



# CASE STUDY OF 4.25 TON CHISEL

**CUSTOMER : SIMPLEX INFRASTRUCTURES LIMITED**

**DATE : 14/08/2020 to 30/08/2020**

**REPAIRED BY : EXCEL CRAFT PVT LTD - WELDING DIVISION, BENGALURU**



# COMPANY PROFILE

## SIMPLEX INFRASTRUCTURE PVT LTD



- ▶ **Simplex Infrastructure Pvt Ltd**, Simplex Infrastructures Ltd. is a diversified company established in 1924 and executing projects in several sectors like Transport, Energy & Power, Mining, Buildings, Marine, Real Estate etc.
- ▶ Simplex is one of the construction leaders in India for nearly 90 years executing projects with consistent quality assurance, cost control and adherence to milestones in a safe environment as per the customer requirements.

## EXCEL CRAFT PVT LTD



- ▶ **Excel Craft (P) Ltd, -Welding Division**, has set up the most modern facilities in Bommasandra, Bengaluru and it is a part of **Excel Craft (P) Ltd**, with its head quarter in Mumbai, which has got several interest in various industries.
- ▶ Senior experts in the field of manufacturing and marketing of welding consumable with several years of experience are associated with the organization. We also specializes for manufacturing of welding consumable for steel plant, Thermal power station, Sugar, Cement, Forging and construction equipment



# PROBLEM STATEMENT



Photo:1



Photo:2

## DAMAGED CHIESEL AT EXCEL CRAFT WORKSHOP

### Function:

As the name indicates, the component is a part of the rock breaking machine usually used for underground mining. Our Customer Simplex Infrastructure Limited, is the major contractor for building the civil structure for metro rail in Bengaluru. The foundation of the metro goes as deep as 15-20meter underground. For building the foundation for metro Simplex has to Evacuate over burden from the ground. In This process there are lot of hard rocks available underground which are to be broken into pieces. This equipment is used for breaking the hard rocks underground. The chisel shown in the photograph weighs 4.25 ton, & this is dropped from a considerable height on to the bid rocks to break it into pcs. Therafter smaller rock pcs are transported to the surface level using dumpers & dozers. The Chisel is damaged in this process and hence needs to be brought back into shape & size.



# A VIEW OF CHISEL AFTER REMOVAL OF FRONT PLATE



Photo:3

REMOVED WORN OUT EDGES



Photo:4

Chisel is a component used to break the underground rocks & makes the hole in underground to build a Metro Pillar.

1. In this process the Chisel component breaks the underground rocks.
2. The Chisel is dropped to underground from certain height.
3. Since the rock will be very hard, over a period of time the front plate will be worn out.



## **METALLURGY OF CHISEL**

**COMPONENT : CHISEL.**

**MATERIAL : IS2062-HOT ROLLED MEDIUM & HIGH TENSILE STRUCTURAL STEEL.**

**COMPOSITION : C 0.22, Si 0.4, Mn 1.5, S 0.045, P 0.045.**

**WEIGHT OF CHISEL : 4.25 Ton.**

**PRODUCTS USED : AIR ARC GOUGING, OXYGEN GAS CUTTING, KEMALLOY 309, MEDIOCARB-7018.**



Photo: 5

**DAMAGED CHISEL**



## PROCEDURE FOLLOWED TO CARRY OUT THE JOB BY EXCEL CRAFT

### Gouging:

- All damaged plates were marked and strategy was made to remove the plates by gouging.
- Gouging is a method used to remove the material.
- Gouging is the fastest method to cut the plate of 100MM with accuracy. Excel Craft have highly skilled people & a good knowledge bank to execute such jobs.



Photo: 6

GRINDING IS DONE ON GOUGED AREA



# HARDOX 500 PLATE-TAB TEST



Photo: 7



Photo:6(7018)



Photo:7(kemalloy309)

In a Tab Test piece of metal is welded with the hardox with Mediocarb-7018 /& Kemalloy 309 Products to check the strength

Hardox 500 wear plate is a very wear resistant material. Hardox 500 wear plate is manufactured & exported world wide by the Swedish company SSAB, which developed the first modern wear resistant material in 1974. This material wears slowly even under large Mechanical Jobs.



# WELDING PROCESS



Photo:8



Photo:9

## JOINING HARDOX 500 PLATE TO THE CHISEL

- ▶ In Welding process we have used two types of electrodes Kemalloy 309 & Mediocarb-7018.
- ▶ Kemalloy 309 ,5\*450mm used to join a new Hardox 500 plates to the chisel.



# COMPLETED CHISEL



Photo:10



Photo:11



Photo:12

VIEW OF A CHISEL AFTER JOINING AN HARDOX 500 PLATE



**THANK YOU FROM TEAM EXCEL CRAFT**