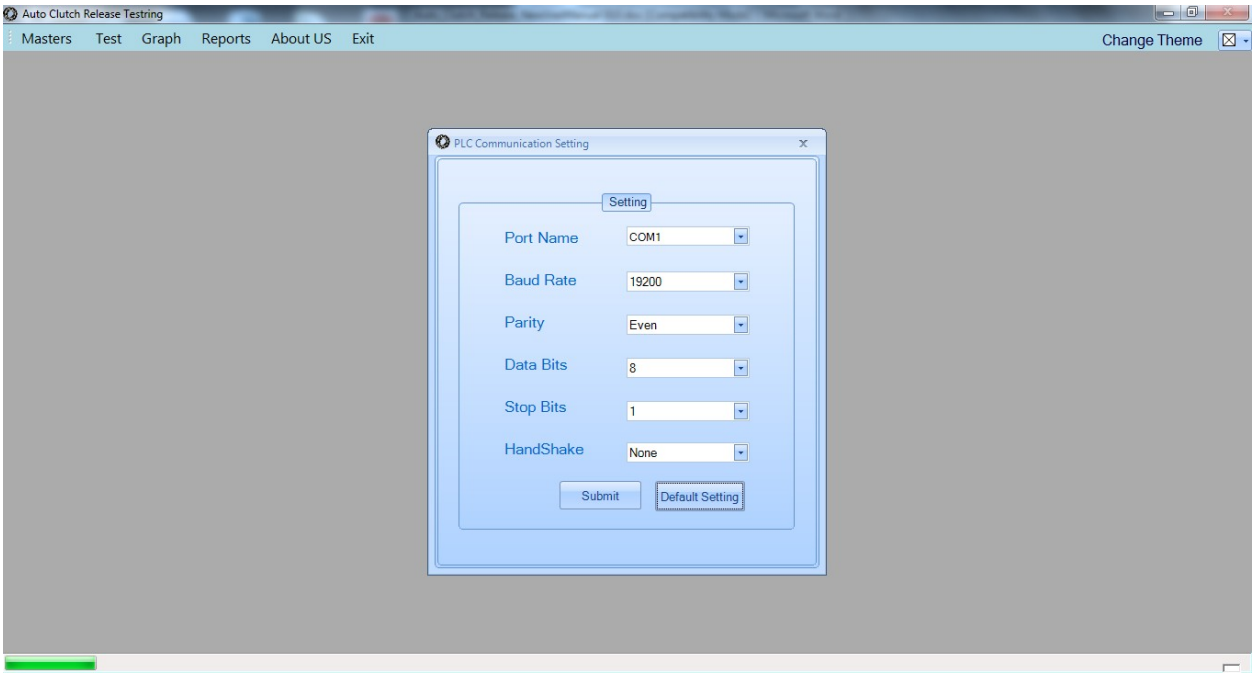
Clutch release bearing durability / endurance test rig automation

Challenge: Our customer manufactures bearings for automobile companies. However, for quality analysis these bearings were not checked. They had to be checked under various parameters like load, temperature and speed. Integration with computer and an easy graphical user interface was not present which would help to carry out the test, neither were there reports in graphical format.

Solution By Arun InfoTech: Arun InfoTech designed a test rig for our customer where these parameters “i.e.load, temperature and speed”, could be simulated and the bearings could go through a test before being dispatched to their respective customers. Below we have shown screen wise how the test rig can be set and managed.

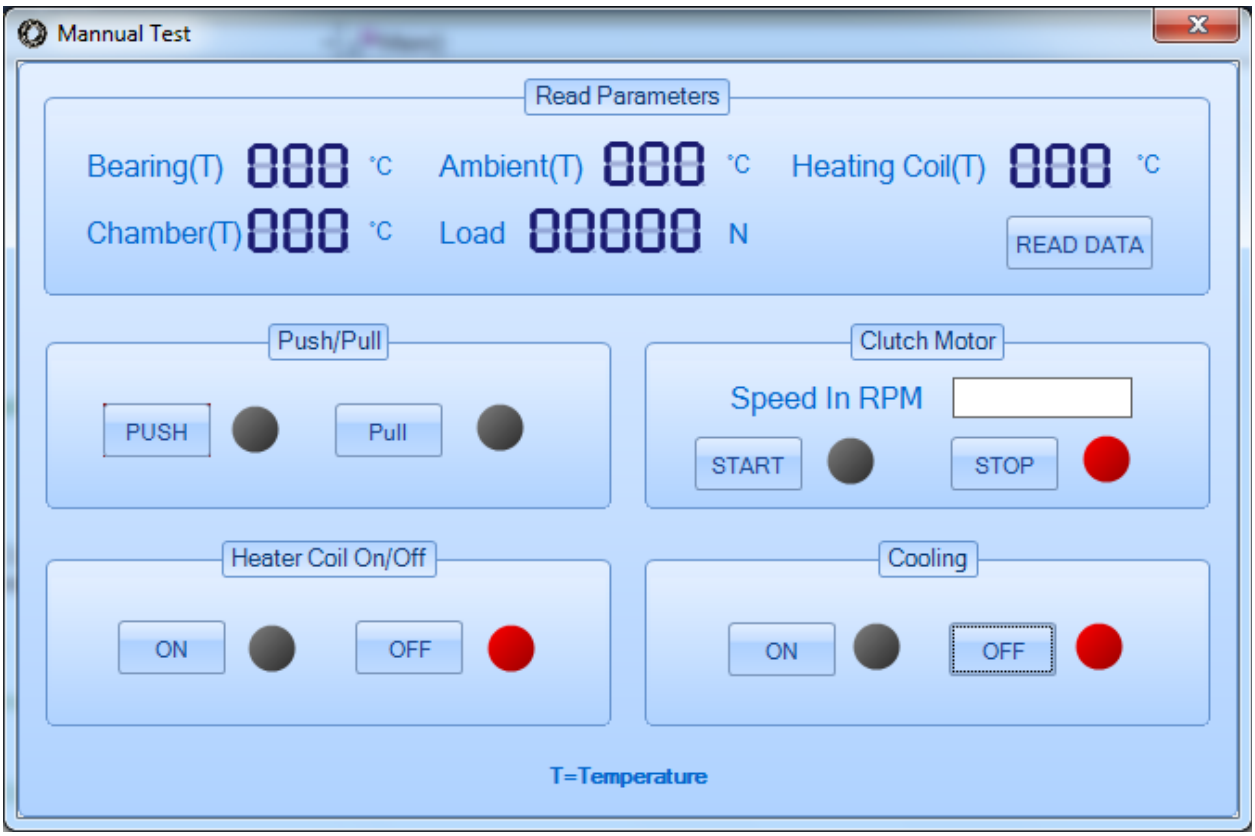
A new user can be created and edited as it will be saved in database. There are two options one of manual test and other of automated test.

Below form is to set communication settings for control panel (used for communication between PC and Control Panel).



Test mode selection:

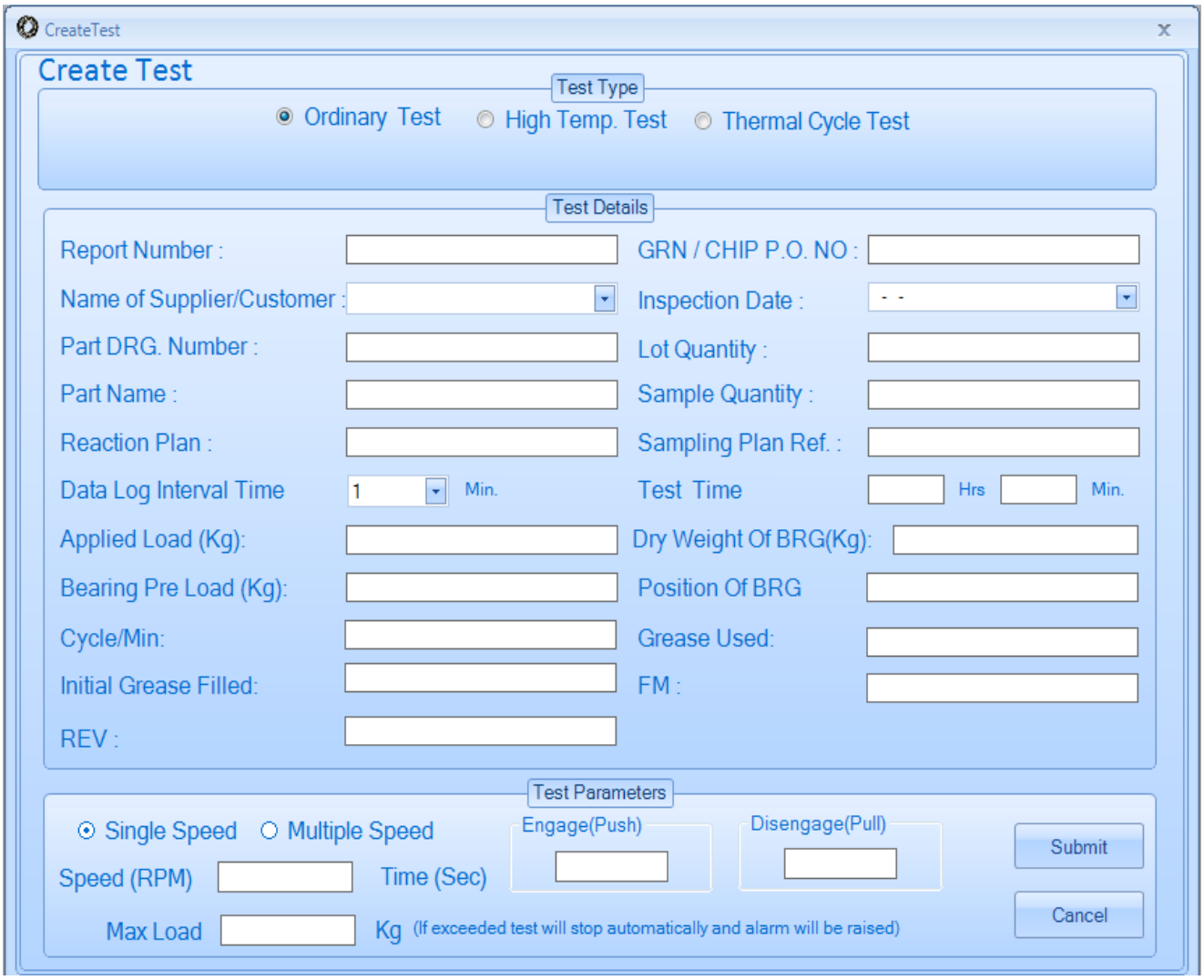
1. Manual test mode: Initially the manual test mode is generally selected to check if the system is working properly. In manual test mode user can get data of bearing, ambient, chamber temperature & load from load cell. As shown he can also do cylinder Push/ Pull operations & can further control ON or OFF settings of heating coil, cooling/blower & VFD Motor, as well, as shown below:



2. Selection of auto test mode: If user selects auto test mode then “test input” form will be opened. It provides an auto generated job Id. User has to fill all details for job and select test type (Ordinary, High, and Thermal).

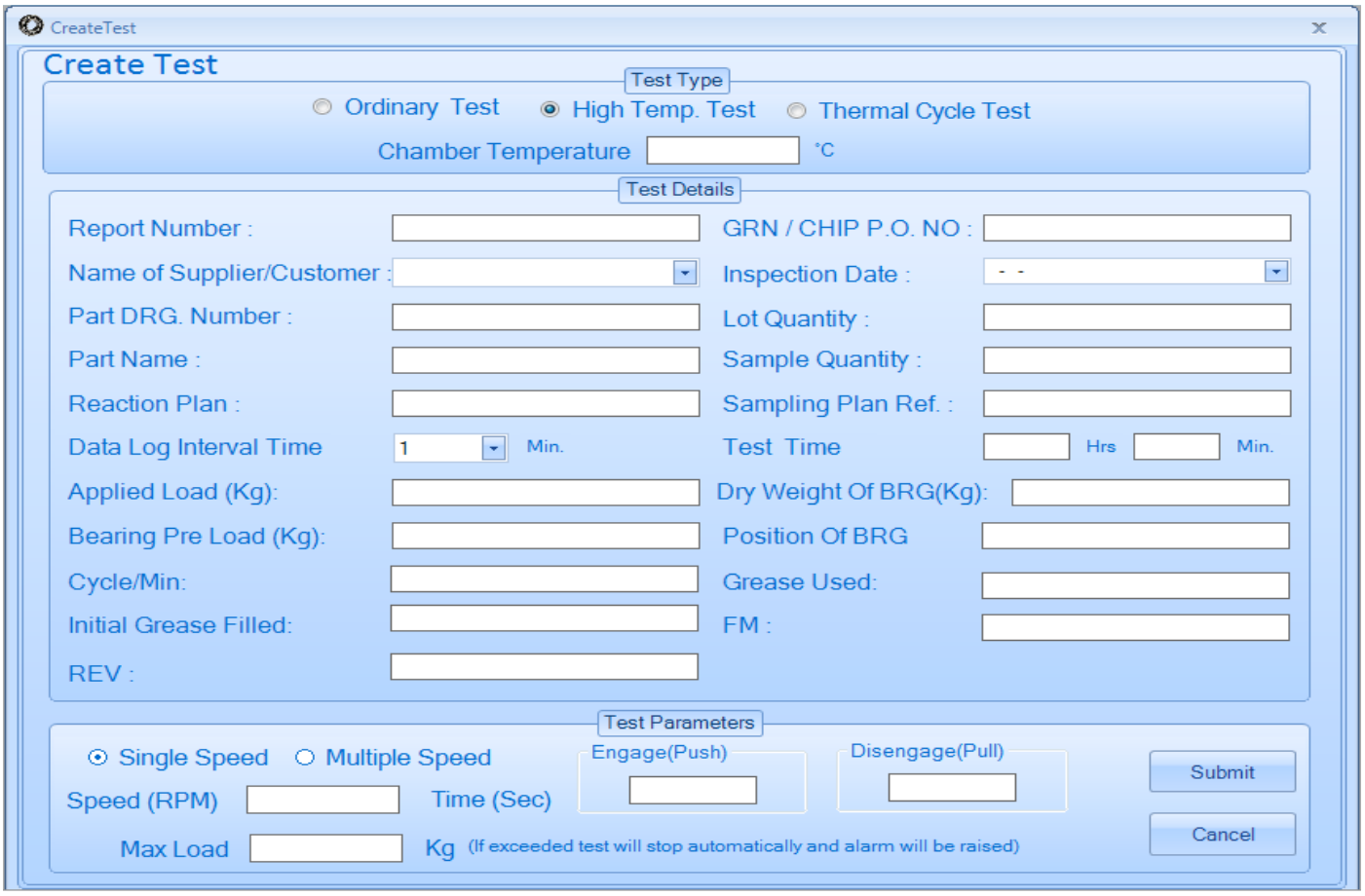
Ordinary Test:

User selects Ordinary Test and fills the required details. In ordinary test the test will be carried out till the specified maximum load is reached or if the defined time gets over. Maximum load is specified as seen at the bottom of screen shot.



High Temperature Test

If user selects high temperature test then user will have to fill control chamber temperature as shown in bellow screen and other details as well. Now if the any of the three i.e. if defined chamber temperature is exceeded or the maximum load is exceeded or if time gets over then the system stops.



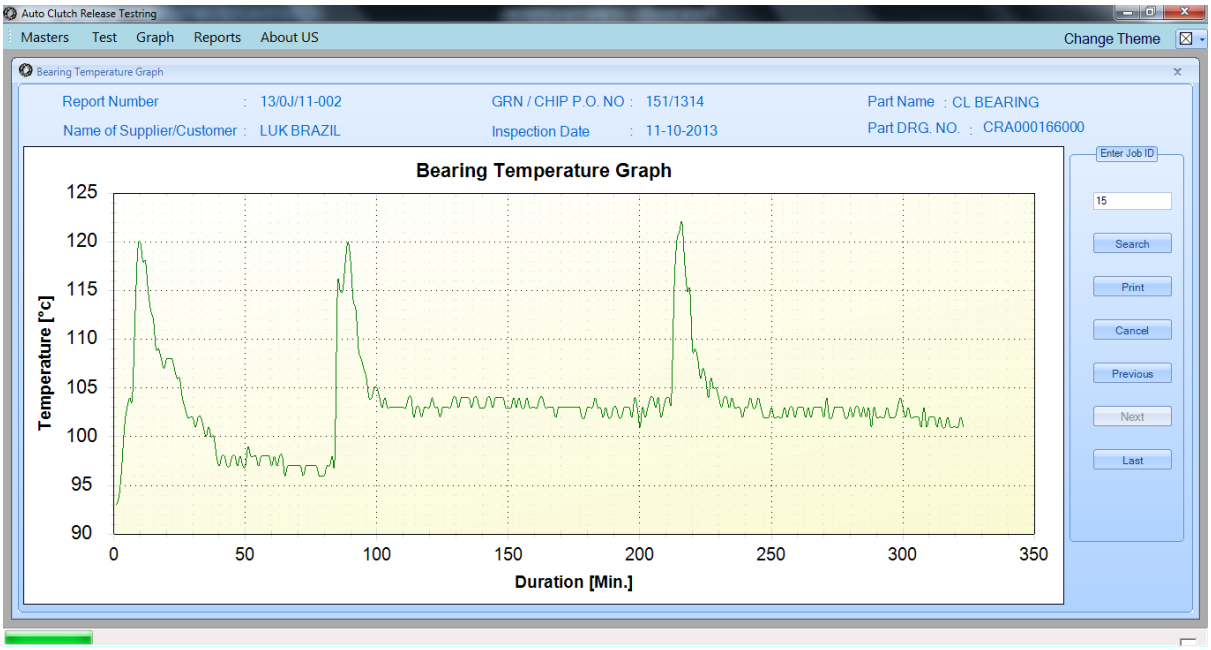
After saving test parameters user will get an auto test form.

User will click submit button to start test.

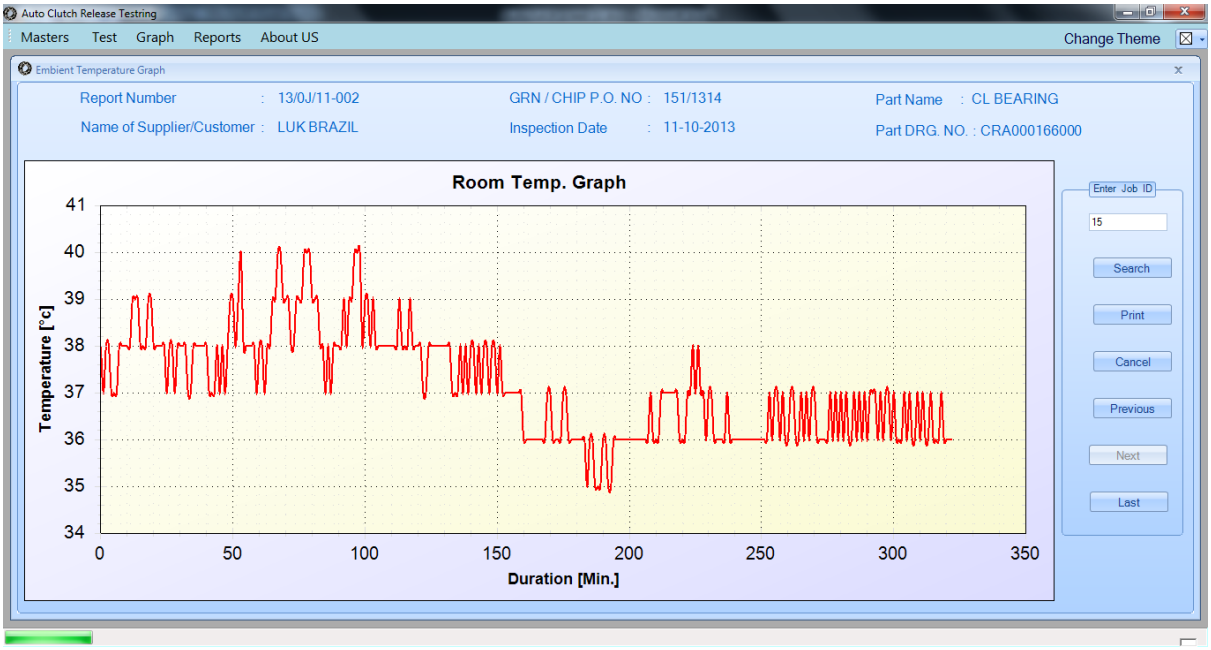
Graph: - Graph module contains 4 types of graph.

In run time graphical data will be displayed in respective graphs at regular intervals as shown below.

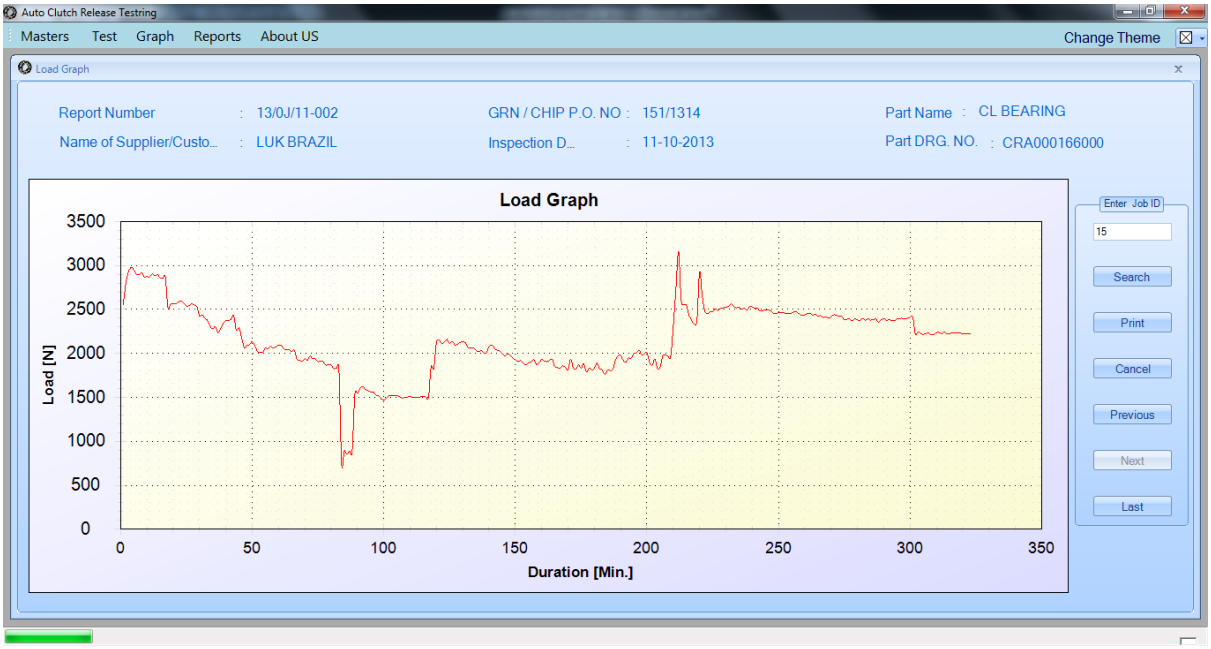
1. Bearing Graph (Time interval vs. Bearing Temp).



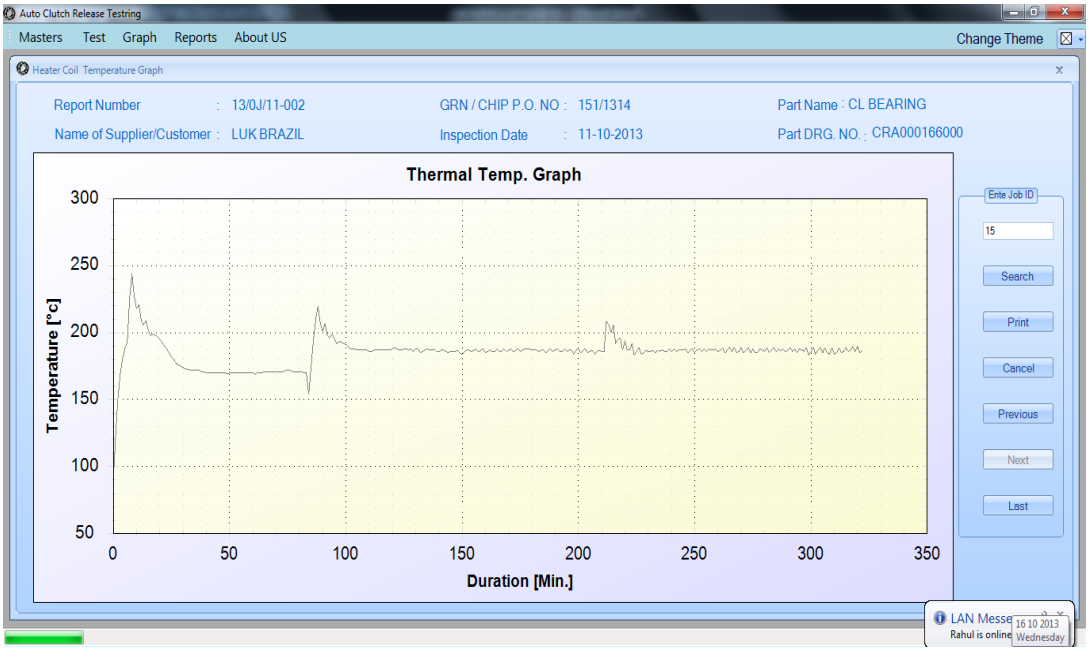
2. Ambient Graph (Time interval vs. ambient temp).



3. Load Graph (Time interval vs. load (KN)).



4. Thermal Graph (Time interval vs. coil temp).



Reports:- This module contains test reports using various search parameters.

1. Test type, company name, between from and to date

2. Test ID/Job ID wise

User can export /save this report in word, excel & pdf format. And take a printout of test report (printer is required).