

Weld repair of earth drill bits

by Björn Ulander Esab AB, Göteborg, Sweden

A cladding/hardfacing method for hammer drill bits which considerably prolongs their service life has been worked out. The technique is simple and can be used in most work places.

Practical trials

The method is the result of a cooperation between Esab and the AMU Group's training unit in Hässleholm, (vocational training courses), and with the companies TGB in Ljung and Malmberg in Yngsjö. Both companies are engaged in earth drilling.

At the AMU "well drilling training" courses a large number of trials were carried out in an attempt to restore worn guides, reamers and pilot crowns by weld repair. Different application techniques and different types of hard weld metals were tested. The drilling was done in soil consisting of rock, sand and clay.

The trials at AMU resulted in a method that was tested at the aforementioned companies. Also here the results were very good and confirmed previous experience. The service life of the work pieces being weld repaired was the same as for newly manufactured, i.e. the same number of drilled meters could be achieved.

Conclusions

The trials show that it is fully possible to weld repair guides, reamers and pilot crowns. Worn details can be completely restored. The durability of the work pieces being weld repaired is the same as for newly manufactured details. By repeating the weld repair, the useability can be further increased. The welding is normally simple and can be done in a short period of time. Preheating of the work piece is usually not necessary.

The types of drill bits tested are sold under the names Odex, Roxel and Tubex. The dimensions

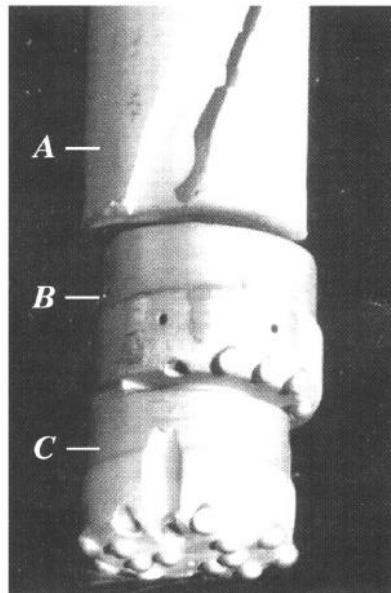


Fig. 1. Worn drill bit
A—guide, B—reamer, C—pilot crown

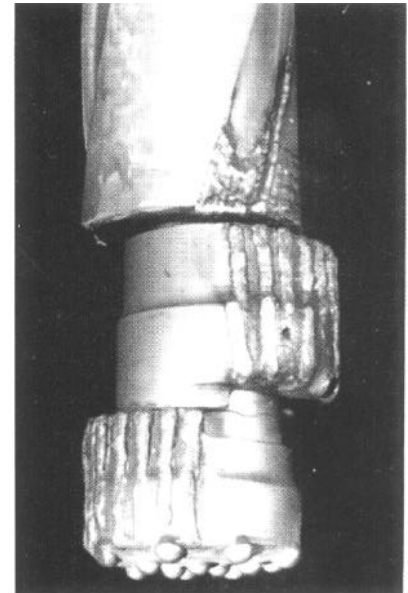


Fig. 2. Weld repair drill bit

were between $\varnothing 115$ and $\varnothing 165$ mm. Even larger bits should be possible to recondition. Preheating might in that case be needed.

OK 84.84

Esab has developed a hardfacing electrode with a weld metal extremely resistant to the types of

wear occurring when drilling in soil. The electrode is OK 84.84, see below.

Esab has also worked out an instruction advising how to carry out weld repair of the drill bits.

Contact Björn Ulander, Esab AB, Sweden, phone +46 31-50 90 00 or fax +46 31-50 94 80

OK 84.84.

A new electrode for severe abrasive wear

OK 84.84 deposits a weld metal with a high volume fraction of very fine and hard carbides in a hard martensitic matrix. The carbides have an unusually uniform distribution in the weld metal, providing the same wear resistance through out the life of deposit. Weld metal hardness is approx, 60 HRC.

This implies outstanding properties for protection of parts subjected to severe abrasion and, due to the fine grained microstructure, also very heavy impact.

The electrode is best suited were separate beads are requested, e.g. for making weld metal patterns on earth drilling equipment, on shovel teeth or on hammers. Other areas are in asphalt, cement and brick production where edges on scrapers, screws and paddles must be protected.

Wear resistance is optimal already in the first made run. Therefore single beads are enough for protection.