

## Overall Information

**Table 1- Overall Information**

|                          |   |
|--------------------------|---|
| Vehicle plate number     | 85476                                   |
| CPK data logger number   | LN: 001508, DN: 2003, Sim +989218469624 |
| Bus line                 | Number 10 (south to north Bus line)     |
| Bus Terminals            | Azadi Square - Daneshgah Square         |
| Total path distance      | 10.7 km                                 |
| DPF producer company     | HJS04 (Passive system with FBC)         |
| Installation date        | 23/Feb/2015                             |
| Report period            | 1/May/2015 – 15/May/2015 (fifteen days) |
| K value - DPF upstream   | 1.29 [ $m^{-1}$ ]                       |
| K value – DPF downstream | 0.09 [ $m^{-1}$ ]                       |

**Table 2- Maintenance Table**

|                         |  |
|-------------------------|--|
| Filter maintenance date | DPF has been working from installation until now without any cleaning. |
| Dosing status           | Dosing value has been kept constant from installation date until now.  |

**Table 3- Fuel and Additive Consumption Information**

|   |   |
|---|---|
| Bus mileage ( from DPF installation date)           | 12030 km  |
| Bus mileage over the period                         | 1533 km   |
| Working days over the period                        | 9 days  |
| Stop days   | 6 day   |
| Data logger working days                            | 9 days  |
| Working hours over the period                       | 142.28 hours  |
| Average working hours per day (including stop days) | 9.49 hours  |
| Bus average speed                                   | 10.77 km/hr   |
| idle speed time to all working time ration          | 49%   |
| Total Bus fuel consumption over the period          | 1103 lit  |
| fuel consumption per hour                           | 7.75 lit/hr   |
| Average fuel consumption                            | 0.72 lit/km   |
| Total Bus additive consumption over the period      | 0.46 lit  |
| Average additive consumption                        | 0.302 cc/km   |
| additive consumption to fuel ration                 | 420 cc per 1000 lit<br>(Batch Dosing with Tank Level) |

## Temperature, Pressure and Engine Speed Overview

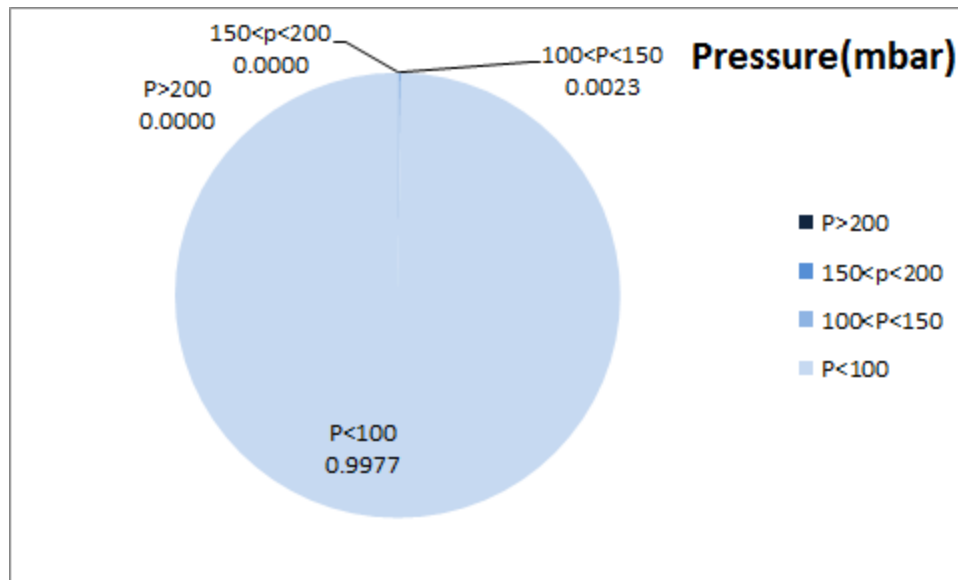


Figure 1- Pressure distribution over the working hours

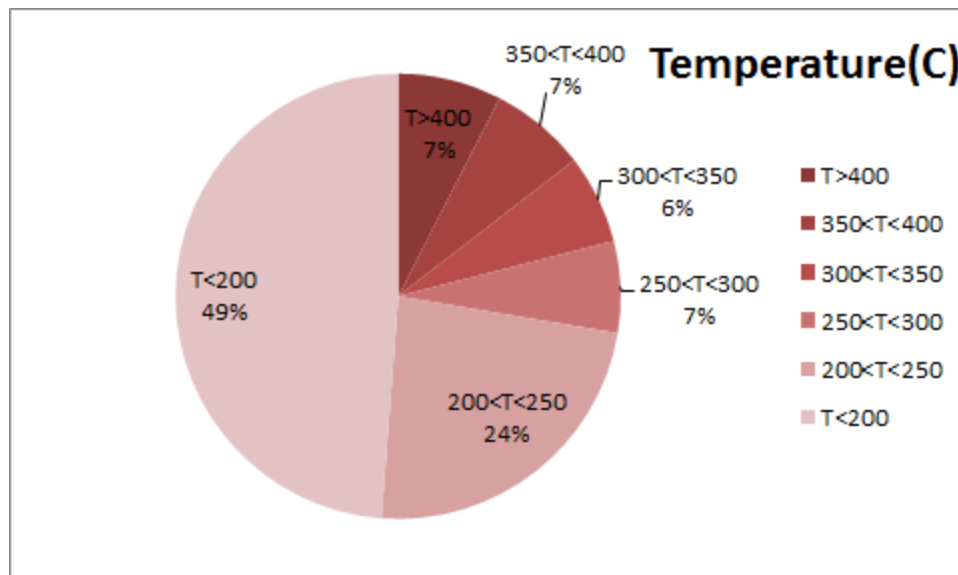


Figure 2-Temperature<sup>1</sup> distribution over the working hours

<sup>1</sup> - Exhaust temperature before the DPF

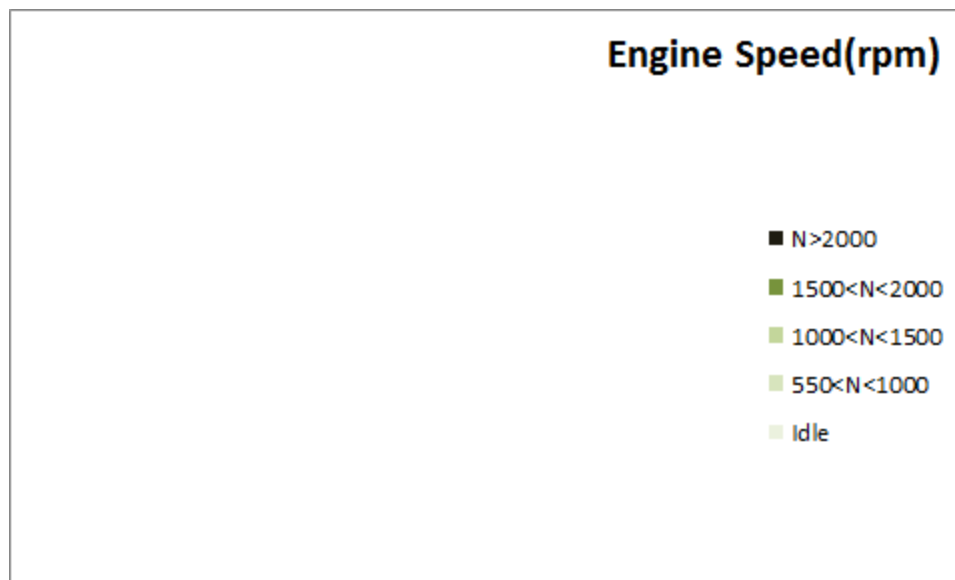


Figure 3- Engine speed distribution over the working hours

**Notice: because of engine speed sensor problem some data missed. So engine speed diagrams are blank.**

**Table 3- Mean values**

| Mean temperature <sup>2</sup> (C) | Mean pressure(mbar) | Mean engine speed(rpm) |
|-----------------------------------|---------------------|------------------------|
| 224.1                             | 11.12               | -                      |

**Table 4- Mean values without idling**

| Mean temperature(C) | Mean pressure(mbar) | Mean engine speed(rpm) |
|---------------------|---------------------|------------------------|
| 294.9               | 17.59               | -                      |

**Table 5- Max-min values**

| Max-min temperature(C) | Max-min pressure(mbar) | Max-min engine speed(rpm) |
|------------------------|------------------------|---------------------------|
| 514-70                 | 150-0                  | -                         |

<sup>2</sup> - Temperature of before the DPF

## Detailed Pressure Analysis

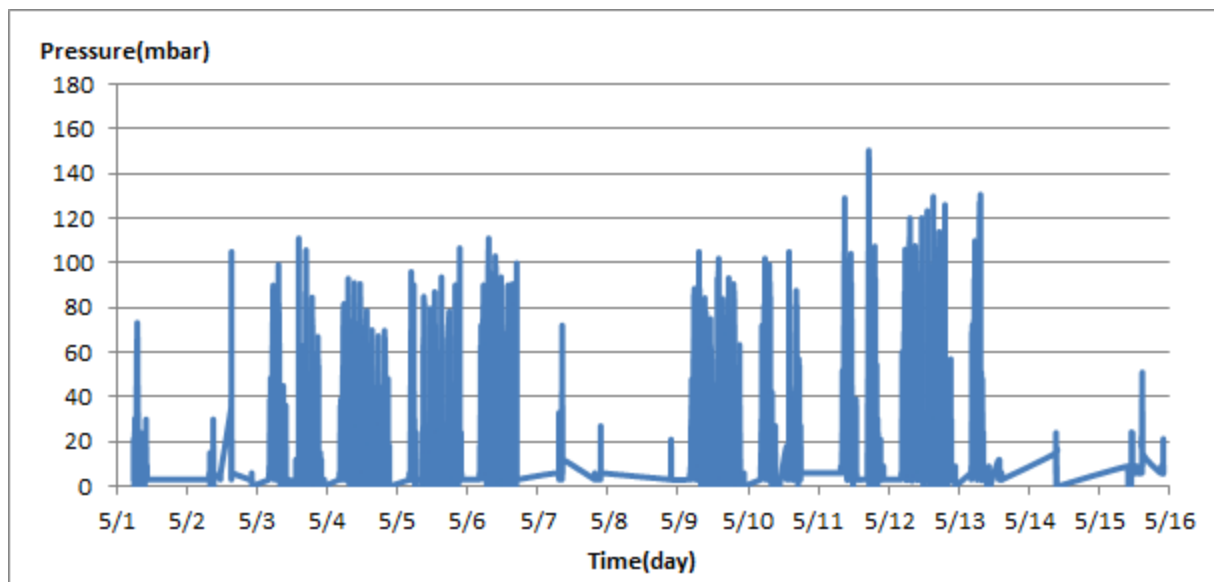


Figure 4- Pressure distribution over fifteen days

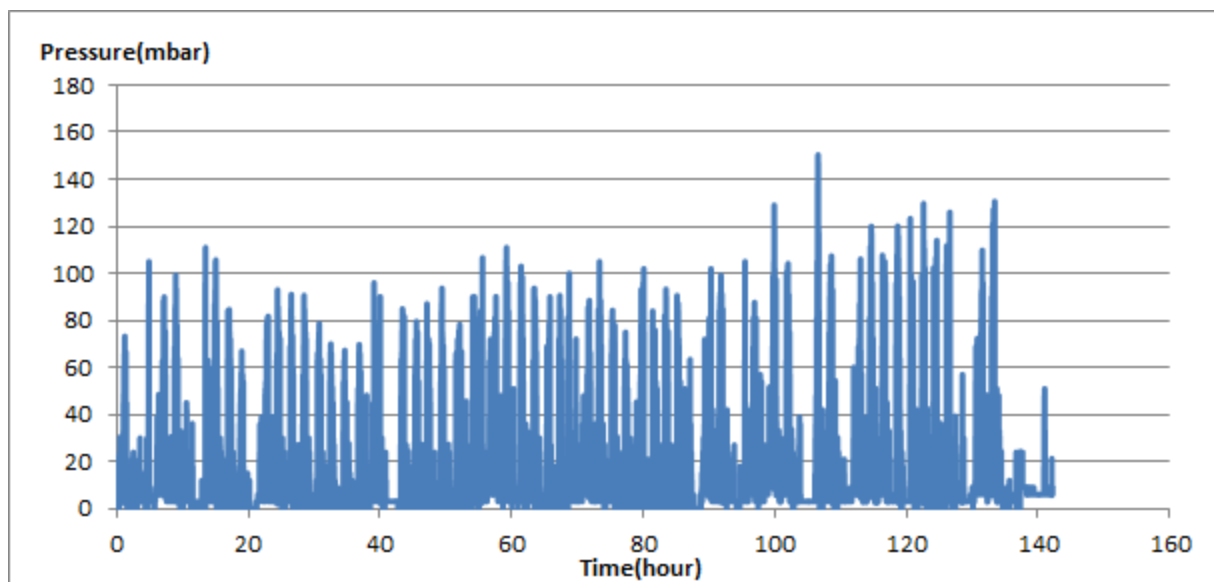


Figure 5- Pressure vs. working hours

Notice: backpressure distribution shown into two diagrams. As obvious in figure 5, stop-working periods were eliminated and pressure is displayed along working-hours.

## Detailed Temperature Analysis

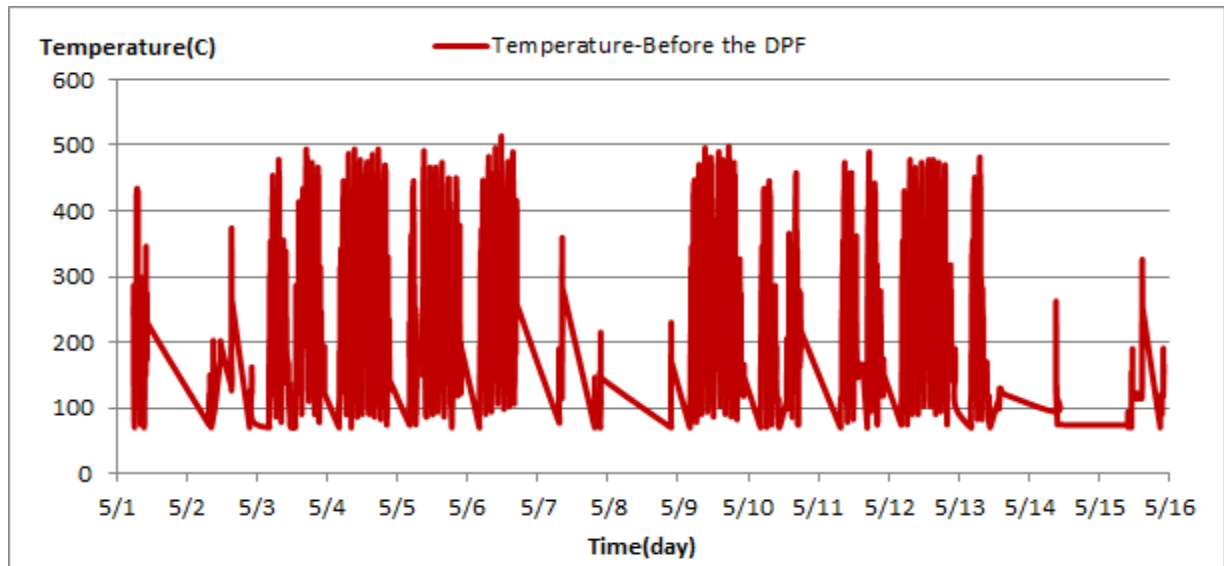


Figure 6- Temperature distribution over fifteen days

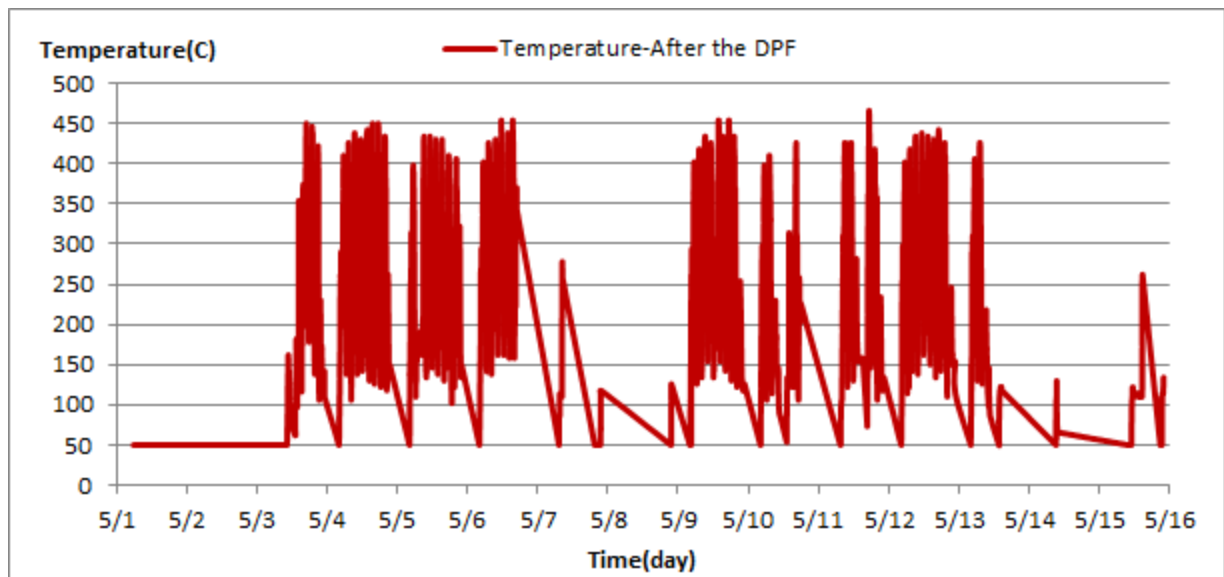


Figure 7- Temperature distribution over fifteen days

Notice: Temperature sensor was installed after the DPF on May 3<sup>rd</sup>. So before this time CPK's monitored 50°C.

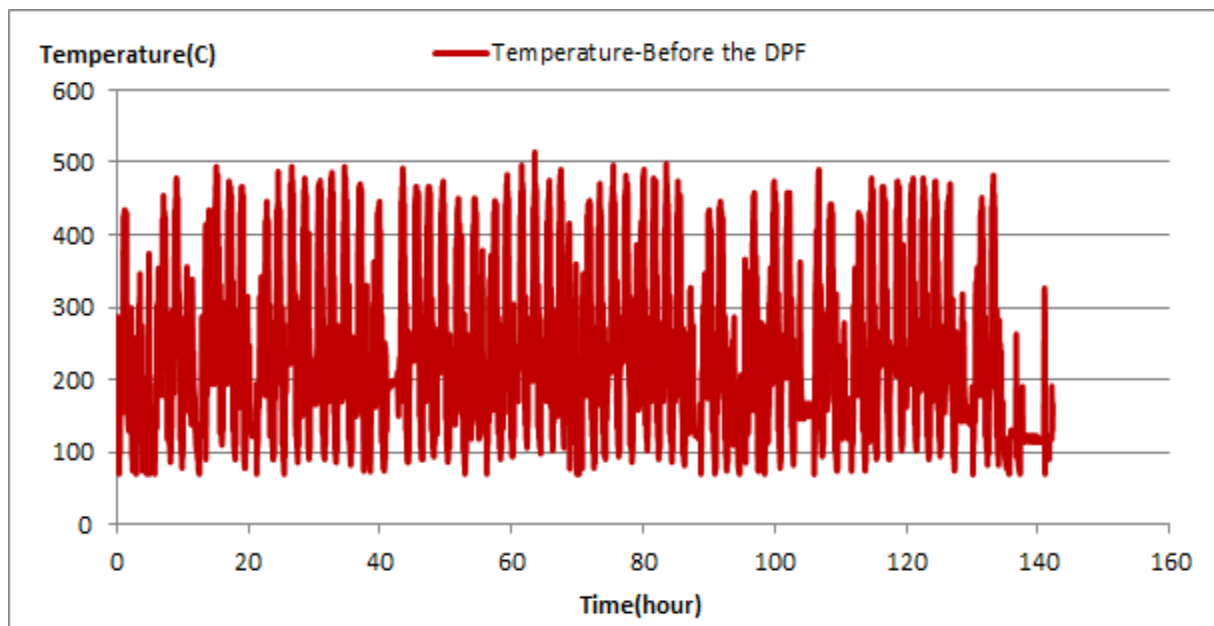


Figure 8- Before DPF temperature vs. working hours

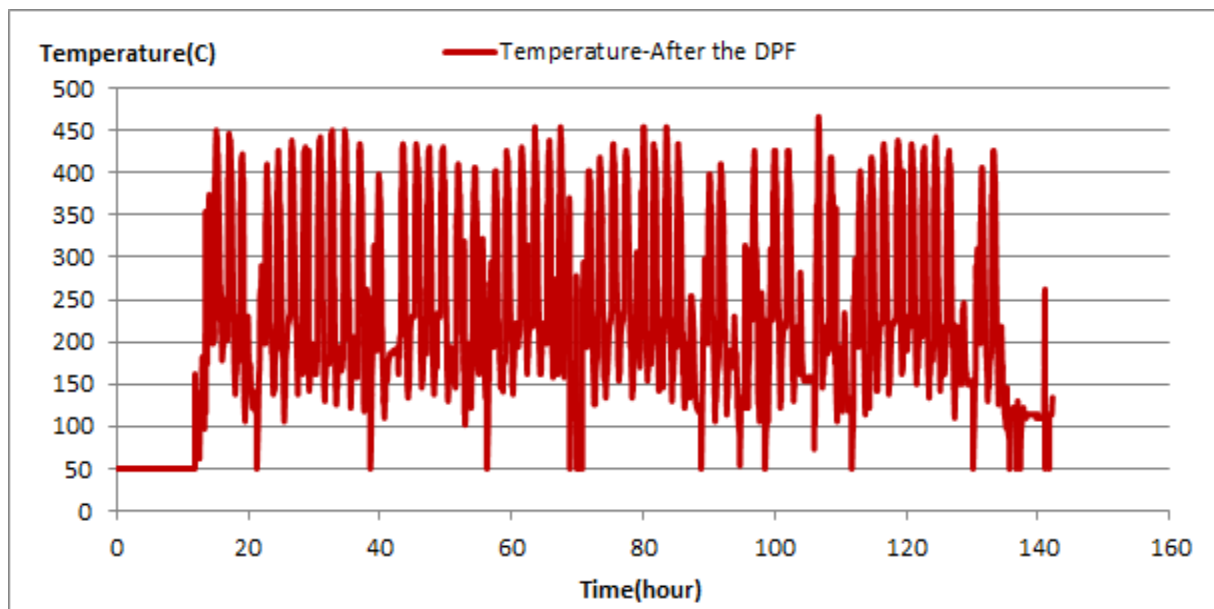


Figure 9- After DPF temperature vs. working hours

## Engine Speed Diagrams

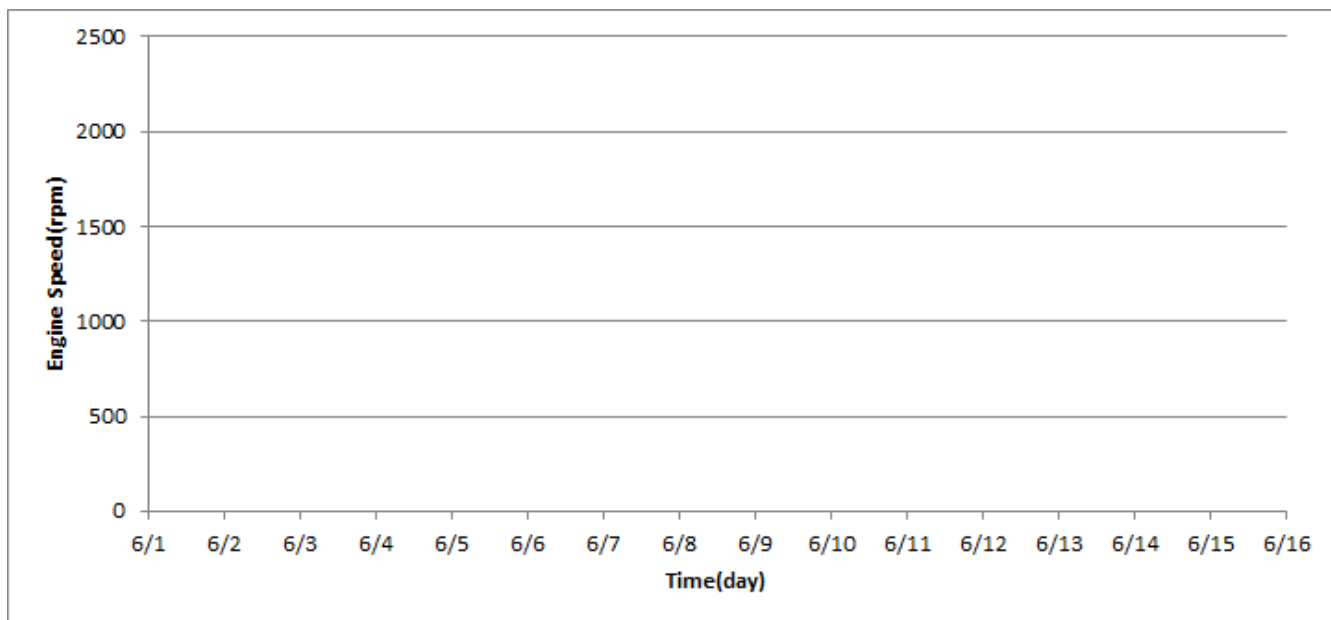


Figure 10- Engine speed distribution over fifteen days

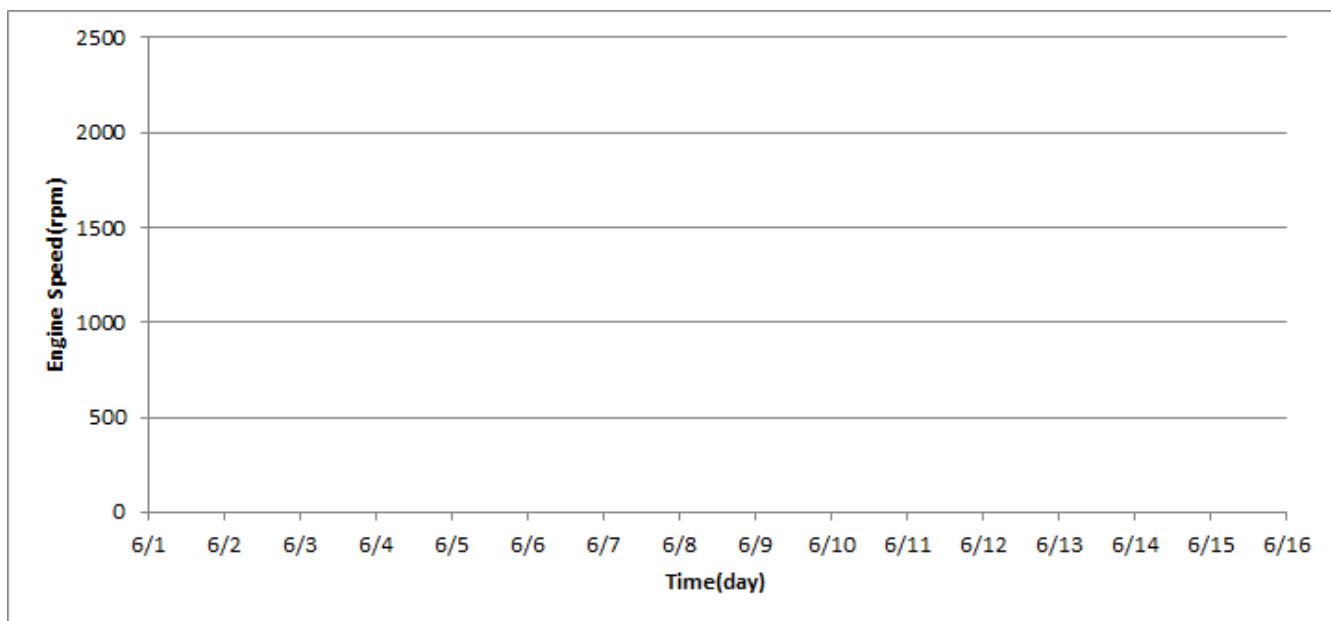


Figure 11- Engine speed diagram for calculating CPK's working days



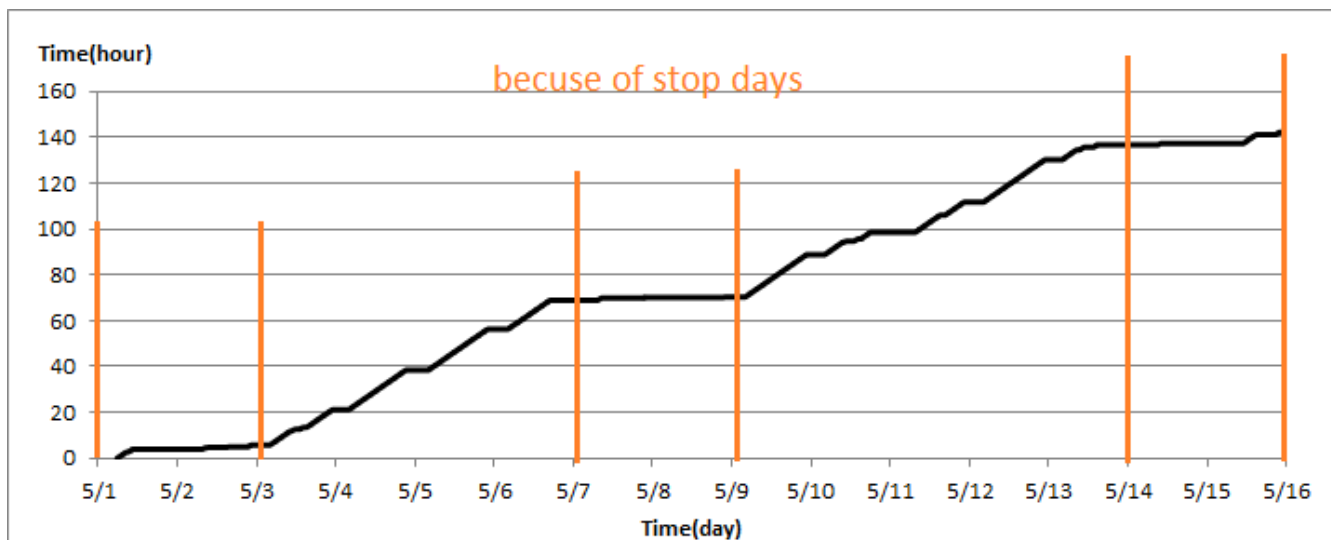


Figure 12- Time diagram for calculating CPK's working days

Notice: Data logger sampling time can be calculated from Figure 12. The lines parallel with time (day) axis show days without data logger data. As depicted in Figure 12, data logger didn't sample six days because of stop days.

## Pressure-Engine Speed diagrams

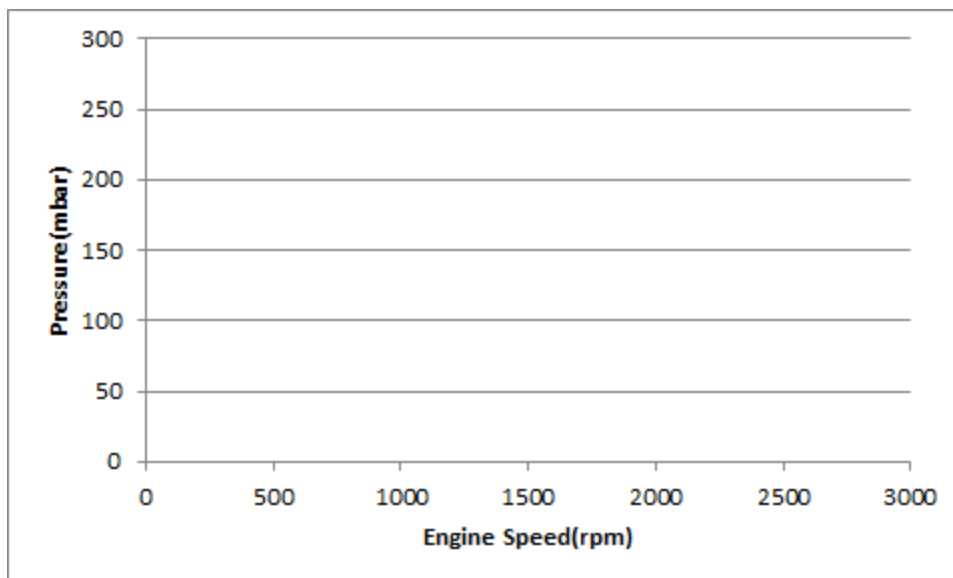


Figure 13- Pressure against speed

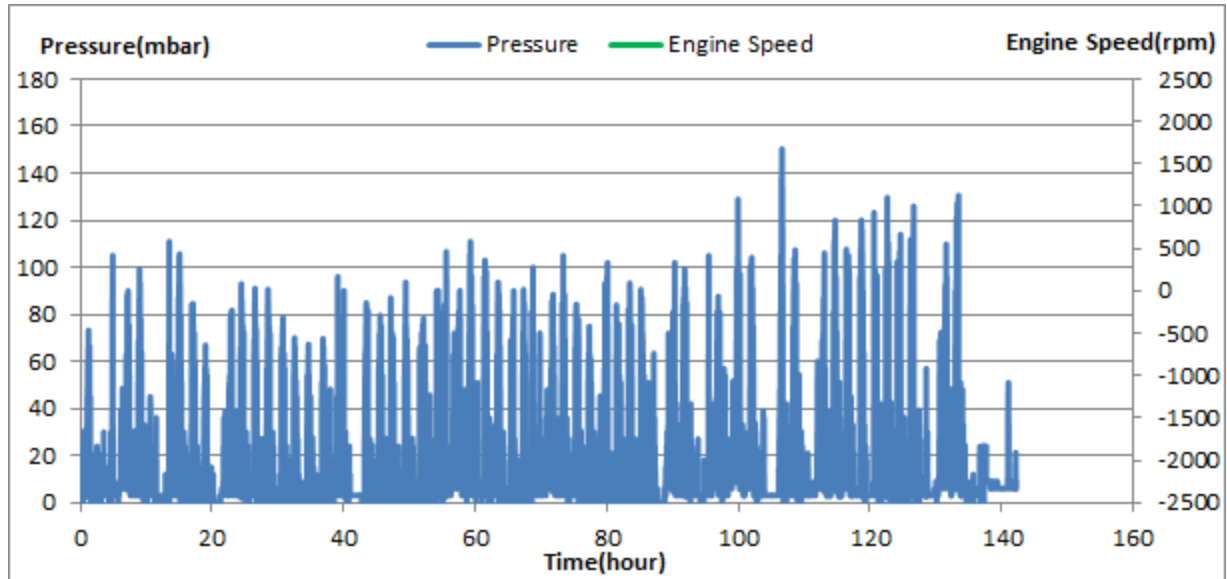


Figure 14- P, N distribution vs. working hours

### Temperature- Engine Speed Diagram

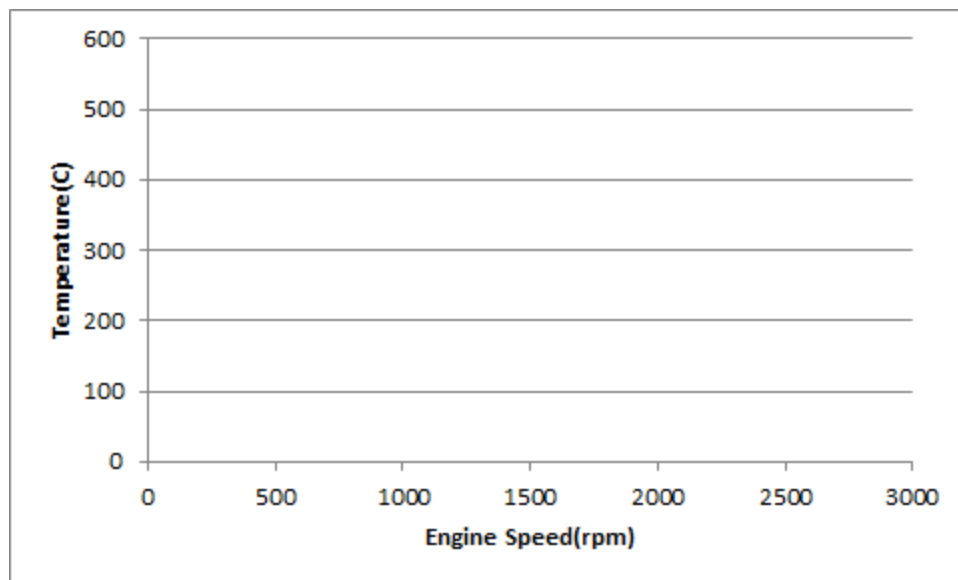


Figure 15- Temperature against speed

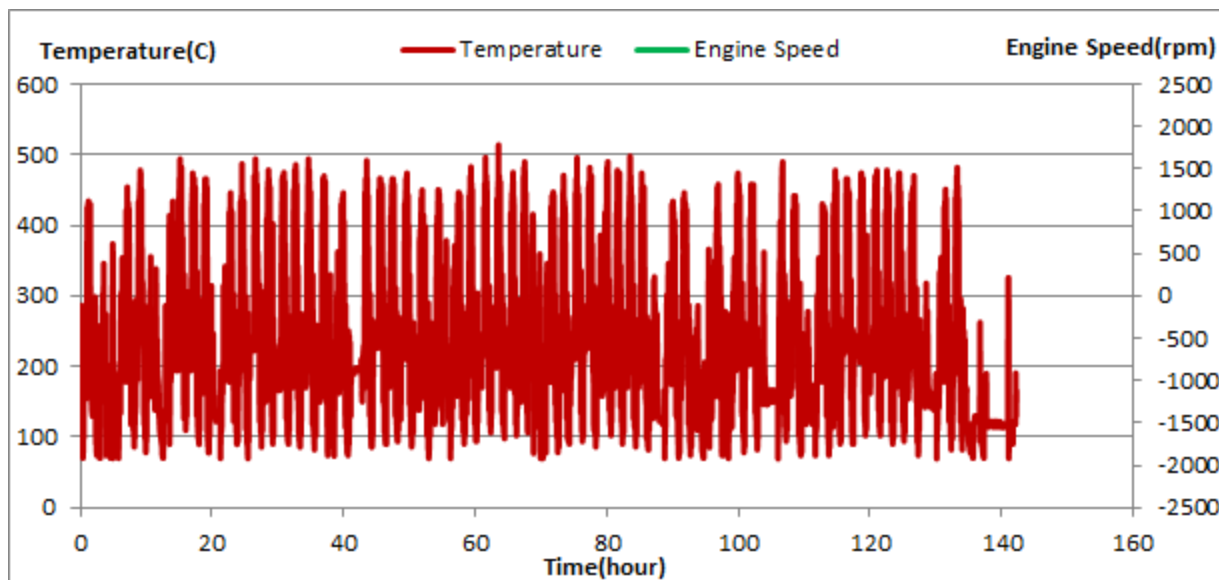


Figure 16- T, N distribution vs. working hours

## Filter Operation Analysis

- As depicted in Figure 1, pressure above 150 can't be observed.
- Figure 2 displays flow temperature before the DPF. It can be obviously observed that 7% of total working-time temperature is above 400 °C and 14% above 350°C.
- ❖ **As mentioned above, engine speed sensor had problem in this period. Hence for calculating some data temperature's data used instead of engine speed's data (idling time for example).**

|                         |   |                                 |
|-------------------------|---|---------------------------------|
| Filter operation status | Excellent <input checked="" type="checkbox"/> | Good <input type="checkbox"/>   |
|                         | Maintenance required <input type="checkbox"/> | Failed <input type="checkbox"/> |