

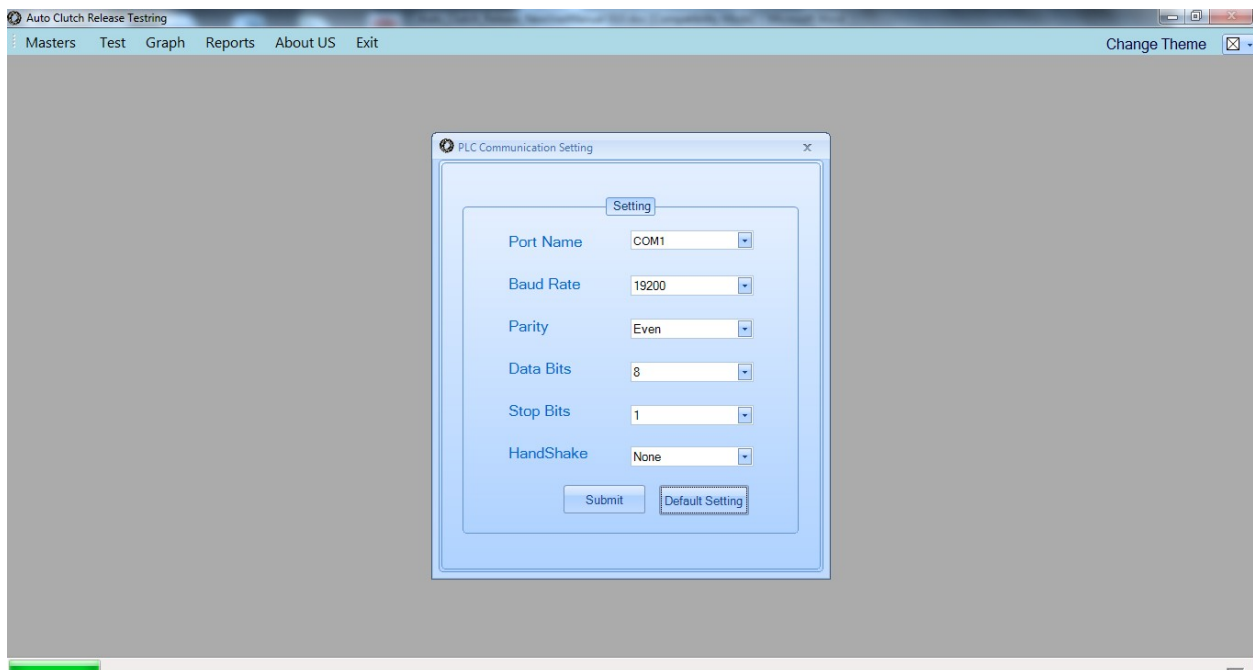
Clutch release bearing durability / endurance test rig automation

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.

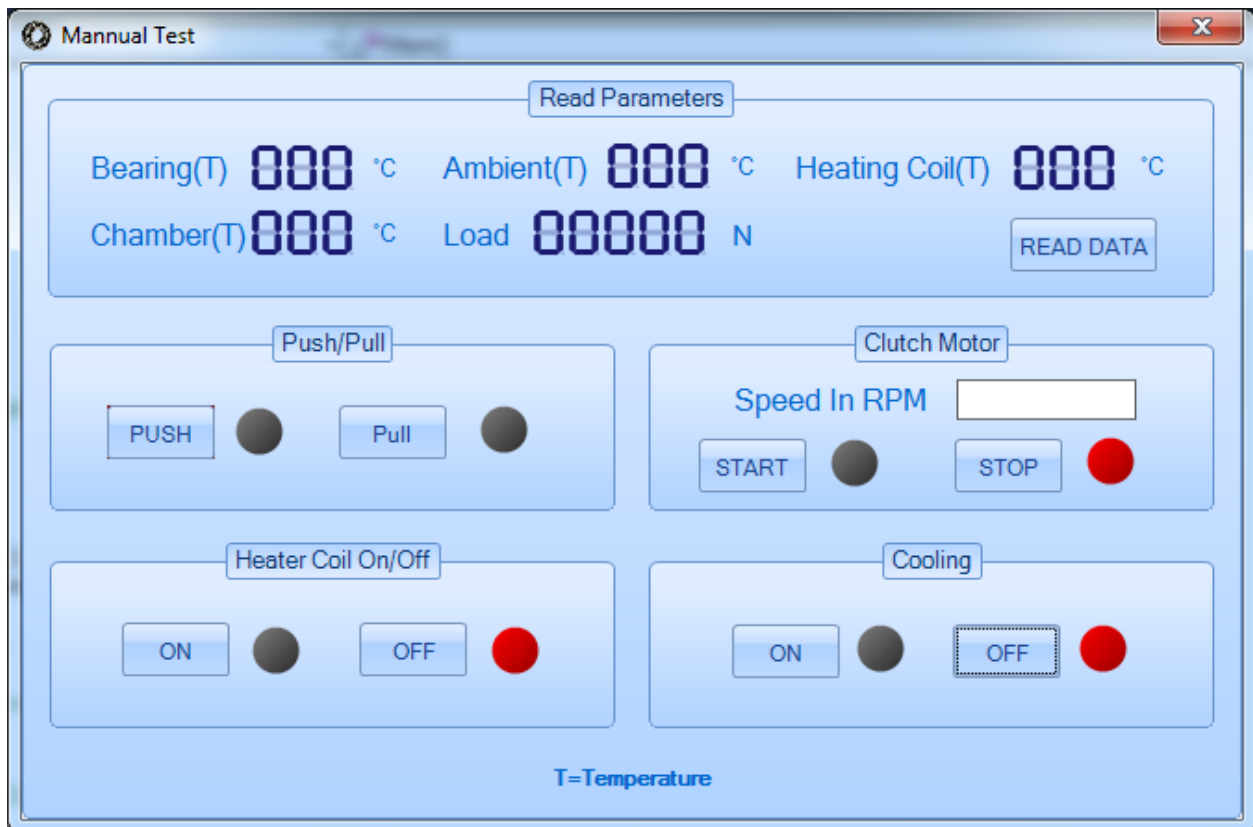
A new user can be created and edited as it will be saved in database. There are two options one of manual test and other of automated test.

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.

CreateTest
✕

Create Test

Test Type

Ordinary Test
 High Temp. Test
 Thermal Cycle Test

Test Details

Report Number :	<input type="text"/>	GRN / CHIP P.O. NO :	<input type="text"/>
Name of Supplier/Customer :	<input type="text"/>	Inspection Date :	<input type="text"/>
Part DRG. Number :	<input type="text"/>	Lot Quantity :	<input type="text"/>
Part Name :	<input type="text"/>	Sample Quantity :	<input type="text"/>
Reaction Plan :	<input type="text"/>	Sampling Plan Ref. :	<input type="text"/>
Data Log Interval Time	<input type="text" value="1"/> Min.	Test Time	<input type="text"/> Hrs <input type="text"/> Min.
Applied Load (Kg):	<input type="text"/>	Dry Weight Of BRG(Kg):	<input type="text"/>
Bearing Pre Load (Kg):	<input type="text"/>	Position Of BRG	<input type="text"/>
Cycle/Min:	<input type="text"/>	Grease Used:	<input type="text"/>
Initial Grease Filled:	<input type="text"/>	FM :	<input type="text"/>
REV :	<input type="text"/>		

Test Parameters

Single Speed
 Multiple Speed

Speed (RPM)	<input type="text"/>	Time (Sec)	<input type="text"/>
Max Load	<input type="text"/>	Kg (If exceeded test will stop automatically and alarm will be raised)	

Engage(Push)

Disengage(Pull)

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.

CreateTest

Create Test

Test Type

Ordinary Test
 High Temp. Test
 Thermal Cycle Test

Chamber Temperature °C

Test Details

Report Number : GRN / CHIP P.O. NO :
 Name of Supplier/Customer : Inspection Date :
 Part DRG. Number : Lot Quantity :
 Part Name : Sample Quantity :
 Reaction Plan : Sampling Plan Ref. :
 Data Log Interval Time Min. Test Time Hrs Min.
 Applied Load (Kg): Dry Weight Of BRG(Kg):
 Bearing Pre Load (Kg): Position Of BRG
 Cycle/Min: Grease Used:
 Initial Grease Filled: FM :
 REV :

Test Parameters

Single Speed
 Multiple Speed

Engage(Push) Disengage(Pull)

Speed (RPM) Time (Sec)

Max Load Kg (If exceeded test will stop automatically and alarm will be raised)

Submit Cancel

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

User will click submit button to start test.

Auto Clutch Release Testring

Masters Test Graph Reports About US

Change Theme

Test Monitoring

Cycle Now Time : **00:00:00.00** Cycle Previous Time : **000:00:00.00**

Bearing Temperature °C
 Ambient Temperature °C
 Chamber Temperature °C
 Coil Temperature °C
 Load N
 Speed RPM

No of Cycles

Cylinder Position Status
 Pull Push

Heater Coil
 On Off

Warning
 Warned

Control Parameter
 Engage Time: s Disengage Time: s Temp: °C

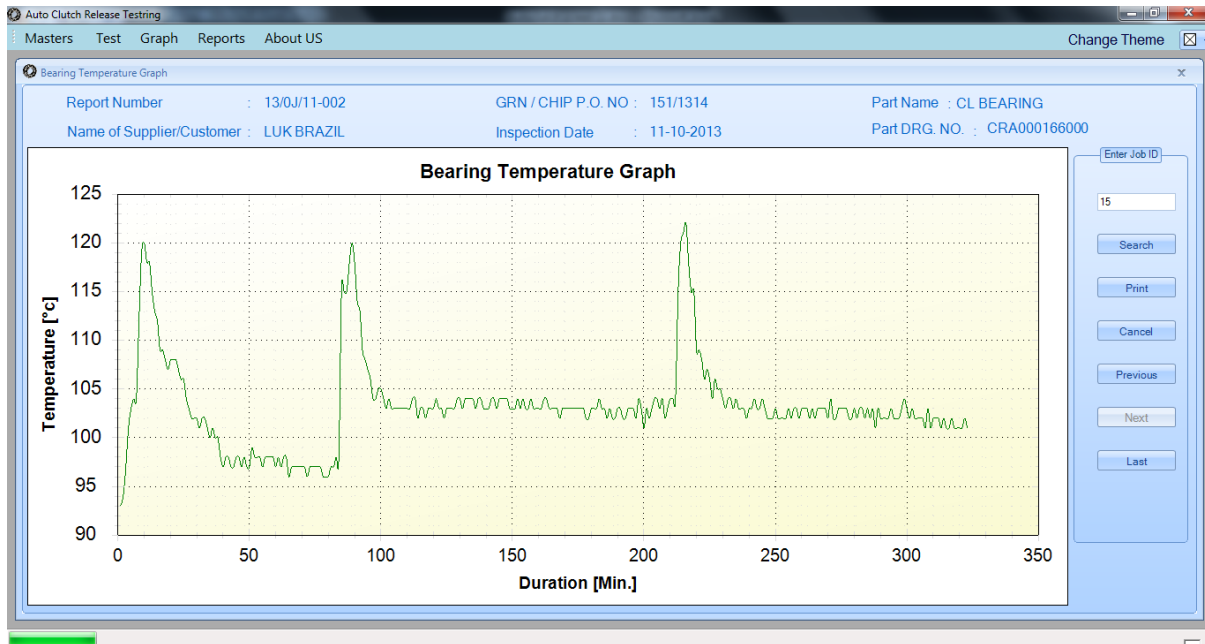
Start Pause Stop

Test Details

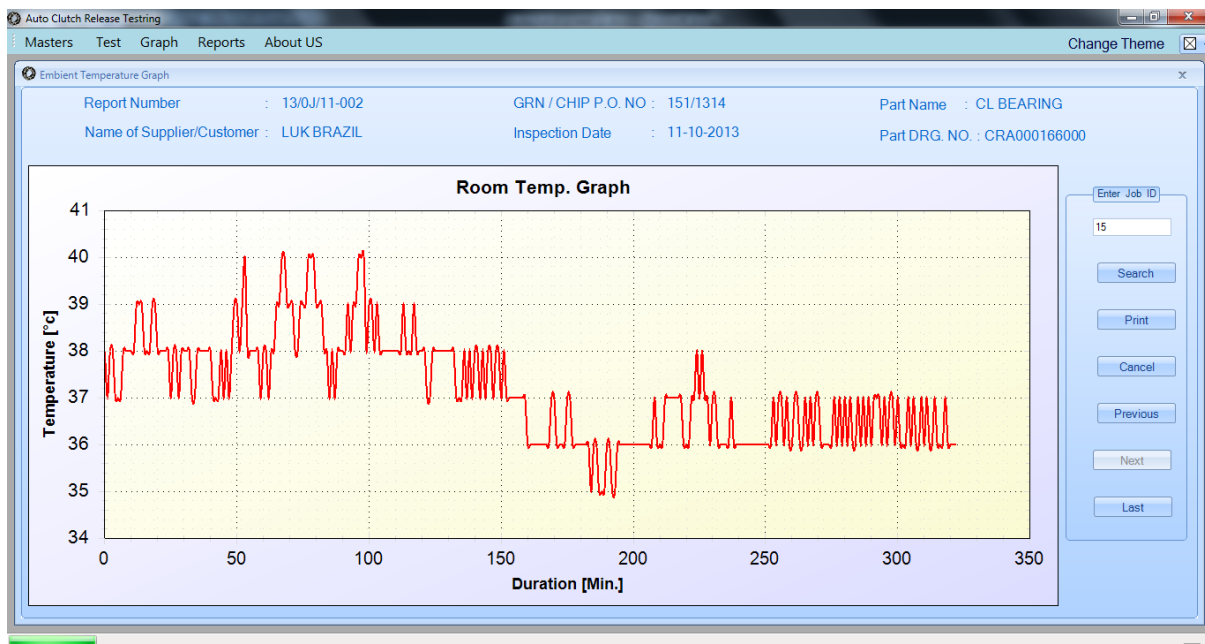
Graph: - Graph module contains 4 types of graph.

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

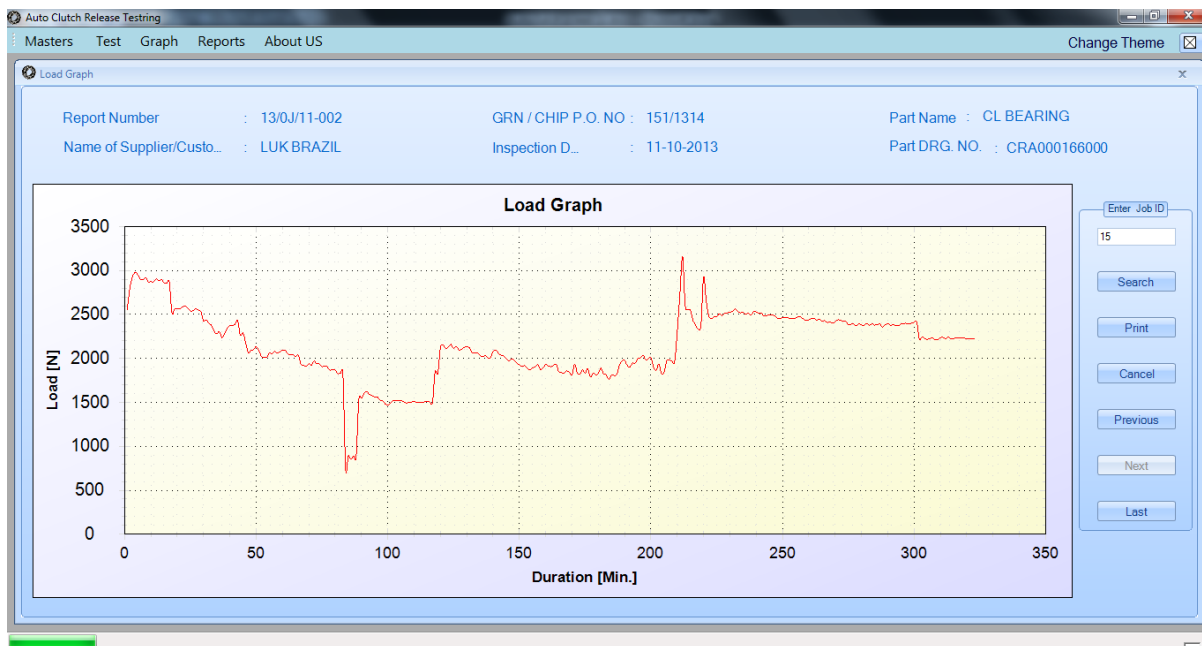
1. Bearing Graph (Time interval vs. Bearing Temp).



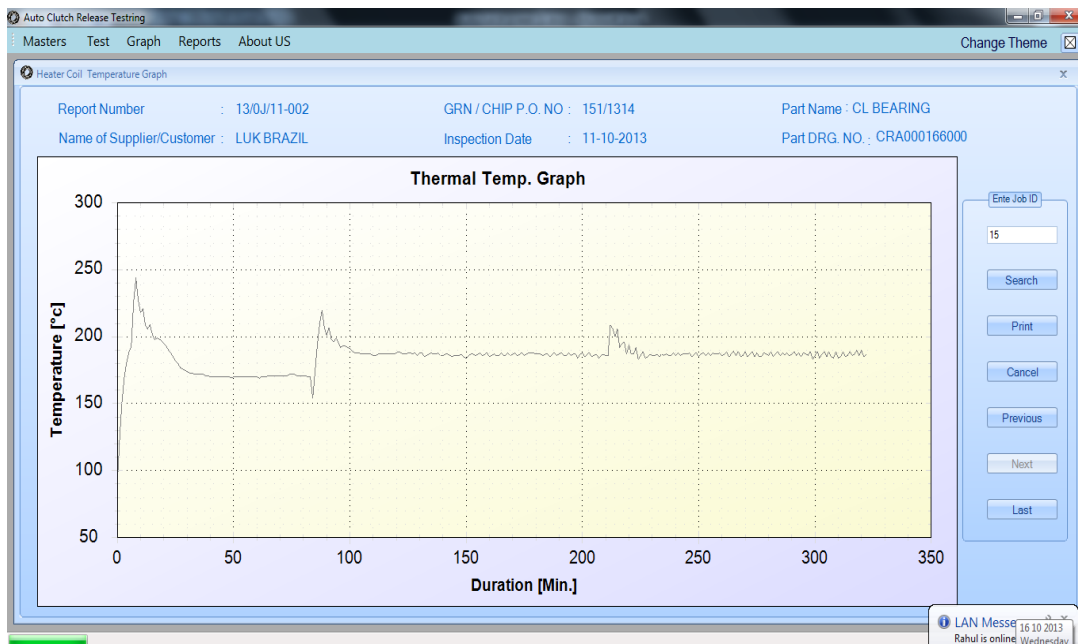
2. Ambient Graph (Time interval vs. ambient temp).



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).

