

**China Yuchai International Limited** 

# China Yuchai International Ltd.

# [NYSE: CYD]

February 2022



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The financial information presented herein for the financial year ended December 31, 2020 audited and 2021 financial information is unaudited.



### China Yuchai International Ltd.

#### Truck and Bus engines applications





Off-road and Agriculture applications





Marine engines applications







- GYMCL was founded in 1951
- Leading manufacturer of a wide array of light-duty, medium-duty and heavy-duty engines for various applications
- One of the top commercial engine suppliers in annual unit sales as ranked by the China Association of Automobile Manufacturers ("CAAM")
- Operates the largest single facility for the production of commercial automotive and industrial engines in China
- Engine production facilities are based in both GYMCL and its subsidiaries, total capacity of 600,000 units per annum
- World-class R&D program with large patent portfolio
- Over 5,000 domestic services stations, and 23 vehicle engine sales, 15 off road engine sales and 13 marine & powergen engine sales offices throughout China\*
- 13 Overseas sales office located across Asia, Europe and Latin America
- \* As of 31 Dec 2021



### **Vehicle Engine OEMs**





### Off Road /Marine Engine OEMs





### **Market Statistics**

China's economy has reported a high growth of 8.1% for the year with quarterly performances of 18.3%, 7.9%, 4.9% and 4.0% between Q1 to Q4, the rapid increase in the first half of the year has reflected a strong rebound from the decline due to Covid-19 impact in early 2020

### According to CAAM, commercial vehicle unit sales (diesel & others):

- 1. CV industry decreased by -5.2% (excluding EV)
- 2. Truck market YoY change for HD (-13.8%), MD (+12.3%) and LD (-2.3%) segments
- 3. Bus market YoY change for HD (-15.4%), MD (-3.9%) and LD (+21.6%) segments

#### Market review – On road

- 1. HD Truck segment sales was 1.395m, a drop of 13.8% from last year due to pre-buy effect prior to full implementation of Nat VI emission regulation. High distributor inventory level temporarily restrained new truck production
- The HD and MD bus segments were significantly weaker as most public transit buses purchased were electric powered. EV bus sales continued to grow especially in LD market which reported a 113% growth in 2021

#### Market review – Off road

- 1. Agricultural machinery sales has increased due to continuing government incentives for large rating harvesting machinery and tractors
- 2. Demand for construction applications such as loader, excavator and mining truck had increased
- 3. Marine segment declined but demand for G-drive engine had increased due to shortage of utility power supply in second half of 2021



### Market Overview: **Commercial Vehicles 2017-2021**

#### **China Truck Market**



#### Source: China Automotive Industry Newsletter (Powered by Diesel and Others)

#### **China Truck Market Drivers**

- China's economic growth ٠
- Stringent emission standards ٠
- Anti-overloading policies ٠
- Urbanization / logistics networks
- Vehicle / engine dry-weight ٠

#### China Bus Market Drivers

- Rapid expansion into rural areas
- Booming tourism
- Continued urbanization
- Demand affected by EV and HSR



### China Yuchai Unit Sales: 2017-2021



#### **Emission standard in China**

- On road National V emission standard was fully implemented from 1<sup>st</sup> January 2018
- On road National VIa emission standard was fully implemented from 1<sup>st</sup> July 2021
- On road National VIb emission standard implementation is scheduled on 1<sup>st</sup> July 2023
- Off-road Tier 3 emission standards was fully implemented from December 2016
- Off-road machinery (below 560kW) Tier 4 emission standard implementation is scheduled on 1<sup>st</sup> December 2022



### **1. Product Strategy**

- Ensure all products meet current stringent emission standards and be among the first engine manufacturers compliant with future emission standards
- Extend HD products for construction and mining application
- Expand HHP products into marine and power generation markets
- Develop New Energy products for Hybrid, Range-extender, e-Axle and Fuel cell power systems
- Extend product applications

### 2. Business Strategy

- Grow new markets with new products such as High Horsepower engines for marine and power generation segments
- Extend off-road engine platforms for industrial, construction and mining machines
- Nurture strategic alliances with OEM customers
- Grow international business
- Implement cost reductions through Supply Chain and Manufacturing Process improvement
- Explore launching more production and assembly facilities to sustain future growth



## China Yuchai International Ltd.

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## **Operational Overview**







### Yulin Facility Nat VI Engine Manufacturing Plants

#### **Engine Assembly Plant**



微正压、恒温、恒湿车间 Micro-positive pressure, constant temperature and humidity workshop.

### **Engine Component Machining Plants**







### **National VI Engine Assembly Plant**



**Engine Plant No. 5 - HD Engine Assembly Line** 

- Yulin facility is the primary manufacturing facility
- Independent R&D facilities for engine development and testing
- Production of diesel and natural gas engines for various applications
- Production of high horsepower (HHP) engines for marine and power generation market
- In-house machining plants for all major engine components



### **Component Foundry**

### Foundry Phase 1



#### **Foundry Phase 2**



- Foundry Phase 1 and 2 are in full operation for the casting of engine blocks and heads for all engine models
- Large Casting Foundry is fully operational since early 2015, mainly producing the casting for HHP engines
- Total annual capacity over 1 million engine cylinder blocks and/or heads
- One of the largest foundry and engine casting facilities in China



### **High Horsepower Engine Plant**

#### **Engine Assembly Line**

#### **Gantry CNC milling center**



- Designed for HHP engine (16 liter and above) machining and assembly
- HHP engines are mainly used for marine and power generation applications
- Installation of Gantry CNC milling centers for cylinder block and head machining
- New assembly line with robots and other automated processes ensure top quality standards
- Individual automated engine painting line
- Individual engine testing stands for comprehensive performance tests



### Wuhu Y&C Power



**Engine Assembly Line** 

**Machining Center** 

- Latest designed engines (10L 13L) comply with China National VI emission standards
- Production and machining lines are fully commissioned
- Existing capacity for 30,000 units per annum (single shift operation)
- Gas version YC6K engine is available for both on-road and off-road applications
- YC6K13 (13L) is available for HD truck market



### MTU Yuchai Power Company Ltd.



#### **Our JV partner MTU**

- A diesel engine manufacturer specializing in high-speed, large-rating diesel engines for power generation, oil & gas, railway, marine and mining applications
- **MTU** is a wholly owned subsidiary of Rolls-Royce Power Systems

#### **The Joint Venture**

- The Joint Venture ownership of 50:50 between MTU and GYMCL
- Main manufacturing facility is located inside GYMCL factory in Yulin
- □ JV company was incorporated in January 2017
- Total investment of RMB150M in phase 1
- □ In 2021, engine production of 458 units, total sales of 362 units



### Yuchai National VI Emission Standard Compliant Engines

### Yuchai National VI Emission Standard Compliant Engines



**Power Rating (PS)** 

•Full implementation of National VIa emission standards starting from 1<sup>st</sup> July 2021 •Full implementation of National VIb emission standard will start from 1<sup>st</sup> July 2023



### Yuchai National VI Emission Standard Compliant Gas Engines

### Yuchai National VI Emission Standard Compliant Gas Engines



Implementation of National VIa emission standards for gas engine starting from 1<sup>st</sup> July 2019
 Implementation of National VIb emission standards for gas engine starting from 1<sup>st</sup> Jan 2021



### LD and MD National VI Engines



Y24 – 100-150 PS





S06 - 200-270 PS



S04 - 140-200 PS



### **MD and HD National VI Engines**



K05 - 190-240 PS



K09 - 360-400 PS K11 - 430-500 PS



K08 - 300-350 PS



K13 – 530-600 PS K15 – 600-650 PS



### Marine and Power Generation Engine Platform (Tier 3 & 4)



功率/kW



### **HHP Marine and Power Generation Engines**



YC12VT

YC6C

YC12VC

YC16VC

- YC6T/6TD 16/19.5L with 550 900 Ps power rating, available for IMO and T2/T3 standard
- YC6C/6CL 40-54L with 600 1520 Ps power rating, available for IMO and T2/T3 standard
- YC12VT 12 cylinders, 33L, rated at 750 900 Ps, available for T2/T3 standard
- YC12VC 12 cylinders, 79L, rated at 1680-2700 Ps, available for IMO and T2/T3 standard
- YC16VC 16 cylinders, 106L, rated at 3000-3600 Ps, available for IMO and T2/T3 standard
- YC20VC 20 cylinders, 132L, rated at 3750-4500 Ps, available for IMO and T3 standard



### **China Distribution Network**



- 15 off road engine sales centers •
- 13 marine & power gen sales centers •

•



### **International Sales and Service Network**



#### **Global Sales and Service Network**

- 13 international offices
- 276 authorized overseas service stations

#### \* As of 31 December 2021



- National VI Emission Standards (Equivalent to Euro VI)
  - National VI-a emission standard for gas engine was implemented from 1<sup>st</sup> July 2019
  - National VI-b emission standard for gas engine was implemented from 1<sup>st</sup> January 2021
  - National VI-a standard for all engines was implemented from 1<sup>st</sup> July 2021
  - National VI-b standard to be nationally mandated on 1<sup>st</sup> July 2023
- National Tier 3 and 4 Emission Standards for off-road applications
  - Off-road Tier 3 emission regulation was implemented from Dec 2016, Tier 3 engines are available for construction, agricultural and power generation markets
  - GYMLC has launched Tier 4 engines for light- medium- and heavy-duty off-road applications for agricultural, industrial, construction and power generation markets
  - Tier 4 emission regulation is expected to be nationally mandated by 1<sup>st</sup> December 2022

#### Hybrid and Range Extender Power Train

- Yuchai has introduced the new eCVT drivetrain on new generation hybrid systems, to achieve higher efficiency and fuel saving
- 65kW and 100kW Range Extender Power systems are installed in both truck and bus applications, these systems contain a Yuchai Nat VI engine with a high-speed motor generator providing reliable green energy

#### Natural Gas (CNG, LNG)

- Gas engine testing center in service since 2015
- Complete range of gas engines are available for both truck and bus applications
- Dual fuel marine and power generation engines are available for specific requirements
- Gas engine sales of 7,934 units in 2021



### Lean Manufacturing

- Promote lean manufacturing across all machining shop and engine assembly plants
- Machining processes outsourced to reduce capital investment

### **Supply Chain Improvement**

- Reduce number of suppliers through stringent vendor selection policy and establish long-term partnership program to achieve cost saving
- Improve component sourcing standard through total quality commitment program

### Intelligent Manufacturing

- Implemented Intelligent Manufacturing SAP projects throughout all factories, foundry and testing centers
- > 3D casting mould printing to reduce development lead time
- SAP system was implemented in finance, supply chain, logistics and R&D departments
- Engine remote monitoring through ECU data communication

### V Configuration for HHP engines

Developing the VTF series engine (in 12V, 16V and 20V configurations) power range from 2,000 to 4,000kW for both marine and power generation applications



- Self-established National Engineering Laboratory, an efficient, energy-saving and environmentally-friendly internal combustion engine testing laboratory in China, which is rated at top tier in Chinese Diesel Industry.
- Installation of 84 engine test benches and 16 parts & components test benches,

COMPrising: Full Flow Sampling Emission Bench Direct Sampling Dynamic Emission Bench Partial Flow Sampling Emission Bench Cold Start Bench Semi-anechoic Room Test Bench Mobile Bench for Plateau Test Plateau Simulation Bench Vehicle Test Bench Thermal Shock Test Bench Deep Thermal Shock Test Bench PTO Bench Inclination Test Bench

- The measurement scope covers engines with displacement of 1~120L, and the overall R&D facilities reach the international advanced level.
- New Energy Development and Production facility including:

High Speed Motor Assembly Range Extender System Assembly eCVT Hybrid System Assembly Fuel Cell System Assembly



### **R&D** Leadership

### **R&D** capability

- Approximately 700 engineers including PhDs and Master Degree holders in the R&D team
- Over 2,000 patents have been registered since 2004
- □ New Energy R&D and Production facilities were set up in Nanning R&D center

### **Engine innovations**

- □ Late 2018: Model K08 engine became the first domestic diesel engine to pass the National VI-b emission regulation
- Full suite China National VI (on road) compliant engines are available for commercial operations
- Newly developed China Tier 4 (off road) compliant engines have completed all required testing and ready for commercial operation by late 2022
- Mid-2020: Commercially launched the 65kW and 100kW range extender power systems for both truck and bus applications
- Mid-2021: Commercially launched the YCK16 engine for Mining Dump truck application
- □ Mid-2021: Commercially launched the 90kW fuel cell power system on buses
- Late-2021: First ignition of the YCK05 Hydrogen Combustion engine



### **GYMCL New Energy Products**

#### New energy power



#### **High-speed electric motor:**

- ≻High rotation speed: more than 15000 rpm.
- ➤ High power density, and high torque density.



High efficiency: maximum efficiency > 70%
High integration, high power density, and ultra-low starting temperature.
Wide application field



Integrated power generating engine power assembly system:

 The engine and motor are highly integrated, with compact structure.
 The flywheel integrated permanent magnet motor,



#### Integrated bridge system

- Highly integrated motor, motor controller, TCU, oil pump and sensor.
- ICU, on pump and sensor.
- $\succ$ Reduce the whole vehicle weight



#### New generation hybrid power system:

- ➢ High saving rate of fuel consumption: the oil saving rate is over 65%.
- ➢High integration, electromechanical coupling, and modular design.



### Yuchai Hydrogen Combustion Engine Continuous Test Running





- GYMCL was named the "Benchmarking Enterprise" published by Stateowned Assets Supervision and Administration Commission of the State Council
- GYMCL YCA05 and YCA08 engines passed certification for China Tier 4 emission testing
- GYMCL Engineering & Research Institute was selected as "New Sequential Management National Engineering Institute" by NDRC, the first published list has included 38 national institutes nationwide
- GYMCL entered into a new strategic alliance with Guangxi Sunlong Bus on new energy power system development and marketing in China
- GYMCL was ranked No.5 in National Enterprise Technology Centre Award, published by China NDRC
- GYMCL development project "High speed large rating low emission marine engine core technology and application" has received the First Prize at Guangxi Technology Innovation Award







### Chinese Premier's Li Keqiang visited GYMCL's Yulin facility in September 2021







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## Business and Finance Overview



	Y2017	Y2018	Y2019	Y2020	Y2021 Un-audited
Units of engine sold ('000)	367	376	376	430	457
Revenue (RMB Billion)	16.2	16.3	18.0	20.6	21.3







- Steady growth in the top line with revenue composition change by engine segments over the last 5 years.
- Strong growth rate in off-road engine segment since 2017 (refer to the growth rate year-overyear line chart on the left).
- Reduction in truck engine % of total revenue. Y2020: 60% vs. Y2021: 47%



### **Financial Performance Review**

Profit Performance	Y2017	Y2018	Y2019	Y2020	Y2021 Un-audited
Gross Profit %	20.7%	19.0%	17.2%	15.5%	13.9%
Operating Profit %	9.9%	7.9%	6.4%	5.7%	3.1%
EBITDA (RMB Billion)	1.9	1.6	1.4	1.5	1.1
Proft After Tax %	8.2%	6.0%	4.8%	3.8%	1.9%
Profit After Tax (RMB Billion)	1.3	1.0	0.9	0.8	0.4

Profitability discipline to cope with the increased R&D spending year-on-year as well as heavily invested capital assets for product diversifications.

Key Balance Sheet Items	Y2017	Y2018	Y2019	Y2020	Y2021 Un-audited
	<b>RMB</b> Billion	<b>RMB</b> Billion	<b>RMB</b> Billion	RMB Billion	RMB Billion
Cash & Bank Balance	6.0	6.1	6.4	6.4	5.3
Total Assets	21.0	21.7	23.9	26.3	25.1
Total Loans	1.6	2.0	2.1	2.2	2.2
Equity for CYD	8.3	8.4	8.8	9.0	8.9
Shareholders Equity	11.0	11.1	11.6	11.8	11.6

- Balance Sheet remains healthy and sound Operating Cash Flow.
- > Total Assets increased due to Capital Investments and capitalized Research and Development cost.



	Y2017	Y2018	Y2019	Y2020	Y2021 Un-audited
Dividend per share (USD)	\$2.21	\$0.85	\$0.85	\$1.70	ТВА
Earnings per share (USD)	\$3.44	\$2.54	\$2.09	\$2.08	\$1.05
Dividend / EPS, Ratio	64.2%	33.5%	40.7%	81.7%	TBA





 $\checkmark\,$  2021 Dividend to be advised.

✓ 2017 Operating profit and PAT include extraordinary and one-time events



Key Financial Ratio	Y2017	Y2018	Y2019	Y2020	Y2021 Un-audited
Debt / Equity Ratio	14.8%	18.1%	17.8%	18.8%	19.0%
Current Ratio	1.71	1.72	1.55	1.48	1.42

- Financial Ratio remains strong
- Will turn the corner from the return on Capital deployed and extensive Research and Expenditures over the recent years,

\* 2017 Operating profit and PAT include extraordinary and one-time events



**China Yuchai International Limited** 

# China Yuchai International [NYSE: CYD]

### Thank You

