

Limestone Batching System



ZYGPS



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Limestone Batching System

I. System Overview

It is based on the truck intelligent optimization dispatch system, and combined with the mining design and ore batching plan, volume monitoring system and online neutron activation grade analysis system of mine, so as to automatic-optimization command and dispatch loading and unloading of each empty truck and loaded truck, to complete the production daily plan in the case of ensuring the quality and quantity, to ensure the limestone production quality of the mine in stable and controllable status for a long time, to stabilize the cement subsequent production process, and to improve the cement production quality.

II. System Functions

- Monitoring, intelligent scheduling of production equipment;
- Collection, analysis, control, feedback of grade control data during production and automatic adjustment of vehicle allocation;
- Stabilizing some indicators standard deviation of the limestone from the crusher such as Ca, Si, Mg, Na, K, etc.;
- The automatic statistics of production data;
- Grade control data analysis of the limestone from the crusher;
- The analysis of the relevant data of production equipment operation.





III. Make Production Schedule

Set the ore batching requirement according to the test data of blasting holes, and make daily plan for the ore batching.

Steps	Output (ton)	CaO	MgO		
Daily Plan	8000	50.3%	1.88%		
1# Excavator	3000	50%	1.8%		
2# Excavator	2500	52%	1.5%		
3# Excavator	2500	48%	1.4%		
Ore Batching Result	8000	50%	1.56%		

Production Plan of [Date]

IV. Vehicle Intelligent Dispatching System

The vehicle intelligent dispatching system is used to achieve the stable grade of limestones when they entering the factory through the precise control of trucks in the whole production process. The vehicle intelligent dispatching system consists of 3 parts: intelligent vehicle terminal, communication network and dispatching center.



Structure Diagram of Vehicle Intelligent Dispatching System



(1) Intelligent vehicle terminal is installed on electric shovel, truck and construction machinery, which is responsible for receiving GPS positioning information and scheduling instructions and sends the production information to the scheduling center.

(2) Working state of the device. The vehicle hardware includes computer unit, vehicle mounted GPS, power supply unit, display unit, wireless communication unit, supporting installation bracket and so on. The onboard software includes shovel software, truck software, drill rig onboard software and auxiliary vehicle software.



(3) Communication Network



(4) Dispatching Center

The hardware includes stope dispatching room unit and its supporting center control unit, general control data services, monitoring display terminals, servers and so on. The software includes server program system, communication program, intelligent scheduling program system, intelligent identification system, production message real-time display system, alarm processing system, map monitoring software, map editing system, WEB query report, short information platform of the mobile phone, management system and so on. In accordance with the principle of practical, applicable, convenient and high-efficient, the design of the system fully considers the specific



conditions of mine production and the requirements for the production organization and management to meet the requirements of the mine.

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Dispatching Console Software



Map Monitoring Software



History Playback Software



Report

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Average Grade Curve



Proportioning Curve of the Ore Mined by the Excavators

V. Truck Monitoring and Measurement

Strictly control and give feedback the situations of vehicle overload / underload timely and adjust timely to ensure the stability of ore proportioning. Record the situations of vehicle underload, so as to examine the drivers.

Feedback the truck overload / underload information into the vehicle intelligent scheduling system, then the system analyzes the feedback result. If the ore proportioning result is affected, the additional vehicles are temporarily assigned to the underload excavators.

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VI. Online Grade Analysis

The belt scale and online grade analysis equipment are installed on the crushing export belt to detect the ore batching results in real time, which can replace other sampling and testing processes.

The test results are fed back to other links, so as to adjust other links such as ore batching plan, electric shovel extracted ore tonnage planning and vehicle scheduling, and ensure the stability of ore batching results.



Online Grade Analysis of Mine

VII. Benefit Analysis

- Improve production efficiency;
- Reduce oil consumption;
- Increase output;



- Improve the utilization of low grade resources;
- Stabilize the ore grade of crushing station, improve the production quality of cement;
- Stabilize the blended-ore grade and various technical indicators of the ores for a long-term.

VIII. Performances and Services

Introduction for the integrated delivery capability of DFMC

- This system has successfully been used on the Taian Zhonglian's 5000t/d world-class cement demonstration production line with the low energy consumption;
- Undertake the GPS intelligent dispatching system in large mines (Over 30 large GPS intelligent scheduling systems in China);
- Undertake the mineral processing automation system (From the ferrous metal mine to the nonferrous mine, the automatic control systems which are custom developed by DFMC for the customers are working in more than 200 large mineral processing plants in the whole world. In China, DFMC accounts for more than 90% of the market share.);
- Plan and implement the "Intelligent Mine" (have completed the planning of "Intelligent Mine" for many enterprises: China National Gold Group Co., Ltd., Yichun Luming Mining Co., Ltd., Hubei Sanxin Gold Copper Limited Company, Yantai Xintai, Ma Steel and so on);
- Professional team: end to end delivery capabilities and technical capabilities;
- Perfect project management system;
- Organizational guarantee in whole processes, professional training services.





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