

## Overview

Rio Tinto's Oyu Tolgoi Mine, in the South Gobi region of Mongolia, is one of the largest known copper and gold deposits in the world. It is also one of the most modern, sustainable and safest hardrock mining operations in the world. Open pit mining began at Oyu Tolgoi in 2011 and the copper concentrator, the largest industrial complex ever built in Mongolia, began processing mined ore into copper concentrate in 2013. When the underground is complete, it will be the world's third largest copper mine.

Oyu Tolgoi is jointly owned by Rio Tinto, the government of Mongolia and Turquoise Hill Resources. Rio Tinto manages the operation on behalf of all owners.

## The Challenge

Oyu Tolgoi Innovation Group specified a need for a new leading-edge Wi-Fi cordless cap lamp with the capability to track miners underground at all times for evacuation and safety purposes. The second stage was to develop further capability of proximity monitoring (V2P) using DSRC Time of Flight calculations for distance ranging and real time two-way message signalling, such as emergency evacuation alerts, paging and duress calls.

## The Solution

Roobuck was approached by Rio Tinto to create a new model of Wi-Fi cordless cap lamps based on our popular and proven KH3E-Ex model with over 3,000 units in operation at Oyu Tolgoi Mine. Rio Tinto also requested their own wireless module to be integrated with Roobuck's cap lamp and for us to develop a ranging algorithm software. In addition, the CB53E charging bank had to be redesigned into a new model, CB53E-OT, to meet the newly defined Mongolian mine electrical standards. The development required Roobuck to engage closely with Oyu Tolgoi Mine's senior management and technical team, along with support and cooperation from Oyu Tolgoi's technology partners.

## The Outcome

The partnership between Roobuck, Oyu Tolgoi Mine (Rio Tinto) and Oyu Tolgoi's technology partners resulted in a new cap lamp model, RN4E-W1, the first of a new series. Roobuck successfully integrated Oyu Tolgoi's current wireless module into our own cap lamp technology and also developed a new firmware for the new cap lamp. Roobuck's factory had to re-tool and modify the casing design to cater for the wireless module spacing. The joint development took 2 years of collaboration to reach the production stage.

The first roll out of RN4E-W1 was for 1,600 units. With this confidence from the mine, today the RN4E-W1 cap lamp supply has increased to over 3,600 units and will continue to rise as the underground mine operations expand. The capability of Roobuck's latest cap lamp ensures that it will remain the number one PPE safety tool for miners working underground.

*Roobuck will present the world's first cordless cap lamp with V2P proximity monitoring in 2021.*

