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论文

机械井筒钻进技术发展及展望

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摘要：

首先对国外机械钻进技术现状做了回顾；其次，对冲积层特殊钻井法凿井技术在国内产生、发展进行了回顾，并将钻井技术发展划分为“技术基础准备阶段”、“钻井工艺现场实验应用阶段”、“技术装备发展成熟阶段”和“技术、装备突破阶段”等4个阶段，提出钻井法凿井向西部弱胶结软岩煤矿井筒、矿山小直径垂直通道、市政工程以及非煤矿山工程发展方向和需要解决的技术问题；再次，对于反井钻机技术发展、钻凿煤矿井筒技术及难点等做了分析，列举出反井钻井凿井需要解决的技术问题；最后，对竖井掘进机技术发展提出展望，对竖井掘进机凿井破岩、排渣、支护和辅助系统作用进行了论述。通过分析得出：根据不同地质条件、工程条件采用不同的机械化凿井方法，才能达到减少井筒内施工人员，提高安全和工作效率目的。

关键词： 钻井法凿井；竖井钻机；反井钻机；竖井掘进机；岩石破碎

Development and prospect of mechanical shaft boring technology

Abstract:

Firstly，the paper reviews the status quo of mechanical shaft boring technology overseas.Secondly，describes generation and development of shaft drilling technology used in domestic alluvium.Then drilling technology development is divided into four stages：Basic technical preparations；field application test of drilling process；mature technology and equipment stage and breakthrough stage.List the drilling method used in western soft rock，small diameter vertical channels in mines，municipal engineering and other mines，as well as technical problems need to be solved.Thirdly，the development of Raise Boring Machine and the difficult in drilling in coal mine was analyzed，and technical issues need to be addressed in the Raise Boring Machine construction is described.Fourthy，the development of full face shaft boring machine is prospected and performances of rock cutter，slagging，supporting and auxiliary systems are discussed.Through analysis，conclusions are that using suitable mechanical drilling method to construct shaft under different geological and project conditions can reduce the workers in the underground construction，then complete the construction safety and efficiency.

Keywords: mine shaft drilling；shaft boring machine；raise boring machine；full face shaft boring machine；rock crushing

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