



# Global and China Mining-use Autonomous Driving Industry Report, 2020-2021

Mar.2021

## STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

## REPORT OBJECTIVES

- ◆ To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- ◆ To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- ◆ To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- ◆ To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- ◆ To help company to succeed in a competitive market, and

## METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications.

Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

## INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

## Abstract

### Demand and policies speed up landing of Autonomous Driving in Mining

Traditional mines have problems in recruitment, efficiency, costs, and potential safety hazards, while which can be solved by autonomous driving well. At the same time, mining areas features closed environment, fixed lines, low speed, and point-to-point, marking one of the best scenarios for autonomous driving.

As early as the 1990s, smart mining emerged abroad. Australia is currently the most mature in this aspect. As of February 2020, nearly 80% of approximately 500 autonomous trucks in the world had been in Australia. China has successively introduced policies to promote the development of smart mining, especially the National Development and Reform Commission (NDRC) and other 7 ministries and commissions issued *Guidance on Speeding up the Development of Intelligent Coal Mines in 2020* to clearly require that open-pit coal mines should realize unmanned transport by 2025. Driven by relevant policies, autonomous driving will accelerate its implementation in mining.

### Main Policies Related to Smart Mining in China

Time	Policies
2016	<i>The National Mineral Resources Planning (2016-2020)</i> clearly states that China should vigorously promote scientific and technological innovation in the mining sector as well as accelerate the construction of digital, intelligent and automated mines in the next five years.
2017	<i>The "13th Five-Year Plan" for Safe Production</i> requires the implementation of "mechanized substitution and automated reduction of personnel" in the mining field, the promotion and application of industrial robots, intelligent equipment, etc., as well as a fewer number of workers in dangerous positions and operations.
Jan 2019	The Announcement No. 1 of National Mine Safety Administration in 2019 --- <i>Key R&amp;D Catalog of Coal Mine Robots</i> proposes to focus on the development of autonomous truck systems for open-pit mines.
Mar 2020	NDRC and other 7 ministries and commissions issued <i>Guidance on Speeding up the Development of Intelligent Coal Mines in 2020</i> to clearly require that open-pit coal mines should realize intelligent continuous operations and unmanned transport by 2025.
Apr 2020	The Ministry of Industry and Information Technology, NDRC, and the Ministry of Natural Resources jointly issued <i>Guidelines for the Construction of Smart Factories (Mining) in the Non-ferrous Metals Industry (Trial)</i> , proposing to create self-perception, self-learning, self-decision-making, self-executing and self-adaptive mines.

Source: ResearchInChina

## **Science and Technology Enterprises Lead the Development of China's Autonomous Driving in Mining**

As the most important part of smart mining, low-speed autonomous driving has now entered the stage of commercial operation on a global scale.

As early as 1994, Caterpillar tested autonomous minecarts in mines in the United States, and Japan-based Komatsu also began testing autonomous transportation system in 2005.

As of April 2020, Komatsu had deployed a total of 221 AHS-equipped vehicles in Australia, North America, and South America, and had fulfilled the automated transportation of more than 3.5 billion tons of materials in 12 years.

Caterpillar has 276 autonomous trucks in operation worldwide, and has transported 2 billion tons of materials with the MineStar System.

Although the domestic mining began to develop autonomous driving relatively late with few players, more than 100 autonomous minecarts have been put into operation as per the disclosed information.

In China, local enterprises mainly dominate autonomous driving in mining, including start-up companies and some OEMs. Among them, startups represented by WAYTOUS, Tage IDriver Technology and EQ are more influential. On the one hand, they cooperate with OEMs to lay out the OEM market, reduce modification costs, and obtain scale advantages in future mass production; on the other hand, they can quickly implement and iterate software and hardware by cooperating with mining enterprises in deploying the AM market.

## Chinese Enterprises Engaged in Autonomous Driving in Mining and Their Main Partners

	Tage IDriver Technology	WAYTOUS	EQ	Boonray Intelligent Technology	MaxSense Technology	Yuexin Intelligent
<b>OEMs</b>	Inner Mongolia North Hauler Joint Stock Co., Ltd., Tonly, XCMG, etc.	SANY, Weichai Tonly, Aerospace Heavy Industry, Heavy Equipment Co., Ltd., China Railway Construction Heavy Industry, etc.	XCMG, Group, LGMG, XEMCTonly	\	Breton	\
<b>Mining enterprises</b>	Baiyun Obo Iron Mine, Huolinhe Coal Mine of State Power Investment Group Co., Ltd., Yitai Group, Wulan Development Group Co., Ltd., Zhonghuan Xieli	Datang Group, CHN of Energy, National Coal Group Corporation, Jiangxi Wulan Copper Group, China National Gold Group	Mengxin Coal	China Molybdenum, Yellow River Group, JISCO, Shaanxi Coal and Chemical Industry, Weichai Special Vehicle	An open-pit mine in Anhui, a sand and gravel mine in Fujian	Qianye Cement, Shanxi Coking Coal Group Co., Ltd., CMOC
<b>Other enterprises</b>	China Mobile, Huawei	\	China Mobile, China Unicom, China Telecom, Huawei, ZTE	Huawei, Gansu Mobile	Chengda New Energy	Huawei, China Mobile Henan, CATL

Source: ResearchInChina

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## Capital Favors Low-speed Autonomous Driving Market for Mining

At present, the capital market is also very optimistic about low-speed autonomous driving in mining. Most enterprises have completed multiple rounds of financing. Among them, Tage IDriver Technology has fulfilled the B+ round with relatively high total financing amount, while CiDi (Changsha Intelligent Driving Institute) Ltd. has raised more than the highest RMB400 million.

Driven by user demand, policies and capital, the development of autonomous driving in mining is accelerating, and a market worth hundreds of billions of yuan will be formed in the next few years hereby.

## Financing of Chinese Enterprises Engaged in Autonomous Driving in Mining

Enterprises	Round	Year	Financing (RMB)	Total financing (RMB)
WAYTOUS	Pre-A	2018	Undisclosed	Over 100 million
	A1	2019	Undisclosed	
	A2	2020	Over 100 million	
Tage IDriver Technology	Angel	2016	Tens of millions	Over 200 million
	Pre-A	2017	Tens of millions	
	A	2019	-	
	A+	2019	-	
	B	2020	Nearly 200 million	
	B+	2021	Tens of millions	
EQ	Angel	2019	60 million	Over 70 million
	Pre-A	2020	Tens of millions	
Boonray Intelligent Technology	Angel	2016	Millions	Tens of millions
	Pre-A	2019	Tens of millions	
CiDi (Changsha Intelligent Driving Institute) Ltd.	Angel	2018	Undisclosed	Over 400 million (Total financing)
	Pre-A	2018	Undisclosed	
	A	2019	Undisclosed	
	A+	2020	Over 100 million	
	B	2020	300 million	

Source: ResearchInChina



### **1 Low-speed Autonomous Driving Market for Mining**

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