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**Large-Scale Testing Setup**

**Dated**

**31st January 2023**

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**Large Scale Testing Setup in WCTC**

# Introduction

This report highlights the activities performed at Well Construction Technology CENTRE(WCTC) to prepare the setup for testing of packers at high temperatures (300°C) and pressures (10,000 psi).

# Setup preparation

The equipment used for the preparation of the setup are:

* Test Container
* Telescopic Gantry Cranes
* Induction unit and induction coils
* Air Compressor
* Hoist Chains

## Testing container

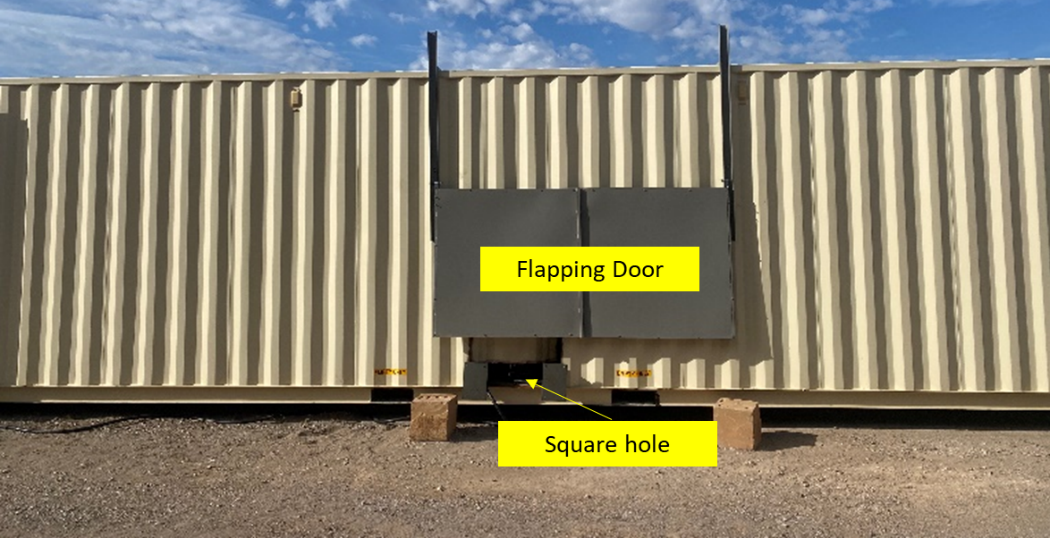
The container is part of the testing setup and the dimension of the container is 491”\*114” . A square hole was cut in the middle of the container in order to facilitate the movement of the

induction unit.The container will be hosting all the equipment in it.

****

**Figure 1: Container for the testing setup**

After the hole was made flapping door was installed that can be seen in Figure 2.

****

**Figure 2: Flapping door installed on container**

## Telescopic Gantry Cranes

Two gantry cranes were installed (Figure 3) and each has the capacity to lift 1 ton of weight and will be used for the hoisting of heavy pipes and preparation of the samples.



**Figure 3: Two gantry cranes installed for the setup**

## Induction unit and induction coils

The induction unit will be used to heat up the setup through the induction process. For the movement of the induction unit, two railings are installed inside the container.

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**Figure 4: Interpower Induction Unit**

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**Figure 5: Induction coils**

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**Figure 6: Two railings for the movement of the induction unit**

## Air compressor

For the local supply of air, an air compressor will be used (Figure 7). The compressor has a capacity of 200 psi.

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**Figure 7: Air Compressor**

## Hoist chains

Two hoist chains were installed inside the container for the lifting of the pipes and adjustment of the induction unit.

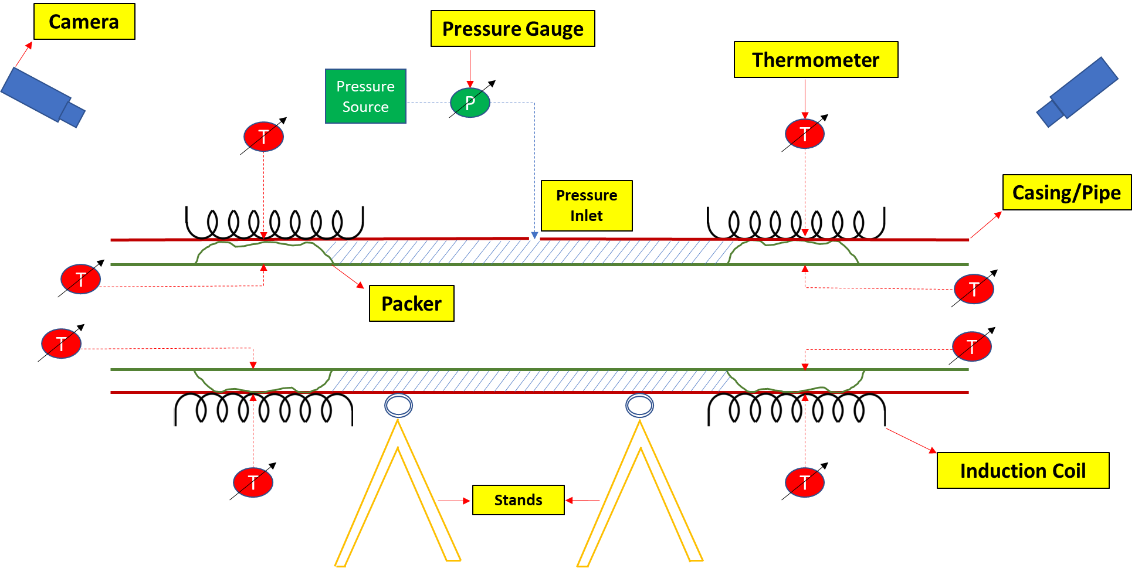
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**Figure 8: Hoist chain installed inside the container**

# Schematic Diagram

The schematic diagram of the setup is given in Figure 9.



**Figure 9: Schematic diagram of the setup**

# Health and Safety

The health and Safety of the team will be a top priority in this project during the testing operations of the equipment.

At the Well Construction Technology Centre (WCTC), the following HSE plan is implemented for the safety of the team:

• Daily safety meetings to be held before each shift, addressing the need for adherence to proper safety rules.

• Operation safety risks to be identified and addressed by the team at the beginning of specific operations.

• Job Safety analysis to be reviewed and understood by all participating teams.

Below are the hazards and the safety precautions that the team will adhered to at WCTC:

**Table 1: Health and safety precaution**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| \*\*Required\*\* | | | | |
| Step # | **Step Description & Required Tools** | [Hazards](file:///C:\Users\Admin\Downloads\Risk%20assessment%20%20.xls#'Hazard List'!A1) | [Controls](file:///C:\Users\Admin\Downloads\Risk%20assessment%20%20.xls#Controls!A1) | [Highest Level of Existing Controls (HoC)](file:///C:\Users\Admin\Downloads\Risk%20assessment%20%20.xls#Controls!A1) |
|
|  |  |  | **List All Controls** |  |
| 1 | Calibration and pressure test | Pinch points, pressure release, equipment failure | Ensure to wear hand gloves, inspect equipment before use, ensure to secure all pressure lines with whip check, avoid approaching equipment under pressure. | Administrative |
| 2 | Gas room temperature test | Pressure release, equipment failure, | Ensure to secure all pressure lines with whip check and chains, Do not pressurize beyond the given pressure, Do not approach equipment under pressure Inspect equipment and ensure full tightening before testing, bleed down when there is leakage. | Engineering |
| 3 | Temperature test | Pressure release, equipment failure | Ensure to secure all pressure lines with whip check and chains. Do not approach equipment under pressure, inspect equipment before testing, bleed down when there is leakage. | Engineering |
| 4 | Movement of Pipes | Struck by a moving object | Stay away from the path of moving objects Ensure no loose clothing is worn Ensure helmets are worn at all times | Administrative |
| 5 | Operation of Crane | Drop Object | Put on Safety Helmets Ensure items are secured when placing at height Do not move underneath cranes while lifting operation is been performed. | PPE |
| 6 | Contact with Electricity | Electrical Shocks & Electrical line Trips | Ensure electrical lines are properly isolated Ensure electrical lines are isolated from wet substances | Engineering |
| 7 | Equipment assembling and Lifting | Cuts | Ensure safety gloves are worn at all times | PPE |
| 8 |  | Ergonomics (Poor lifting postures, Frequent lifting and Awkward movements ) | Perform reverse motion once in a while on work Take intermittent breaks for water and stretching Ensure proper lifting postures when lifting equipment. | Administrative |
| 9 |  | Lone Worker | Ensure to work in teams / Inform your supervisor before performing work alone. | Engineering |
| 10 |  | Exposure to High Temperatures | Ensure proper ventilation Hydrate Take intermittent breaks for air | Engineering |

## Personal Protective Equipment

The following protective equipment will be used during the course of testing

* Safety Glasses
* Safety Footwear
* Protective Clothing
* Glove (Latex and High Impact Gloves)