Application in Surface Mining through Machine Guidance Systems

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SUMMARY

Surface drill rigs are essential equipment in mining operations, and machine guidance (MG) systems are increasingly being integrated into these drills to enhance drilling accuracy and efficiency. These systems utilize 2D computer models of the drilling plan along with real-time spatial data from the equipment, enabling them to display the precise position of the drill bit relative to the design levels. This real-time visual feedback assists operators in maintaining optimal drilling alignment. The MG system also supports remote monitoring through wirelessly connection, allowing simultaneous viewing of mining operations at two separate locations. A case study conducted at a surface mining site in China has demonstrated the practical benefits and effectiveness of the machine guidance system in real-world conditions. By improving operational precision, safety, and cost-effectiveness, the proposed system contributes significantly to the ongoing advancement of intelligent mining technology.