

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	16/Jun/2015 – 30/Jun/2015 (fifteen days)
K value – DPF's upstream	2.2 [m^{-1}]*
K value – DPF's downstream	0.03 [m^{-1}]

Notice: The K value for filter's upstream was high, because K value had been measured a day before bus oil service was done.

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)	19449 km
Bus mileage over the period	2445 km
Working days over the period	14 days
Stop days	1 day
Data logger working days	14 days
Working hours over the period	225 hours, 40 minutes
Average working hours per day (including stop days)	15 hours, 3 minutes
Bus average speed	10.83 km/hr
Idle speed time to all working time ration	52%*
Total bus fuel consumption over the period	1562 lit
Fuel consumption per hour	6.92 lit/hr
Average fuel consumption	0.63 lit/km
Total bus additive consumption over the period	0.65 lit
Average additive consumption	0.265 cc/km
Additive consumption to fuel ration	416 cc per 1000 lit (batch dosing with tank level)

Notice: Due to rpm sensor's problem temperature data were used for calculating idle speed time instead of engine speed data.

Temperature, Pressure and Engine Speed Overview

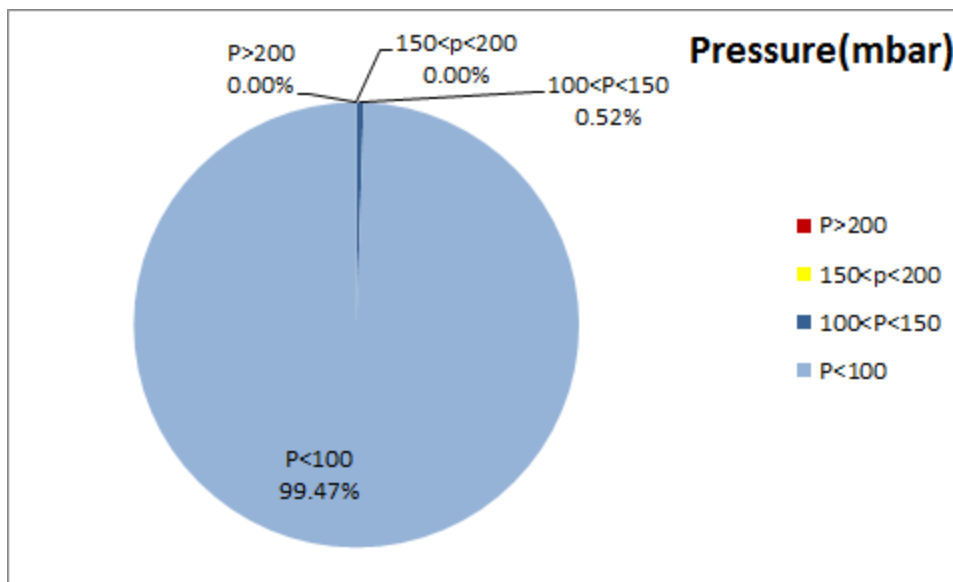


Figure 1- Pressure distribution over the working hours

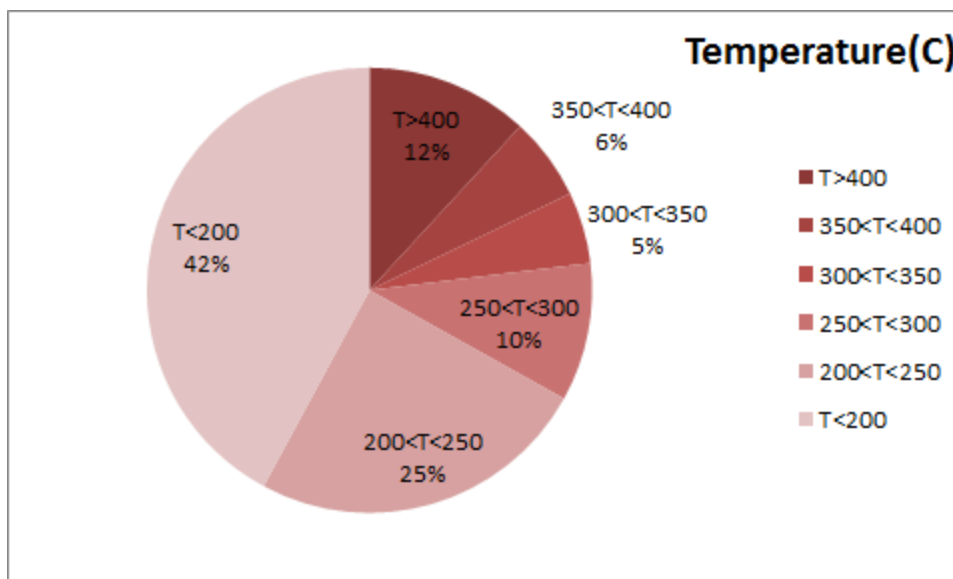


Figure 2-Temperature¹ distribution over the working hours

¹ - Flow temperature (DPF's upstream)

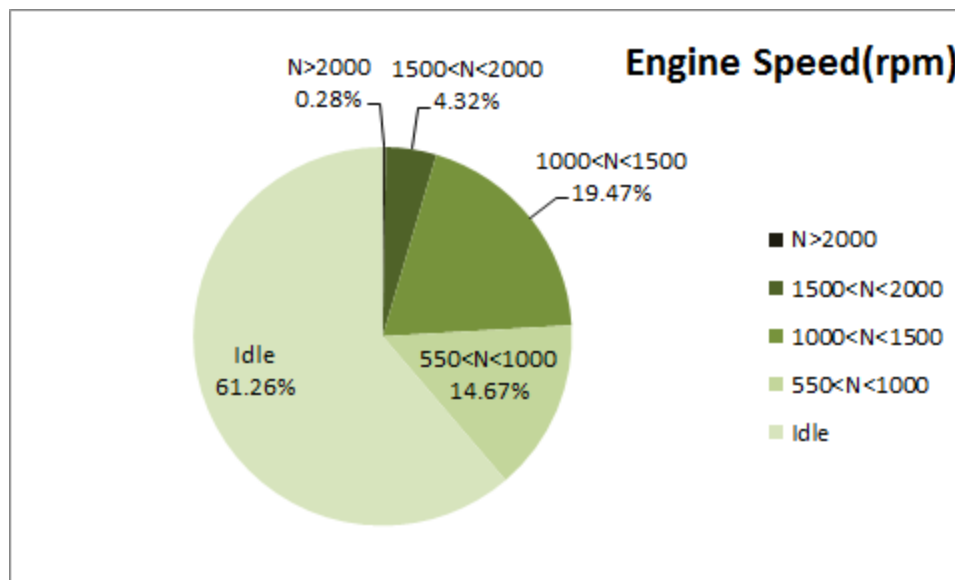


Figure 3- Engine speed distribution over the working hours

Notice: RPM sensor was fixed on Jun 23th, so figures and numbers related to engine speed related to data after this date.

Notice: This vehicle cooler system was not used during this period. So upper limit for idle engine speed was considered to be 550 rpm.

Table 3- Mean values

Mean temperature ² (C)	Mean pressure(mbar)	Mean engine speed(rpm)
241.90	12.59	755

Table 4- Mean values without idling

Mean temperature(C)	Mean pressure(mbar)	Mean engine speed(rpm)
319.66	21.35	873

Table 5- Max-min values

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
542-70	153-0	2256-0

² - Flow temperature (DPF's upstream)

Detailed Pressure Analysis

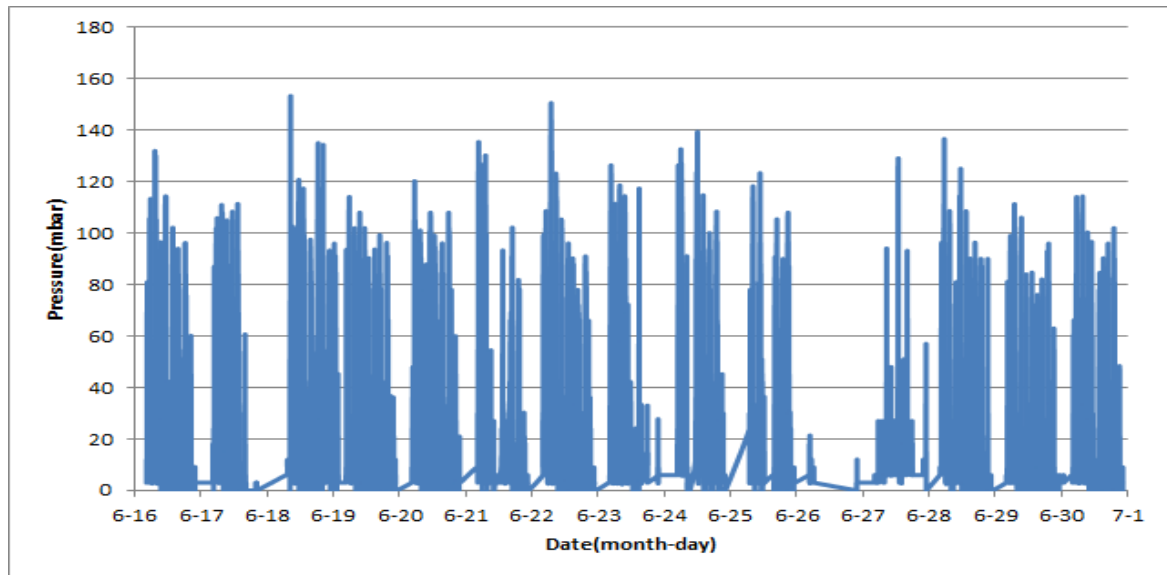


Figure 4- Pressure distribution over the fifteen days

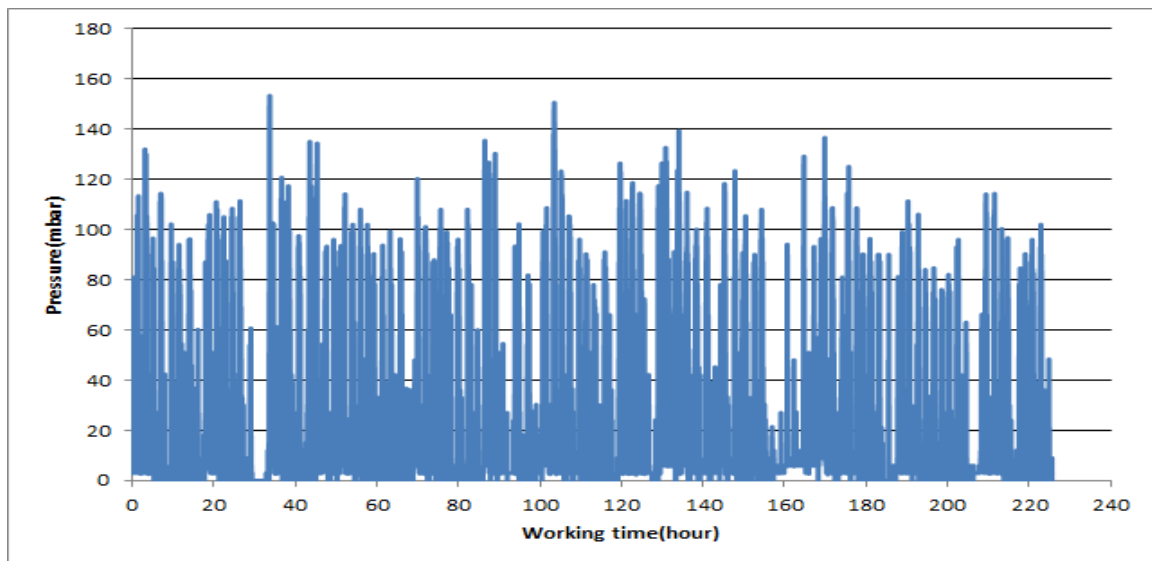


Figure 5- Pressure vs. working hours

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

Detailed Temperature Analysis

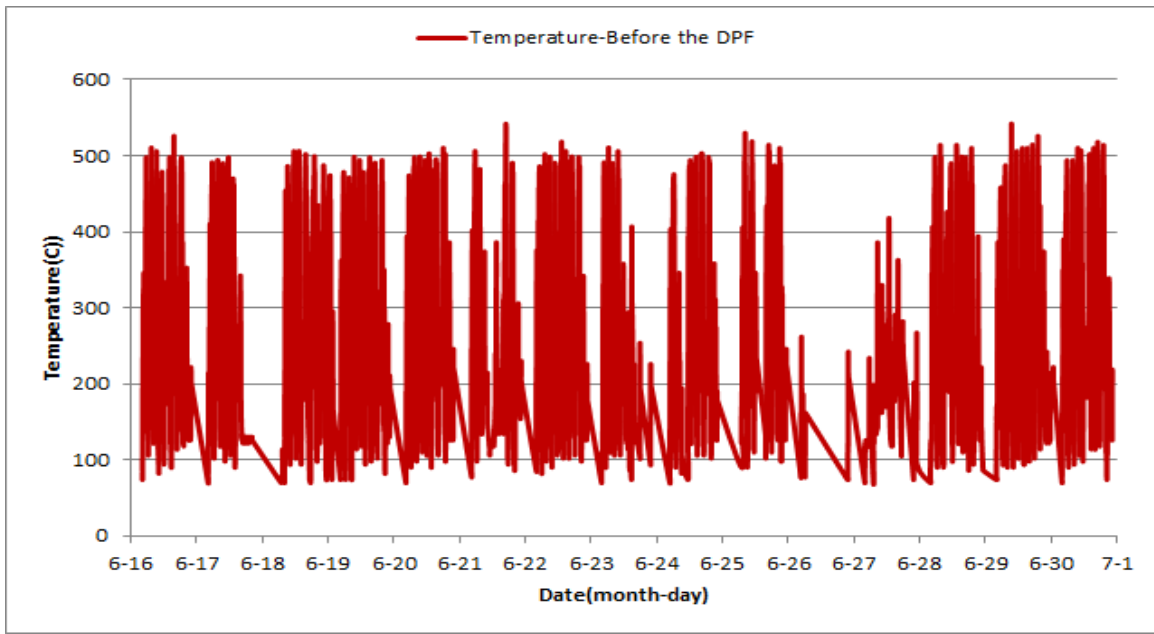


Figure 6- Temperature distribution over the fifteen days

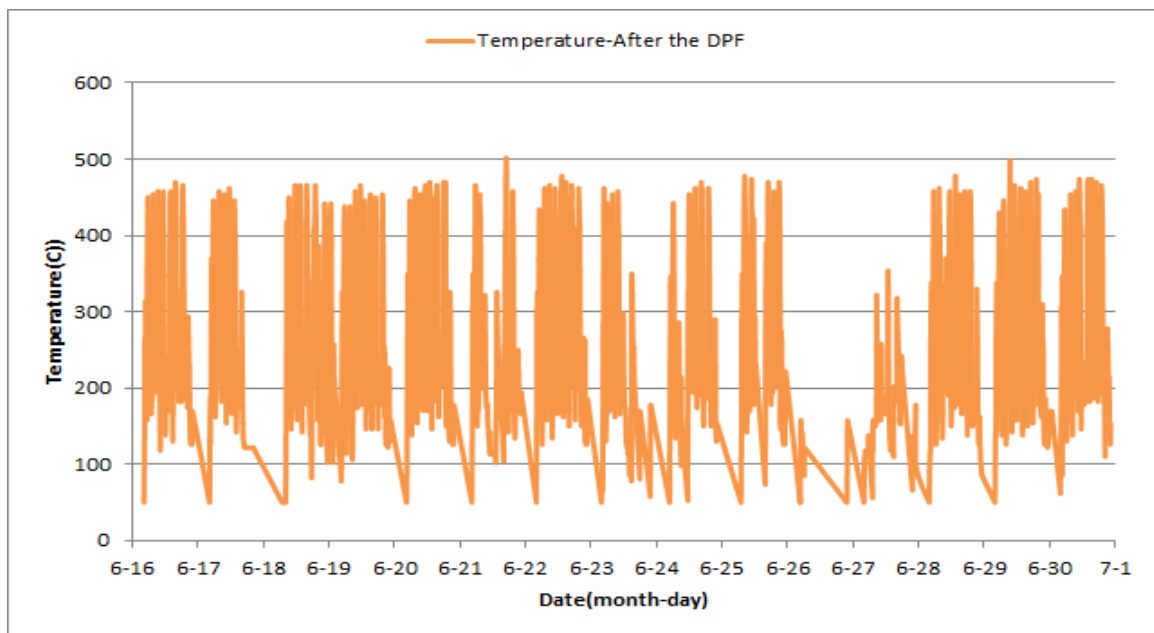


Figure 7- Temperature distribution over the fifteen days

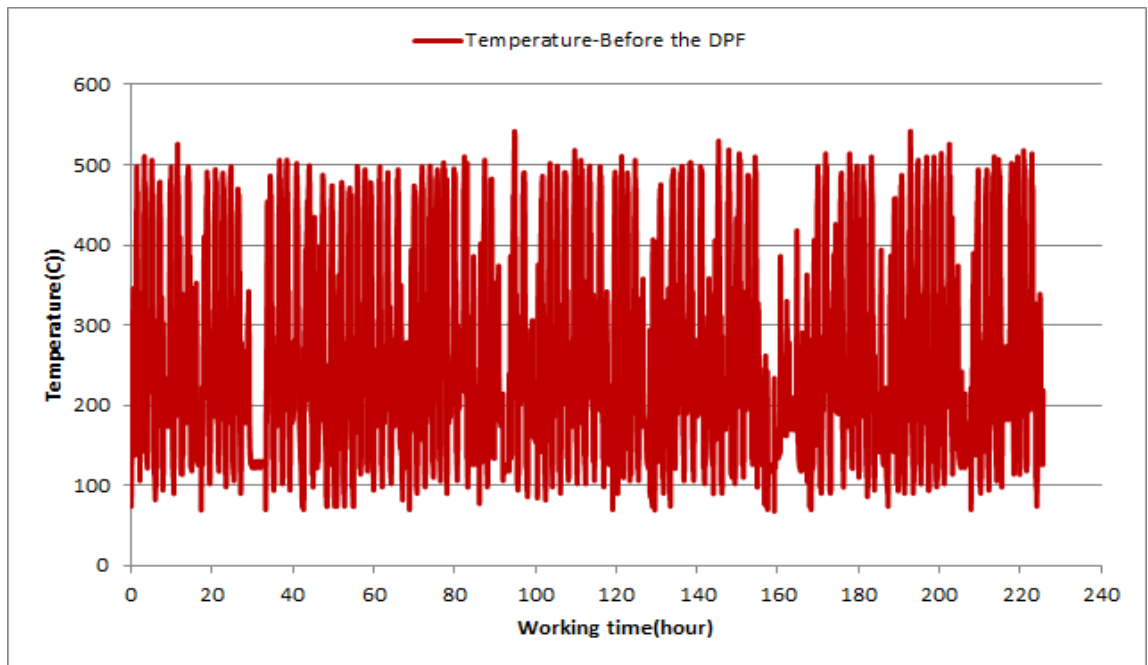


Figure 8- Temperature vs. working hours

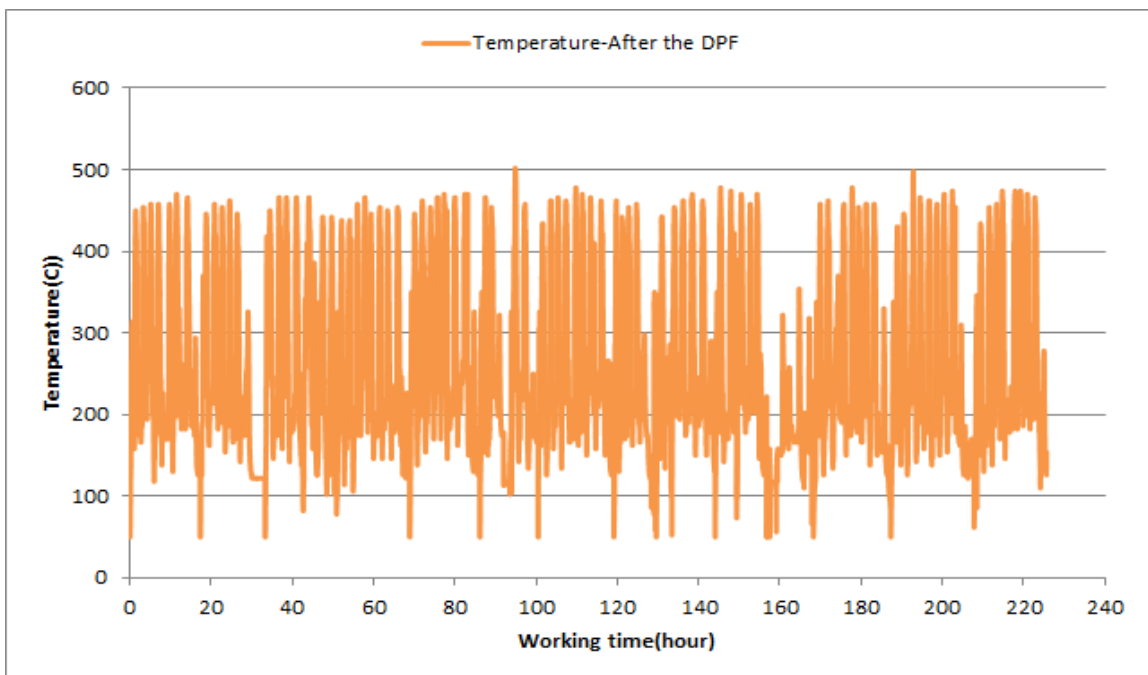


Figure 9- Temperature vs. working hours

Engine Speed Diagrams

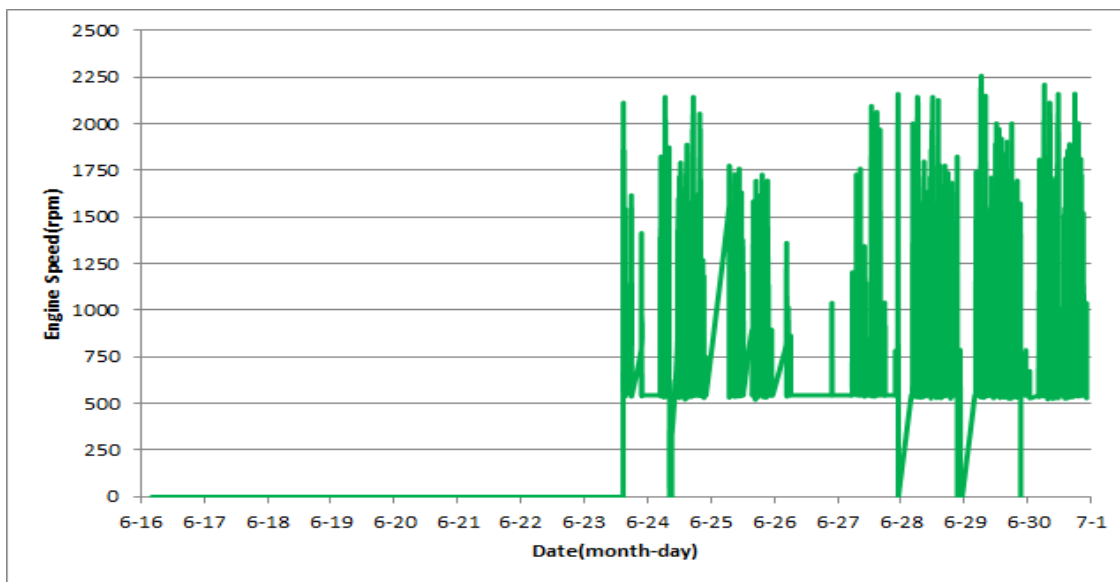


Figure 10- Engine speed distribution over the fifteen days

Notice: Figures related to engine speed show zero value before Jun 23th due to rpm sensor's problem.

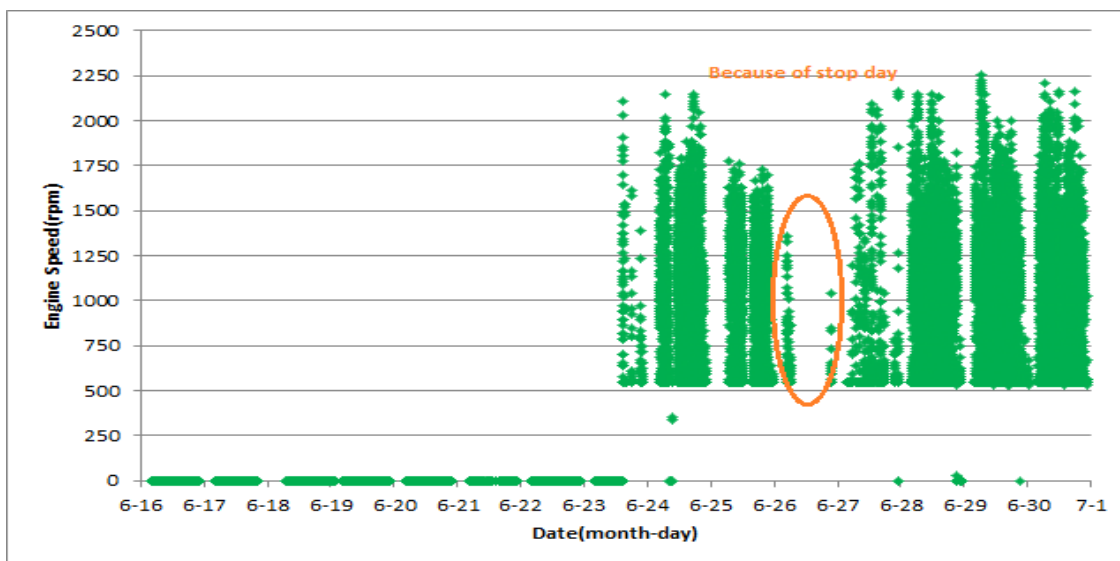


Figure 11- Engine speed diagram for calculating CPK's working days

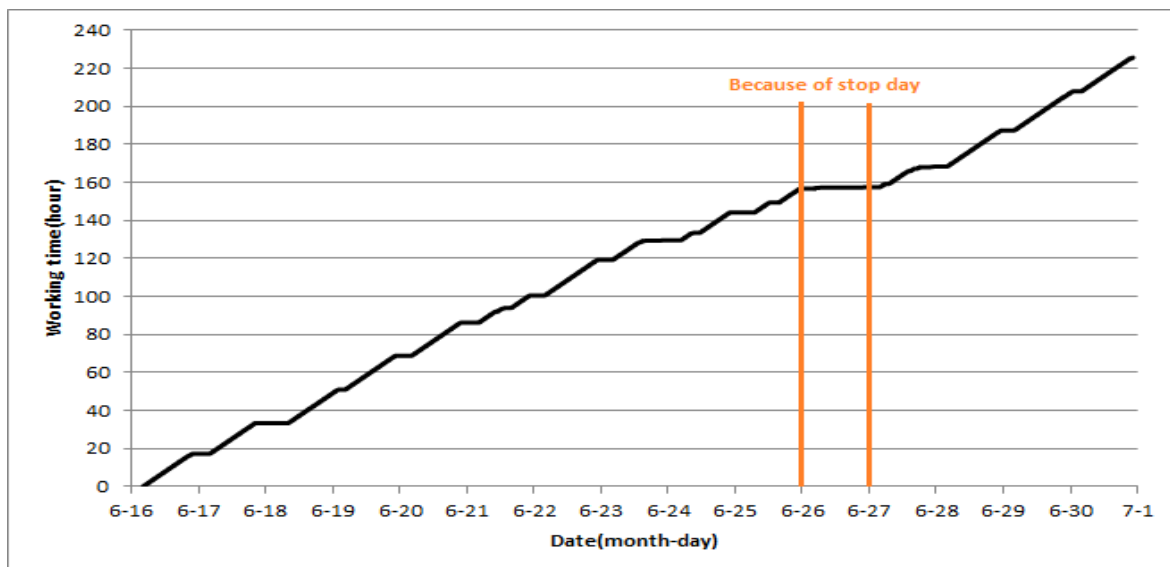


Figure 12- Time diagram for calculating CPK's working days

Notice: Data logger sampling time can be calculated from Figure 12. The lines parallel with Date axis show days without CPK's (data logger) data. As depicted in Figure 12, data logger sample all days of period.

Pressure-Engine Speed diagrams

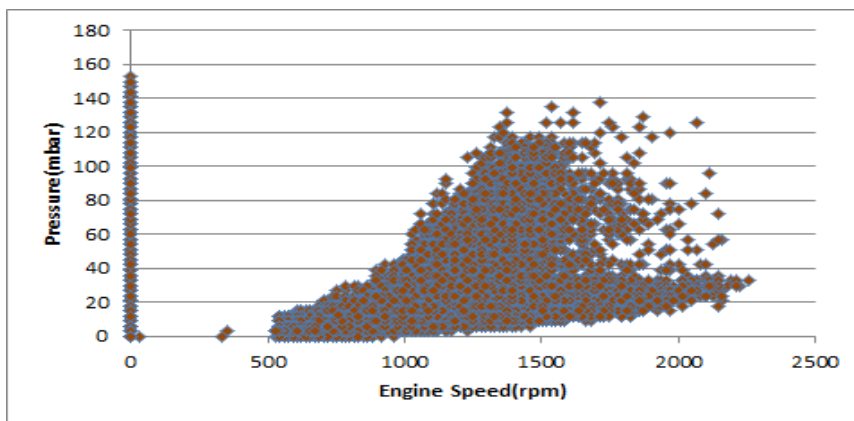


Figure 13- Pressure against engine speed

Notice: The line parallel with pressure axis related to rpm sensor problem. (fixed on 23th Jun)

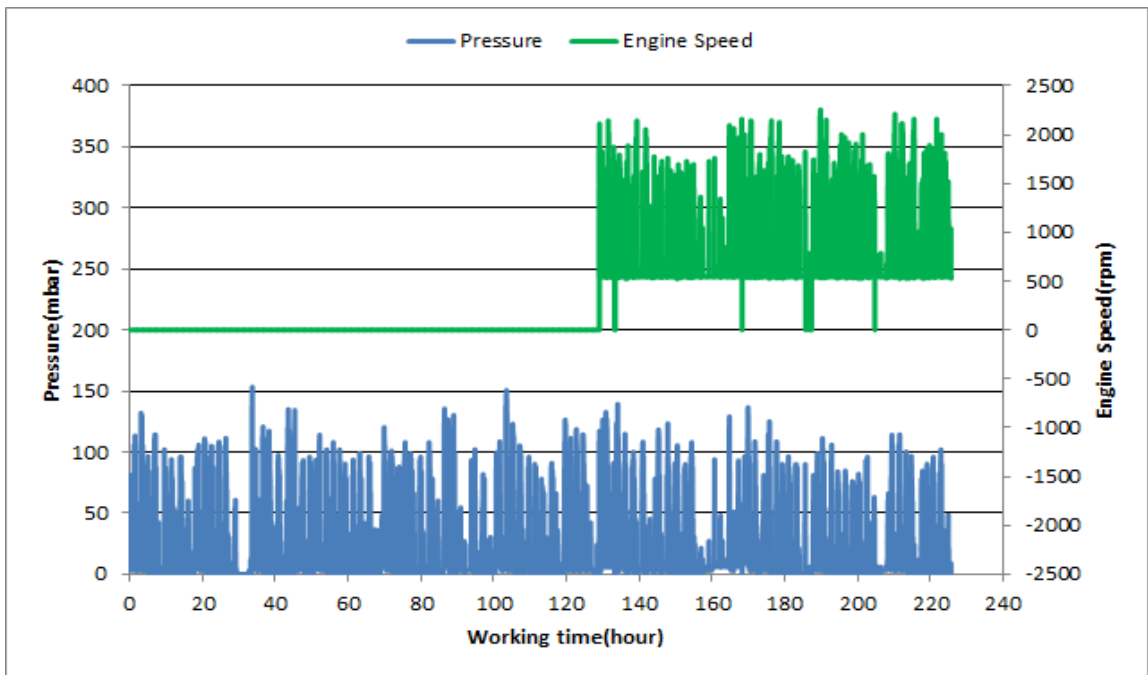


Figure 14- P, N distribution vs. working hours

Temperature- Engine Speed Diagram

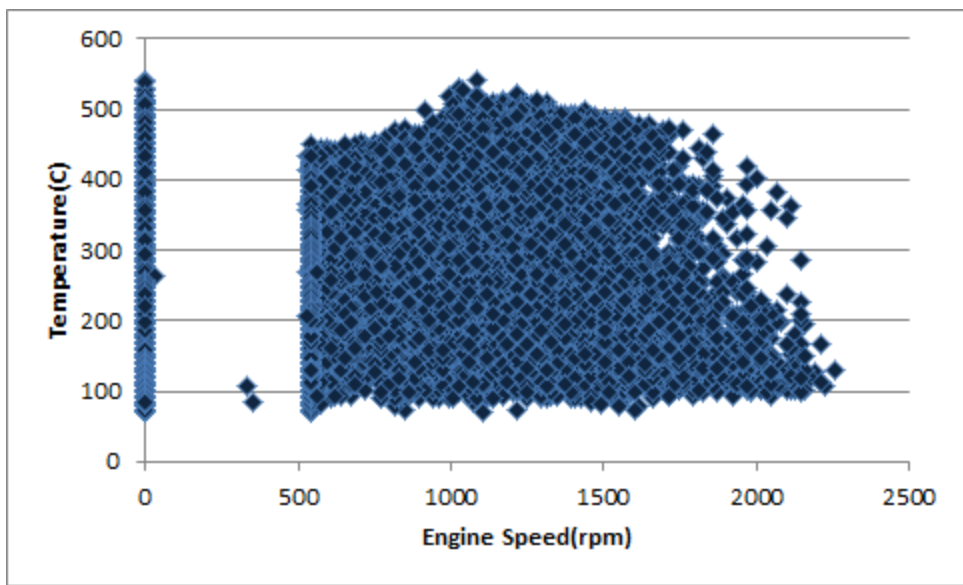


Figure 15- Temperature against engine speed

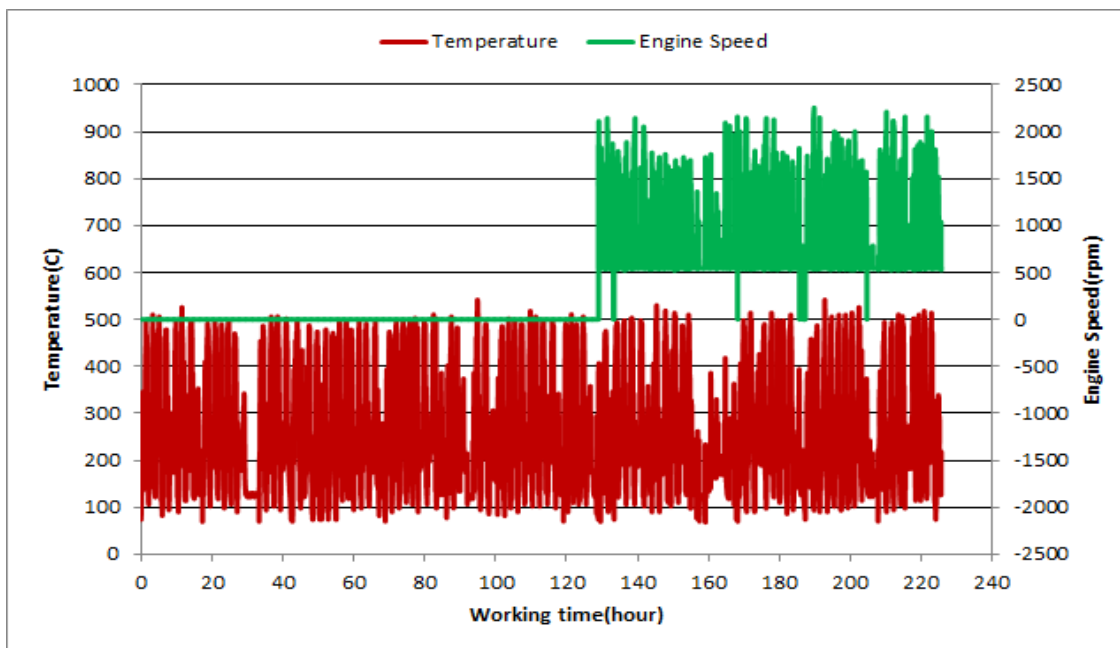


Figure 16- T, N distribution vs. working hours

Filter Operation Analysis

- As depicted in Figure 1, pressure above 150 can't be observed.
- Figure 2 displays flow temperature distribution for DPF's upstream. It can be obviously observed that 12% of total working-time temperature is above 400 °C and 18% above 350°C.
- ❖ **As mentioned above, engine speed sensor had problem in this period. Hence for calculating some data temperature data used instead of engine speed data (e.g: for calculating idling time upper temperature limit was considered to be 215 °C).**
- ❖ **RPM sensor was fixed on Jun23th.**

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