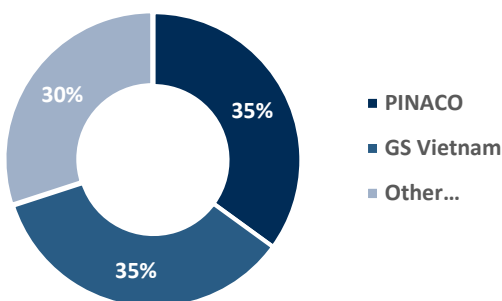
Battery for autos, 2017 marketshare



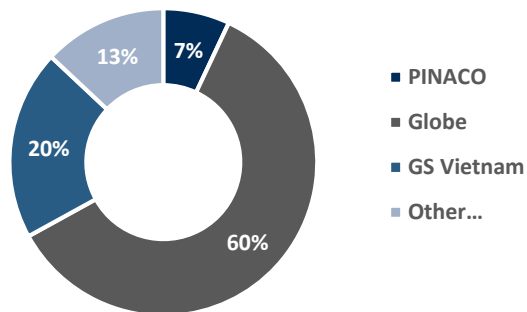
Wet battery for autos, 2017 marketshare



Dry battery for autos, 2017 marketshare



Dry battery for motors, 2017 marketshare



Our national electrochemical battery production was not linked to two markets boom in the past recent years: high-quality automobile assemblies with demand for specific types of batteries for each type of commercial vehicle and especially for passenger car, the wireless electronics market (smartphones, tablets ...) with the growth rate of 20% for rechargeable batteries (Li-ion and Ni- MH). In the vision plan 2010 – 2020, VINACHEM expects to buy Lithium-ion battery technology after 2010, but has not yet started until now?

The biggest problem is that we are slow in planning and seeking joint ventures to innovate in order to create a market-leading product. At present, in Vietnam, there are four 100% foreign-owned enterprises producing batteries for automobile assembly and export (3K – Battery, LELONG, Glope and GS Vietnam) currently have capacity many times bigger than VINACHEM', ready to saturate and dominate the traditional market with their brand and high. In addition, PINACO's refusal to enter into a joint venture with Mitsubishi and JSB (Japan Storage Battery) to set up the GS Vietnam factory is a mistake in the free trade trend, ignoring the opportunity to innovate technology, coming to the market along with a big brand name of the power sector.

Another issue belongs to market for wireless electronics device (phones, tablets ...). According to the Ministry of Information and Communications. By the end of June 2018, the number of subscribers in Vietnam is 123 million, with 20 times growth compared to the beginning of 2010. The demand for Lithium-ion batteries is ~10 million units via a non-commercial route equivalent to USD 30-40 million. Technology innovation delays increase the risk of backwardness, economic loss and reduced growth. In contrast, the production lines of battery have been fully depreciated, high energy consumption and causing pollution.

III. DRY CELL & STORAGE BATTERY JOINT STOCK COMPANY

1. Overview

Formerly known as Southern Battery Company (HoSE: PAC), was established on the basis of nationalization of dry cell and battery factories in the South including: Eagle Dry Cell Company (Vidofin), Pin Con Meo, Pin Hot Xoan, VABCO and VIDEKO Battery Factory. The company's business registration certificate was first issued on Sep 23, 2004 by the Department of Planning and Investment of Ho Chi Minh City and the 8th registration on Jun 22th, 2016. The company is a member of Vietnam National Chemical Group (VINACHEM). Its main activity is to produce dry cell and lead-acid Battery for domestic market and export.

PINACO currently has 3 members:

- Dong Nai Battery Factory
- Dong Nai Battery Factory 2
- Eagle Dry Cell Factory

Shareholders with the largest stake in PINACO:

<i>As of Oct 15th, 2018</i>			
No.	Name	Stake	Ownership (%)
1	Vietnam National Chemical Corporation	23,898,273	51.43
2	Furukawa Battery Co., Ltd	4,899,708	10.54
3	Vietnam Holding Limited	2,211,800	4.76
4	PINACO' Labor Union	1,080,054	2.32
5	KIM Vietnam Growth Equity Fund	1,018,982	2.19
6	KITMC Worldwide Vietnam RSP Balanced Fund	545,730	1.17
Total		33,654,547	72.41

2. Investment catalysts

PINACO is a leading dry cell and battery company in Vietnam. The company holds 50% of domestic dry cell marketshare and 40% of battery marketshare. The key market for PINACO is the South area, while the PINACO' batteries are sold nationwide. The company sells products through brokerage agencies for major manufacturers in Vietnam such as:



Nationwide distribution network with more than 200 distributors. The quality system of PINACO was certified by ISO 9001, ISO/TS 16949, ISO/IEC 17025, ISO 14001.

Complete Maintenance Free (CMF)



Dry – charged batter used for autos, truck, ship...



Motorcycle battery



Deep cycle battery used for golf cart, scooter, forklift...



Dry cell (R2DP-R20C/UM1/D Size)



Dry cell (R6P/UM3/AA)



Alkaline dry cell (LR6/AM3/AA)

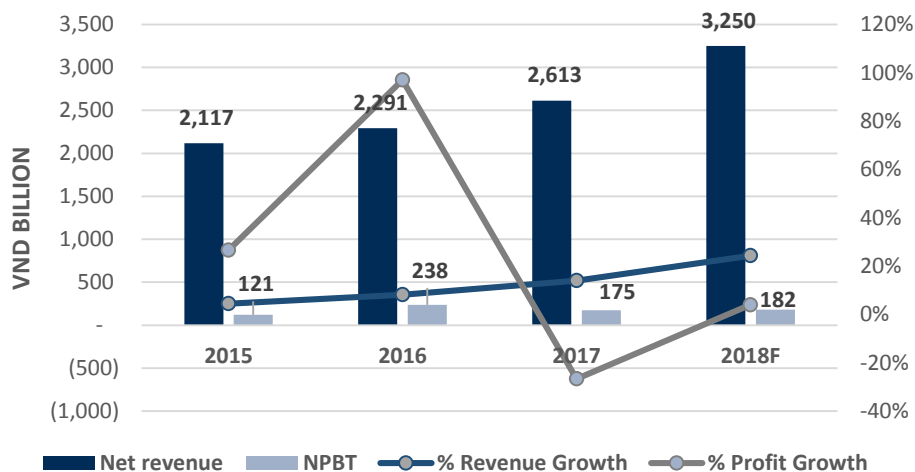
Alkaline dry cell (R03/UM4/AAA)



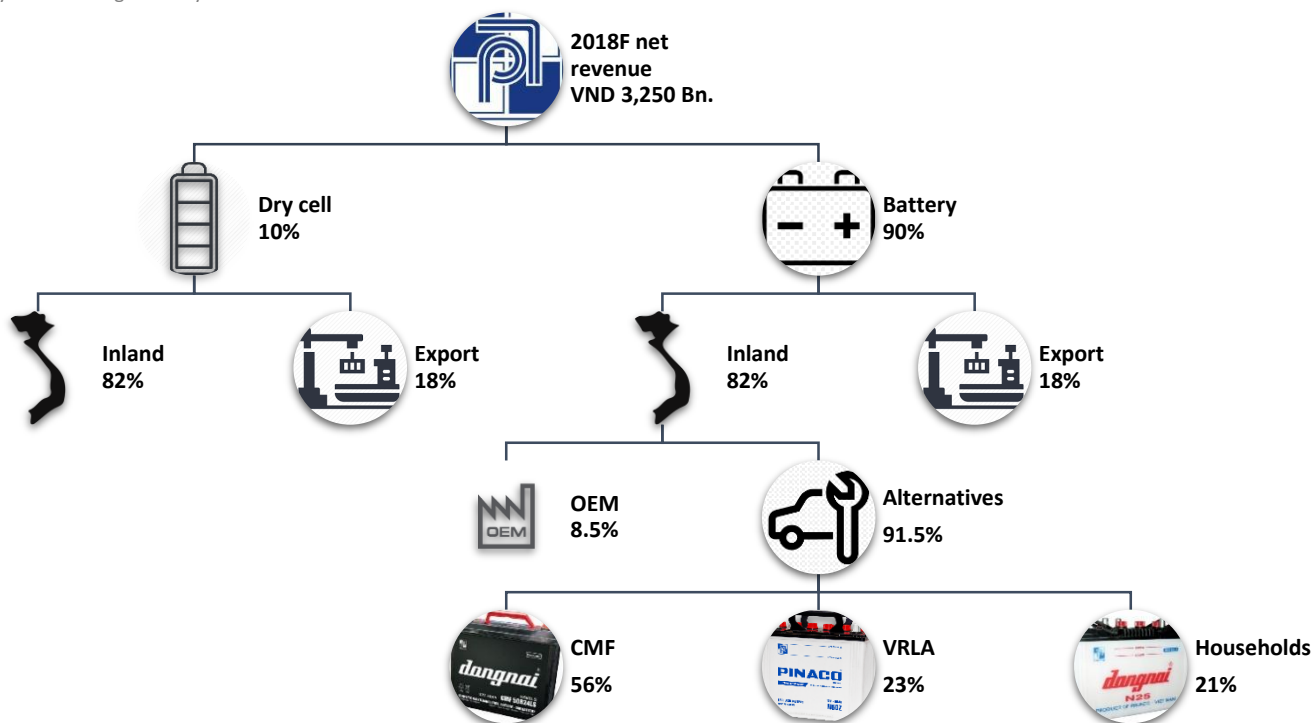
PINACO's products have high quality with technology transferred from Europe, Japan, advanced machinery and equipment of Austria, USA, Germany, UK, Italy, PINACO has advanced management system that meet the strict requirements of many customers and the leading automobile & motorcycle assembly companies in Vietnam.

In recent years, PINACO has a stable revenue growth rate, averaging over 12% per annum. Particularly in 2017, despite the difficulties of the automobile market, the company has consistently implemented growth policies and plans in order to maintain its market share, boosting 2017 revenue growth compared to 2016 (+14% YoY). At the same time, in the year, the company had an extraordinary income from compensation of VND 25 billion, which helped its profit before tax amounted to VND 175 billion, slower than 2016. Domestic sales grew by 13% and export sales grew by 15% compared to 2016. PINACO exports products to 32 countries and territories.

2015 - 2018F BUSINESS RESULTS



In 2017, profit before tax of reached 175 billion, up 6.06% compared with the plan and down 37.5% over the same period last year. The reason is that input price of lead (+27.2% YoY) and zinc (+42.7% YoY) increased sharply during the year, while selling prices were just up to (+3.83% YoY) compared to 2016. Profit in 2016 increased sharply due to some changes in provisions for salaries, supplies and selling expenses. At the same time, in 2017, the Company had a significant income from the compensation of partner of VND 25 billion, together with the localization a part of supply sources of zinc and lead materials which helped the company's 2017 pre-tax profit achieved VND 175 billion, which was lower than 2016.



Source: PINACO, KB Reseach

Pinaco's manufacturing capacity is leading domestic market: PINACO is the nation's largest manufacturer of dry cell & batteries.

Product	Mesurement	Nationaliztion	1990	2000	2008	2009	2017	2018F
Dry cell	Unit	25	41	115	250	250	280	300
Battery	Million Kwh	0.2	0.4	0.5	1.1	1.2	2.2	2.4

Source: PINACO, KBSV Research

Pinaco's manufacturing capacity is leading domestic market: PINACO is the nation's largest manufacturer of dry cell & batteries.

2. Investment risks

- Material input price

The main raw materials for the company's production are lead and zinc (70% for batteries and 30% for batteries), in which lead and zinc prices in 2017 increased sharply, affecting the initial input costs of PINACO. Prices for lead and zinc have peaked in the first quarter of 2018 (lead: USD 2,600/tonne and zinc: USD 3,400/tonne). In second quarter of 2018, lead and zinc prices have fallen by 15% - 20% to USD 2,200/tonne and USD 2,700/tonne respectively. The main reason was due to high demand. In addition, supply was limited due to the lack of new mines and tighter control policy of the environment of Chinese government. Increased input costs have led to increased costs of production and lower gross profit margins.

PINACO is looking for new sources of supply, increasing use of domestic resources and researching alternative materials to reduce the impact of raw material prices on business performance.

- Fierce competition

Participation in next-generation FTAs, Comprehensive and Progressive Agreement for Trans-Pacific Partnership - CPTPP (CPTPP) will make competition from imported products even more acute due to decreasing import tariffs as per CPTPP commitments. For PINACO, the competition comes from famous brands in countries with strong battery industry: Japan, Korea, ASEAN countries, etc.

PINACO is investing, renovating equipment. Most production equipment is selected from the world's leading suppliers in the G8 countries. With the foundation of technology accumulated over 40 years of operation and new technologies transferred from Europe, Japan, Korea ... will help PINACO improve the quality of their products, create new products to meet consumer demand.

- Sales policy

PINACO maintains a payment discount rate for agents with a relatively high percentage of revenue in 2017 and 2018 (over 5%), which has significantly increased the financial cost of the business.

- Legal risk

Battery business must comply with regulations and standards of the *Environment Law (2014)*. Meanwhile, the cost of recycling wastes is as expensive as new production.

PINACO operates in battery manufacturing industry. The main raw materials of the company are lead and zinc. Meanwhile, lead is the most polluting and poisonous substance affecting the surrounding environment. Vietnam Government is tightening its environmental protection policies, as well as strengthening sanctioning of environmental violations of industrial plants to ensure sustainable development.

- Risk of substitutions

Dry cell technology is changing very fast with the arrival of new technologies: rechargeable dry cell, lithium-ion cell, fuel cells, etc. Some technologies have replaced the PINACO products in certain segments such as rechargeable laptop, electric bikes, electric cars, etc. In the dry cell market, zinc – manganese dry cell that PINACO is producing has old technology, the growth rate for this product is deteriorating, especially demand for big dry cell (R20, D size) is declining strongly and will end its life-cycle in the near future. Lead-acid batteries are also being replaced by newer, more advanced batteries.

Recently, VinFast (Vingroup) and LG Chem (LG) have signed a Memorandum of Understanding (MoU) for the production of batteries with international standard. Batteries will be used for products in the Vingroup ecosystem, including electric vehicles, telephones, and industrial products in the future. This shows that PINACO has been slow to research and innovate technology, catching up with market trends.

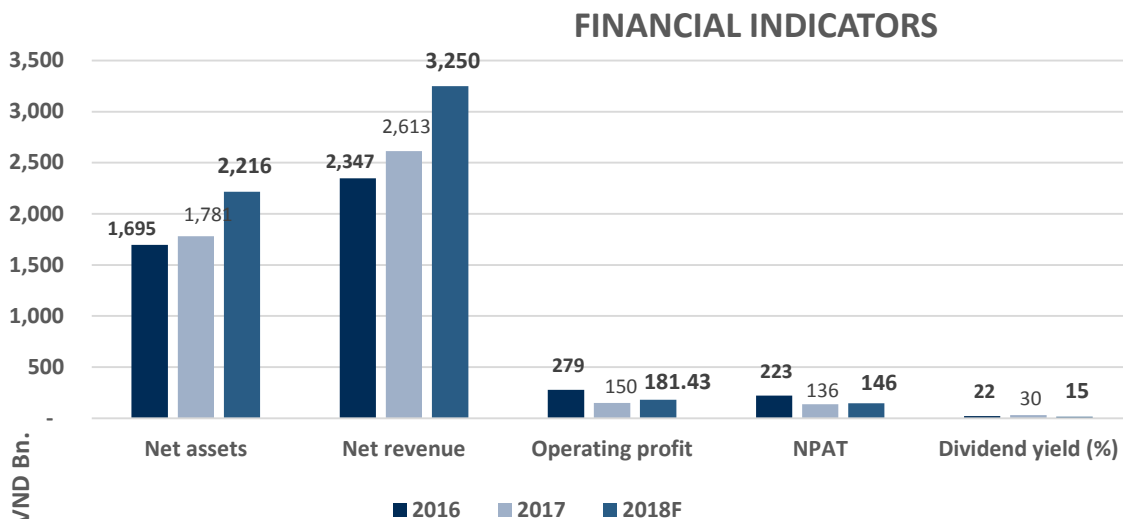
PINACO is investing heavily in R & D, looking for partners to research and actively seek out new technologies to replace existing old technologies for development in the future.

3. Financial structure

- Financial indicators

By the end of 2017, total assets reached VND 1,781 billion (+5.33% YoY). The reason for the increase is mainly in long-term assets. In particular, the investments to maturity are VND 205 billion. This is a savings deposit at banks with interest rates 5.3% - 9.75%. In the year 2017, to capture the potential development, PINACO re-organized production plan to improve efficiency. Accordingly, PINACO has invested in 2 hectares at VSIP Bac Ninh to build finished-product and office, strengthened cooperation with overseas leading companies such as Furukawa Battery.

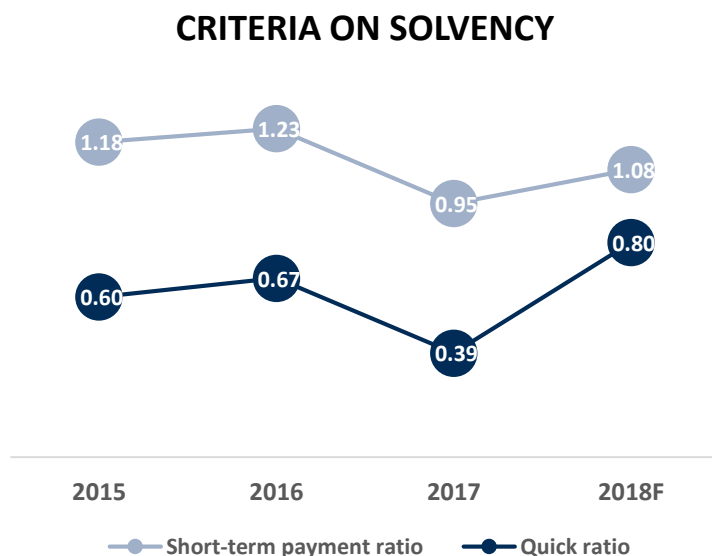
On the other hand, due to difficulties in 2017, the company has been flexible in implementing production plans. Adjust the production volume of each product line to suit the market situation. Specifically, gloomy car consumption in 2017 led to poor battery consumption. So. In order to solve this problem, PINACO actively negotiated the payment discount rate with distributors and provided various products. 2017 revenue reached 2,864 billion (+13% YoY)



However, due to the impact of raw material price increases. Specifically zinc prices increased by 43% compared to 2016, lead price increased by 27% compared to 2016. PINACO's profit before tax was only VND 175 billion, down 38% compared to 2016.

- Criteria on solvency

In 2017, the solvency criteria of PINACO decreased compared with 2016. Short-term payment ratio decreased from 1.23 times to 0.95 times. The main reason is that in 2017 the company spent more than VND 44 billion to buy two hectares of land in Bac Ninh for investment in warehouses and offices, spent more than VND 100 billion to buy machinery, equipments and built a factory. At the same time, the short-term financial investments have been translated into long-term financial investments (the change in term of savings deposits), from VND 467 billion to VND 248 billion. The quick ratio of PINACO has dropped by half compared to 2016, from 0.67 times to 0.39 times, mainly due to the increase in inventories from VND 572 billion to VND 627 billion. Due to the high price of lead and zinc, inventory value increased.

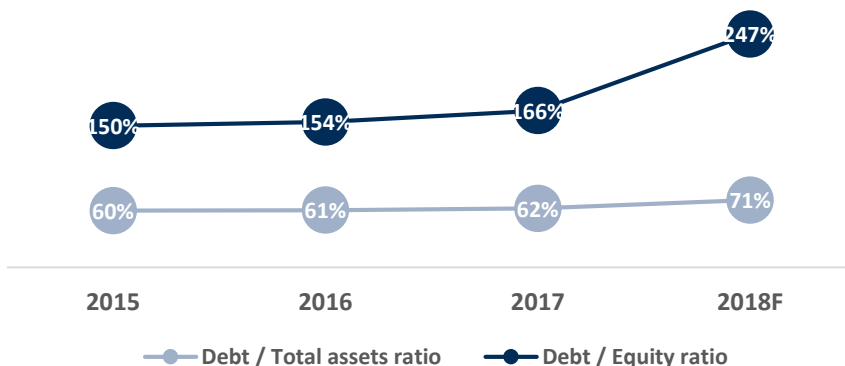


In 2018, KBSV, the criteria on solvency will recovery due to the decrease in inventory value. The fall 15-20% in lead and zinc prices in the second quarter of 2018 (lead price from USD 2,600 to USD 2,200/tonne, zinc price from USD 3,400 to USD 2,700/tonne). In addition, short-term savings deposits will increase by VND 300 billion. The short-term payout ratio will be 1.08 and the quick payout ratio will be around 0.8 (double that of 2017).

- **Criteria on capital structure**

In 2017, criteria on PINACO' capital structure will tend to increase compared to 2016. Specifically, debt/total assets ratio increased from 60.56% to 62.36% and debt/equity ratio increased from 153.56% to 165.67%. The main reason is, due to low interest rates, PINACO actively borrowed from the bank to supplement working capital, production and investment in expansion of production and business operation.

CRITERIA ON CAPITAL STRUCTURE



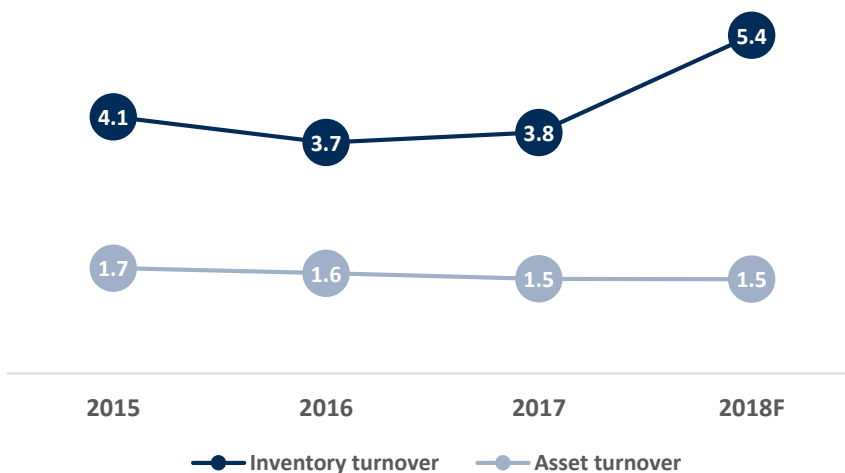
In 2018, with interest rates of only 4-5% for VND loans and 2 - 3.5% for USD loans, Pinaco will continue to borrow VND 250 billion to expand its production. According to the estimates of KBSV, debt/total assets ratio will be 71% and the debt/equity ratio will be 247%. Due to the difficult situation of consumption, PINACO will continue to increase payment discount rate to distributors and selling expenses.

- **Criteria on performance**

In 2017, the PINACO's inventory turnover will increase from 3.66 to 3.82 times over the same period of 2016, due to higher input prices. COGS increased from VND 1,848 billion to VND 2,294 billion.

PINACO's total asset turnover in 2017 decreased slightly from 1.59 to 1.50 over the same period last year. The reason is that the growth rate of total assets is higher than the growth rate of net sales. Over recent years, the company has been expanding its business to increase the capacity of factories.

CRITERIA ON PERFORMANCE

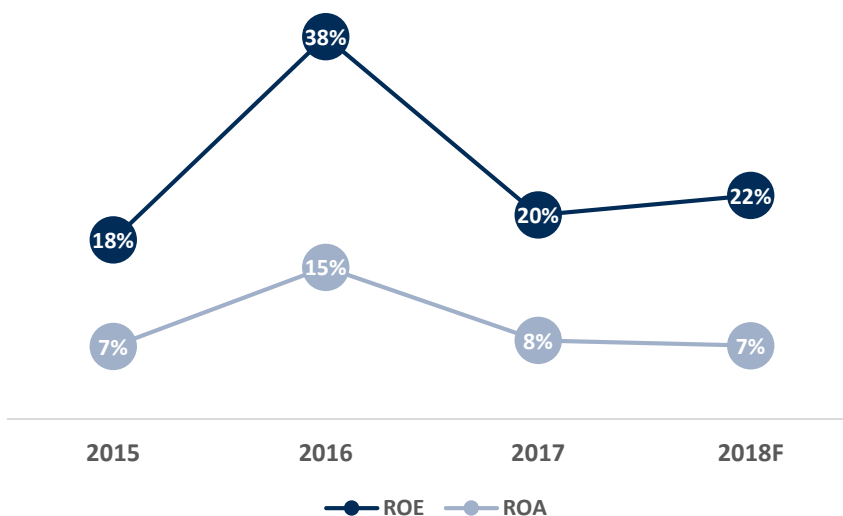


In 2018, KBSV estimates inventory turnover will increase to 5.4 cycles while the total asset turnover will remain at 1.50. The main reason is the strong performance of the company in order to free up inventories. At the same time, there are no large expansion projects in 2018 so it will not affect the overall asset turnover.

- Criteria on profitability

In 2017, criteria on profitability of PINACO decreased, the main reason was that the cost of input materials increased sharply. Profit from business activities decreased from VND 279 billion to VND 150 billion. As a result, the company's profit after tax decreased from VND 279 billion to VND 150 billion, equivalent to a 60.82% decrease in net profit after tax compared to 2016. However, PINACO has taken measures to mitigate risks from raw material price fluctuations. Tighter control of production and business costs in order to overcome the difficult period.

CRITERIA ON PROFITABILITY



In 2018, raw material costs tend to decrease from the second quarter, so the ROE is projected to increase slightly from 20% in 2017 to 22% in 2018. The ROA is almost unchanged compared to 2017.

4. Capital expenditure

PINACO' board of directors recently approved the project to lease 8.54 hectares of land in An Phuoc Industrial Zone – Dong Nai Province to increase the land fund for the relocation of the Dong Nai battery factory and to meet the development planning program until 2030. The expected lease term is 44 years (until 2062). Total investment is nearly VND 190 billion, expected to be allocated in the first quarter 2019. In order to meet the environmental requirements, factories in Bien Hoa must be relocated to An Phuoc Industrial Park before 2022. The application for a construction permit and the completion of the plant lasted from 3 to 4 years. If the project is delayed, it will seriously affect the capacity of PINACO.

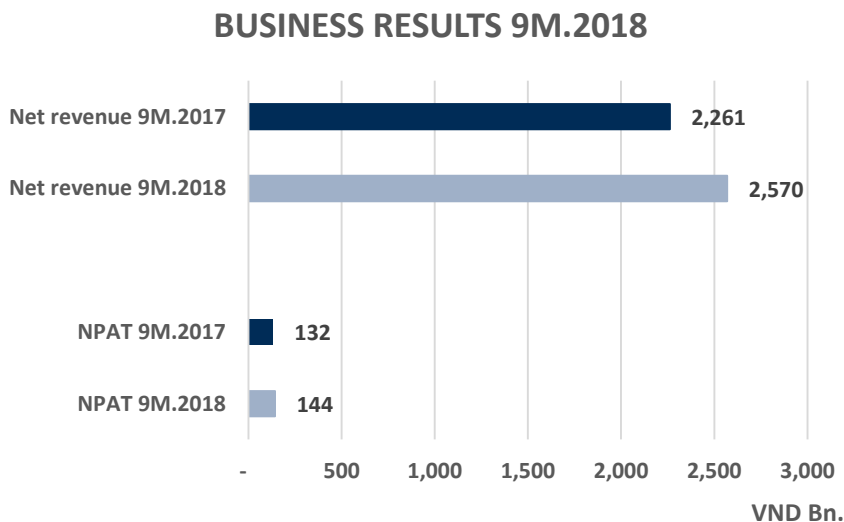
In 2018, PINACO will complete the relocation of Eagle battery factory to Tan Tao Industrial Park. However, relocation will affect production and increase costs. Establishing northern branch at VSIP Bac Ninh Industrial Park. To continue investing in 01 automobile battery assembly line; pole extrusion, industrial battery production equipment and equipment to increase the capacity of battery production in 2018 to over 2.5 million Kwh per year and over VND 350 million cells with the total value of investment over VND 160 billion.

Developing all types of battery for: electric vehicles, stations, market-demand products. Acquiring land for expansion of Dong Nai 2 battery factory and prepare for new battery factory to meet consumption demand after 2020.

It should be noted in the PINACO' interim financial statement that an investment in Think Phat Real Estate Investment Co., Ltd. with a 26% ownership and this investment is in a loss. This is not accounted for in the business result 2017 - 2018 due to insignificant losses.

5. 2018 - 2019 business results forecast

- Business results estimate for 9 months of 2018



According to the estimates of KBSV, net sales of 9M.2018 reached VND 2,570 billion (+13.6% YoY) and Profit before tax was VND 144 billion (+ 9.2% YoY). Net revenue increased by 13.6% compared to 9M.2016 mainly due to a 10% increase YoY in average selling price, while sales volume increased slightly by 2% YoY. The production was low due in part to factories of PINACO were operating at full capacity. Profit from core business was affected by the sharp increase in selling expenses, of which the commission for distributors was over VND 80 billion.

According to VAMA report, up to the end of September, 2018, autos sales of the whole market fell 2% over the same period last year. In particular, passenger cars increased by 13%; commercial vehicles decreased 19% and special vehicles decreased 43% compared to the same period in 2017. Motorcycle sales increased slightly by 4% as this market is almost saturated. This affects the OEM battery demand especially for commercial vehicles. In the last 3 months of the year, the rising passenger car sales will partially compensate for PINACO's OEM output growth.

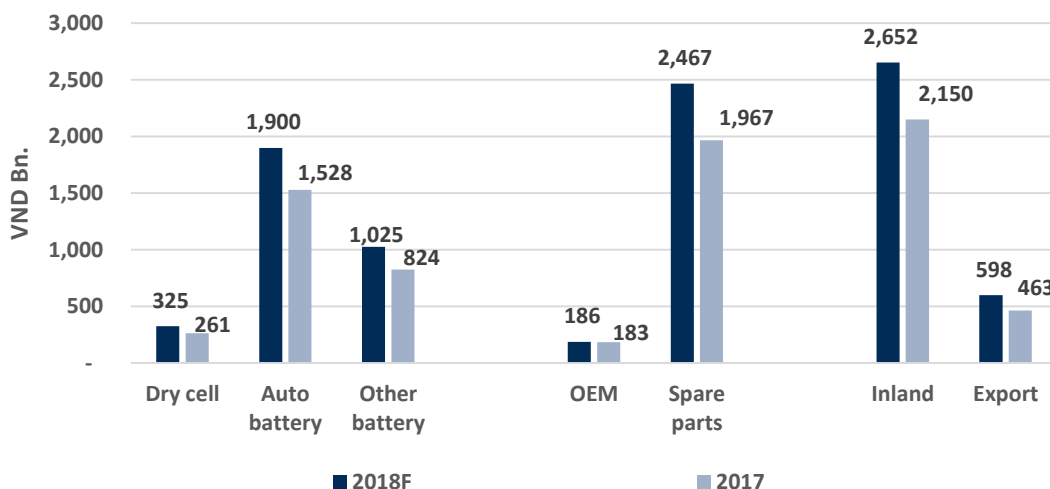
Competition in the industry is fierce. Currently, PINACO provides starting batteries for low-end motorcycles, Koreab light trucks and a few specialized vehicles. This type of product is not competitive with foreign competitors (GS, Globe ...) and is losing market share. The number of orders from the assemblers: THACO, Ford, Hyundai, Honda, Yamaha ... decreased. The company also faced with competitive importing batteries from Korea. Due to Korea Government' subsidy, the price of imported products is lower than that of PINACO.

Selling price increased by 10% while the battery sales volume still increased slightly by 2%, indicating that PINACO is a manufacturer that has influence on the battery market. Demand from alternative batteries has offset the decline in OEM shipments.

- Business results forecast for 2018

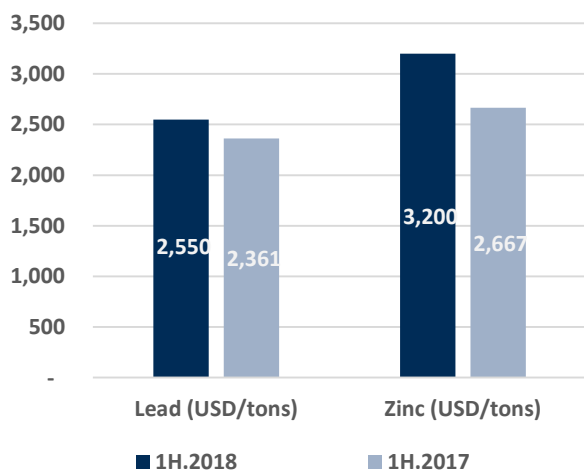
In 2018, KBSV forecasts pretax profit will come to VND 118.4 billion (+4.1% YoY), net sales will come to VND 3,250 billion (+24.4% YoY) and pretax profit will come to VND 182 billion (+4.1% YoY). Excluding non-recurring income in 2017 from the compensation of 445 Gia Phu project, PINACO' profit after tax from its core business is up 19.8% compared to 2017. Assumptions are as follows:

2017 - 2018 revenue structure

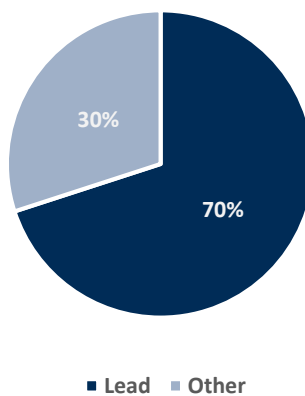


Dry cell output will reach 300 million units. Battery production reached 2,200,000 Kwh. Average selling price increased 10%. Gross profit is forecasted at VND 414 billion (+30% YoY). The gross profit margin increased from 12.2% to 12.8% ss the PINACO transferred the price increase (10% COGS increase) to customers through the increase in selling price (10% increase in selling price).

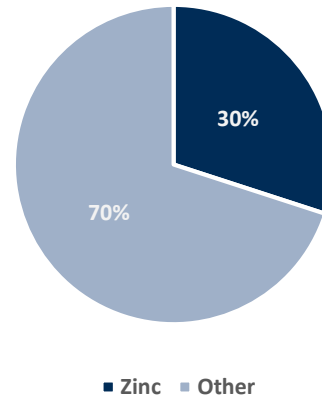
Average input price



Battery cost structure



Dry cell cost structure



Gains from financial activities came from deposit interest while loss on translating foreign exchange was VND 8.4 billion, estimated depreciation of VND against USD until the end 2018 was 2.8%. As a result, financial losses will be around VND 6.8 billion. Short-term debt will increase by 40% YoY in order to build capital for investment activities and pay 2018 dividends.

Selling and administrative expenses will increase sharply, with selling expenses of VND 177 billion (+24% YoY) and administration expenses of VND 54 billion (+24% YoY), equivalent to 5.3% of sales. The reason is PINACO has conducted a marketing campaign to regain market share from rivals (VND 30 billion), hired 100 additional staff to expand battery distribution system. Employee benefit policy changed from April 2018 led to higher labor costs.

- Business results forecast for 2019

With the above estimates, in the year 2018, KBSV forecasts PINACO' after tax profit will be around VND 145.9 billion (+7.2% YoY), the 2018 target EPS will be VND 3,132 with target P/E of 14.2.

In 2018, battery capacity of PINACO is 2.2 million Kwh (+ 22.2% YoY). As planned, in 2019, PINACO will increase capacity to 2.4 million Kwh (+ 9.1% YoY). PINACO is seeking to buy a new plot of land to build a new factory right next to the current Nhon Trach plant to increase capacity. The company is currently submitting files to VINACHEM for approval of this plan. Total investment capital is about 1,500 billion VND.

Dry cell capacity in 2018 is 300 million units and is expected to increase to 350 million units in 2019. Pinaco's dry cell segment yields is twice as much as battery. However, the revenue of the dry cell segment only accounts for 10% of the total net revenue. PINACO is planning to boost its dry cell sales in 2019.

Assuming a 4% increase in average selling price and a sales volume equal to the estimated capacity. For 2019, KBSV forecasts net sales will come to VND 3,713 billion and pretax profit of VND 208 billion, equivalent to a leading EPS of VND 3,579 and a leading P/E of 12.3.

6. 2018 dividend payment plan and VINACHEM' divestiture

PINACO has just announced the closing date of the shareholders list for the first dividend payment in 2018, advance 8% cash dividend for shareholders as listed on Oct 10th, 2018. Dividends are expected to be paid on Oct 25th, 2018.

With nearly 46.5 million outstanding shares, PINACO expects to spend more than VND 37 billion for this dividend advance. Along with that, VINACHEM will earn over VND 19 billion by owning 51.4% stake of PINACO. Previously, in June 2018, PINACO spent nearly VND140 billion to pay off 30% cash dividend of 2017.

Decision No. 16/QĐ-TTG dated Jan 05th, 2018 on the divestment of VINACHEM in the period 2017-2020, PINACO is one of nine companies that VINACHEM will reduce its ownership rate to less than 50% in 2018 – 2019. Other companies include CSM, DRC, SRC, NET and LIX ... The Ministry of Industry and Commerce has approved the proposal to reduce its ownership to 36% with the volume of shares will be sold equal to 15.43% of outstanding shares.

According to information from PINACO, the process of corporate valuation and auditing has been completed and is expected to divest in 4th quarter, 2018. The specific time will be decided by VINACHEM. Current strategic partner of PINACO is Fukurawa, one of potential investors showing interest in raising stake.

Fukurawa, a Japan company specializing in battery manufacturing, became a major shareholder of PINACO since the end of October 2016 when buying nearly 4.9 million shares of PINACO, equivalent to 10.5% of charter capital. Furukawa Battery has been assisting PINACO in producing VRLA batteries for motorcycles 6 years ago (2010). That was the time when the company was facing difficulties. Products were poor, technology equipments were backward.

According to Decree No. 32/NĐ-CP on divesting State capital at State-owned enterprises, the reference price must not be lower than the average closing price for the last 30 trading days and the reasonable price as estimated by the professional consultant firms. Therefore, if there are two or more investors, the Government will organize the auction. At the same time, the divestment will be the key growth driver in the 4th quarter of 2018 for PINACO share price.

7. Valuation

Currently, PINACO' plants are operating at 90 – 100% capacity. The potential growth of PINACO is rather unclear depending on the plan to increase capacity, improve technology and expand distribution systems.

At the current price of VND 44,200 per share, PINACO is trading at 12M-trailing P/E of 19x, equal to battery industry P/E and battery industry P/B of 2.5x. However, with 2018 forecasted net profit of VND 145.5 billion (+14.2% YoY) and 2019 forecasted net profit of VND 166 billion (+15% YoY), KBSV recommends **BUY** with an estimate of PINACO fair value at **VND 52,000 per share**. Respectively, the 2018 target P/E is 17.2x.

VINACHEM's divestment plan in the 4th quarter of 2018 will be the driving force for the PINACO share price when there is more than one potential investor interested in PINACO.

Name	Market Cap (VND Bn.)	P/E	P/B
Camel Group	28,383	12.4	1.6
Shinry Technologies	15,022	36.1	4.4
Nippo Batteries	58,350	17.7	2.1
Amara Raja Batteries	38,892	21.8	4.2
High Energy Batteries	19,688	42.4	3.7
<i>PINACO</i>	<i>2,082</i>	<i>19.0</i>	<i>3.6</i>
Weighted Mean	162,417	19.4	2.5

Source: Bloomberg, KBSV Research

BALANCE SHEET (VND Bn.)	2016	2017	1H.2018	INCOME STATEMENTS (VND Bn.)	2016	2017	1H.2018
A - CURRENT ASSETS	1,261	1,056	1,577	1. Gross revenue	2,537	2,864	1,730
I. Cash and cash equivalents	108	37	192	2. Deductions	191	251	202
II. Short-term financial investments	467	248	543	3. Net revenue	2,347	2,613	1,527
III. Short-term receivables	94	96	287	4. Cost of goods sold	1,848	2,294	1,333
1. Short-term trade receivables	64	62	223	5. Gross profit	499	319	195
2. Short-term advances to suppliers	15	13	37	6. Financial income	27	50	23
3. Other short-term receivables	15	21	28	7. Financial expenses	24	37	22
IV. Inventories	572	628	530	- In which: Interest expense	14	24	16
1. Inventories	603	654	555	8. Selling expenses	177	138	95
2. Provision for devaluation of inventories	(30)	(26)	(25)	9. G&A expenses	45	43	27
V. Other short-term assets	20	48	25	10. Operating profit	279	150	73
B - NON-CURRENT ASSETS	434	725	552	11. Profit from other activities	2	25	0
I. Long-term receivables	-	5	5	12. Profit before tax	281	175	73
II. Fixed assets	313	417	385	13. CIT	57	39	15
1. Tangible fixed assets	282	348	317	14. Profit after tax	223	136	59
2. Intangible assets	32	69	68	15. Basic EPS (VND)	4,486	3,037	1,162
III. Long-term assets in progress	45	15	23	CASH FLOWS STATEMENTS (VND Bn.)	2016	2017	1H.2018
1. Construction in progress	45	15	23	I. CASH FLOWS FROM OPERATING ACTIVITIES	234	(18)	53
IV. Long-term financial investments	33	238	88	1. Profit before tax	281	175	73
1. Investments in joint-ventures, associates	33	33	33	2. Adjustments for:			
2. Held-to-maturity investments	-	205	55	- Depreciation and amortisation	64	76	41
V. Other long-term assets	44	50	50	- Others	10	(23)	(0)
TOTAL ASSETS	1,695	1,781	2,129	3. Operating profit before movements in WC	355	228	114
C - LIABILITIES	1,027	1,110	1,558	- Change in receivables	8	(53)	(162)
I. Current liabilities	1,026	1,109	1,557	- Change in inventories	(149)	(47)	99
1. Short-term trade payables	86	97	156	- Change in payables	75	(65)	56
2. Short-term advances from customers	65	60	2	- Change in prepaid expenses & others	(54)	(81)	(53)
3. Taxes and amounts payable to the State budget	29	8	8	II. CASH FLOWS FROM INVESTING ACTIVITIES	(341)	(68)	(141)
4. Payables to employees	125	107	55	1. Acquisition of fixed assets	(93)	(120)	(14)
5. Short-term accrued expenses	28	6	110	2. Cash outflow for investment	(267)	(403)	(403)
6. Other current payables	37	19	168	3. Cash recovered from investment	4	432	268
7. Short-term loans	656	811	1,058	4. Interest earned, dividends received	15	23	8
II. Long-term liabilities	1	2	1	III. CASH FLOWS FROM FINANCING ACTIVITIES	82	15	243
D - EQUITY	669	670	570	1. Proceeds from issuing stocks	15	-	-
I. Owners' equity	669	670	570	2. Proceeds from borrowings	2,118	3,287	1,403
1. Owners' contributed capital	465	465	465	3. Repayment of borrowings	(1,987)	(3,132)	(1,160)
2. Share premium	2	2	2	4. Dividends paid	(64)	(139)	-
3. Investment and development fund	19	12	36	Cash at the beginning of the year	133	108	37
4. Retained earnings	183	192	68	Effects of changes in foreign exchange rates	-0	0	-0
TOTAL RESOURCES	1,695	1,781	2,129	Cash at the end of the year	108	37	192

Source: PINACO, KBSV Research

Investment Rating for Company**Buy:** +15% or beyond**Hold:** between +15% and -15%**Sell:** -15% or beyond**DISCLAIMER**

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