

Overall Information

Table 1- Overall Information

Vehicle plate number	78514
CPK data logger number	LN: 001496, DN: 1914, Sim +989218786219
Bus line	Number 4 (south to north bus line)
Bus Terminals	Tehran South Bus Terminal - Park Way Bus Terminal
Total path distance	22.8 km
DPF company producer	HJS_01 (Passive system with FBC)
Installation date	10/Sep/2014
Report period	1/Jun/2015 – 15/Jun/2015 (fifteen days)
K value – DPF's upstream	1.58 [m^{-1}]
K value – DPF's downstream	0.04 [m^{-1}]

Table 2- Maintenance Table

Filter maintenance date	DPF core was cleaned on Jun 13 th .
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)	39191 km
Bus mileage over the period	1959 km
Working days over the period	12 days
Stop days	3 days
Data logger working days	12 days
Working hours over the period	160 hours, 34 minutes
Average working hours per day (including stop days)	10 hours, 42 minutes
Bus average speed	12.20 km/hr
Idle speed time to all working time ration	57%
Total bus fuel consumption over the period	1266 lit
Fuel consumption per hour	7.89 lit/hr
Average fuel consumption	0.65 lit/km
Total bus additive consumption over the period	0.54 lit
Average additive consumption	0.276 cc/km
Additive consumption to fuel ration	425 cc per 1000 lit (batch dosing with tank level)

Temperature, Pressure and Engine Speed Overview

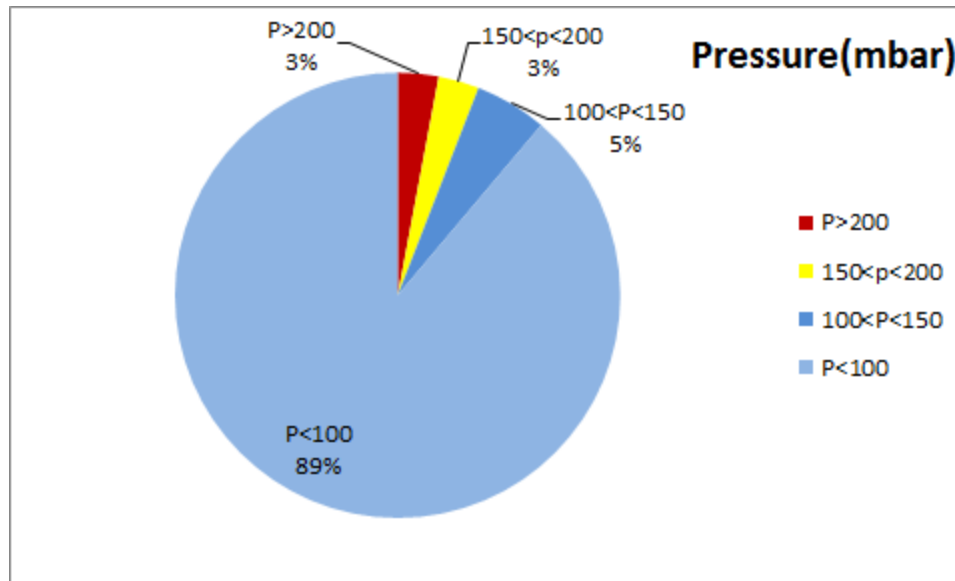


Figure 1- Pressure distribution over the working hours

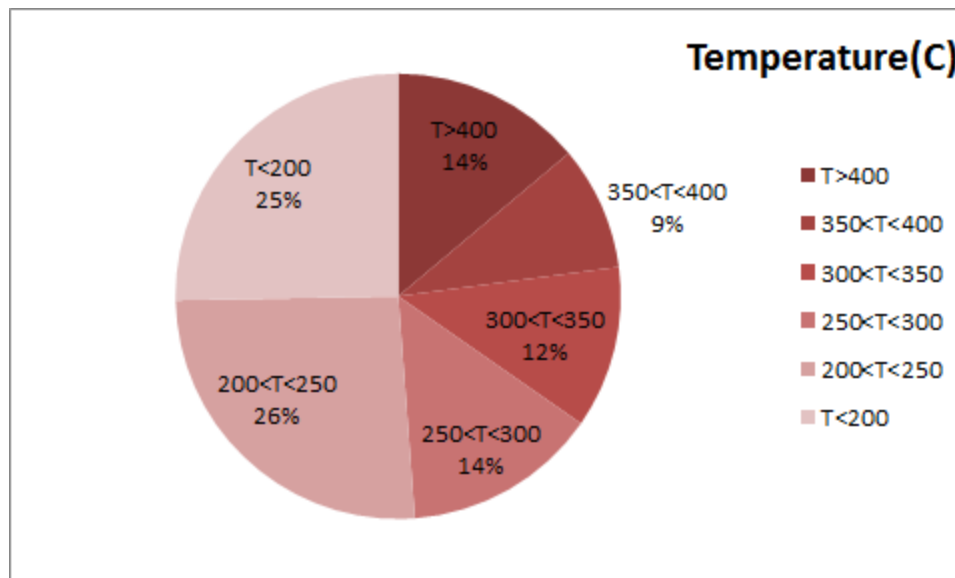


Figure 2-Temperature¹ distribution over the working hours

¹ - Flow temperature (DPF's upstream)

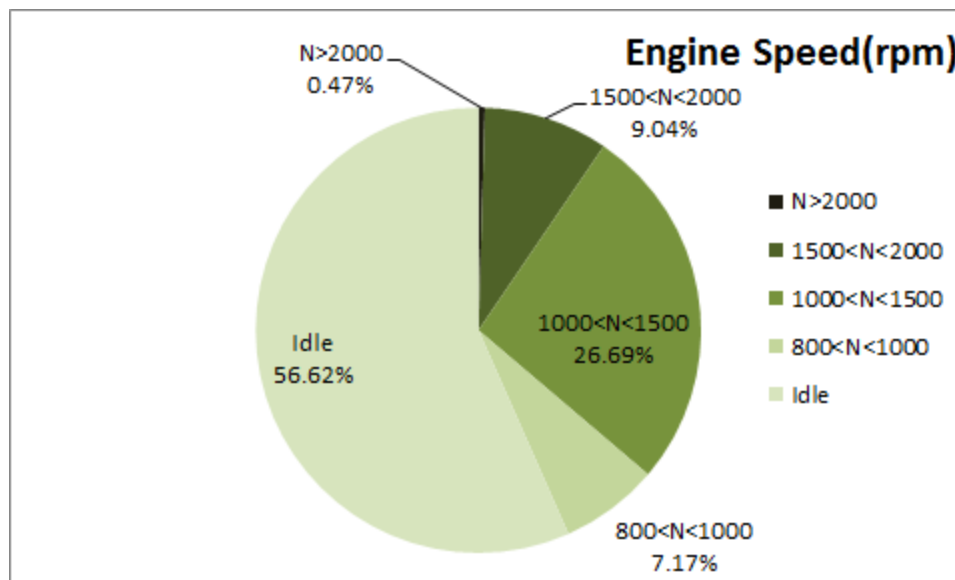


Figure 3- Engine speed distribution over the working hours

Notice: with using bus cooler system, idle rpm increase compare with working times without using ventilation system. So during hot months of year 800 rpm is considered as upper limit for idle engine speed.

Table 4- Mean values

Mean temperature ² (C)	Mean pressure(mbar)	Mean engine speed(rpm)
274.00	41.86	931

Table 5- Mean values without idling

Mean temperature(C)	Mean pressure(mbar)	Mean engine speed(rpm)
335.42	79.20	1277

Table 6- Max-min values

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
578-50	327-0	2240-80

² - Flow temperature (DPF's upstream)

Detailed Pressure Analysis

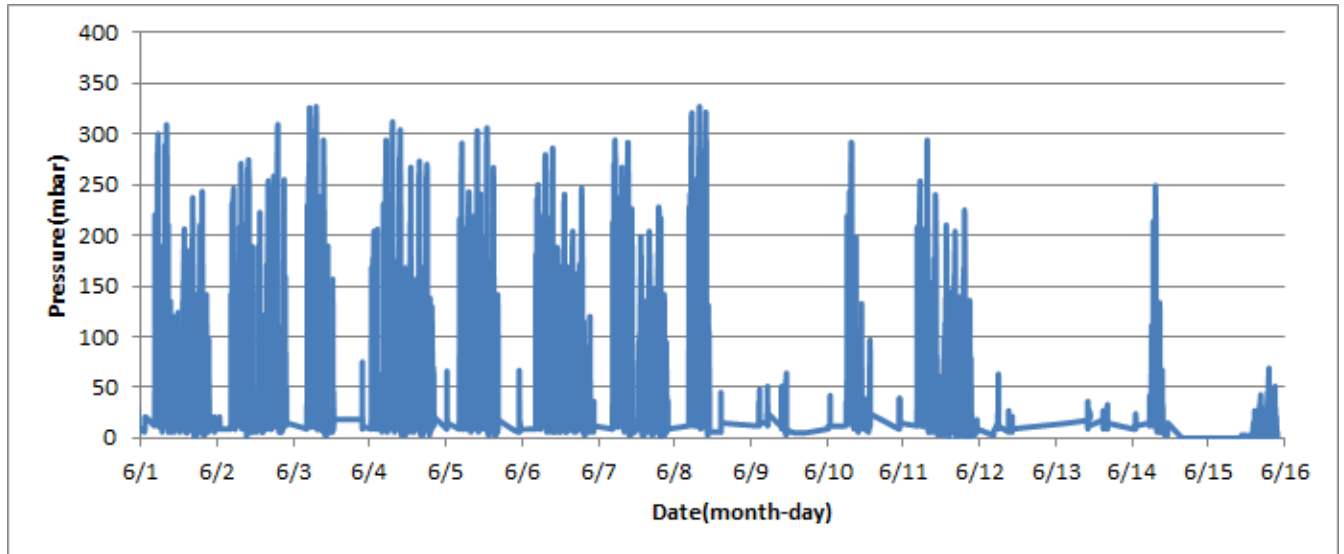


Figure 4- Pressure distribution over the fifteen days

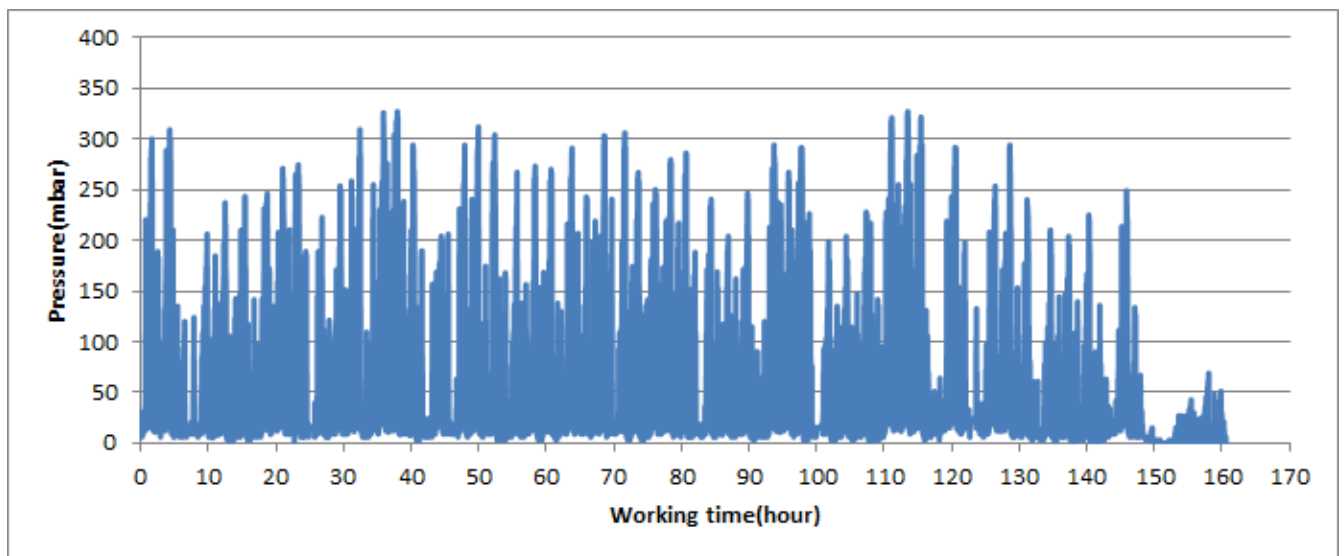


Figure 5- Pressure vs. working hours

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

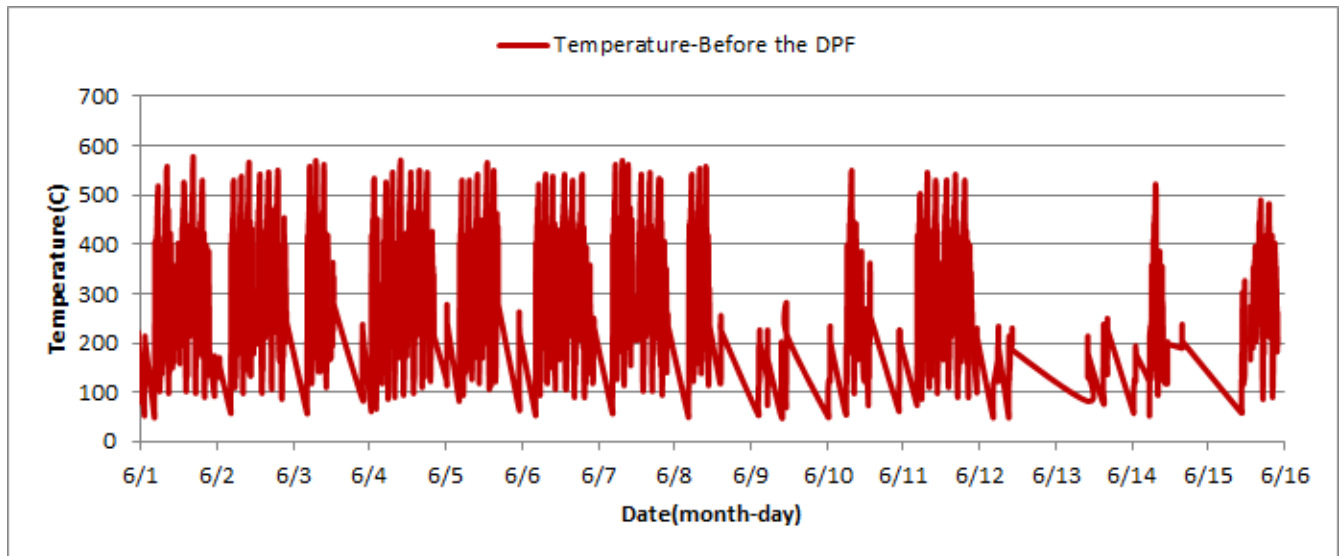


Figure 6- Temperature distribution over the fifteen days

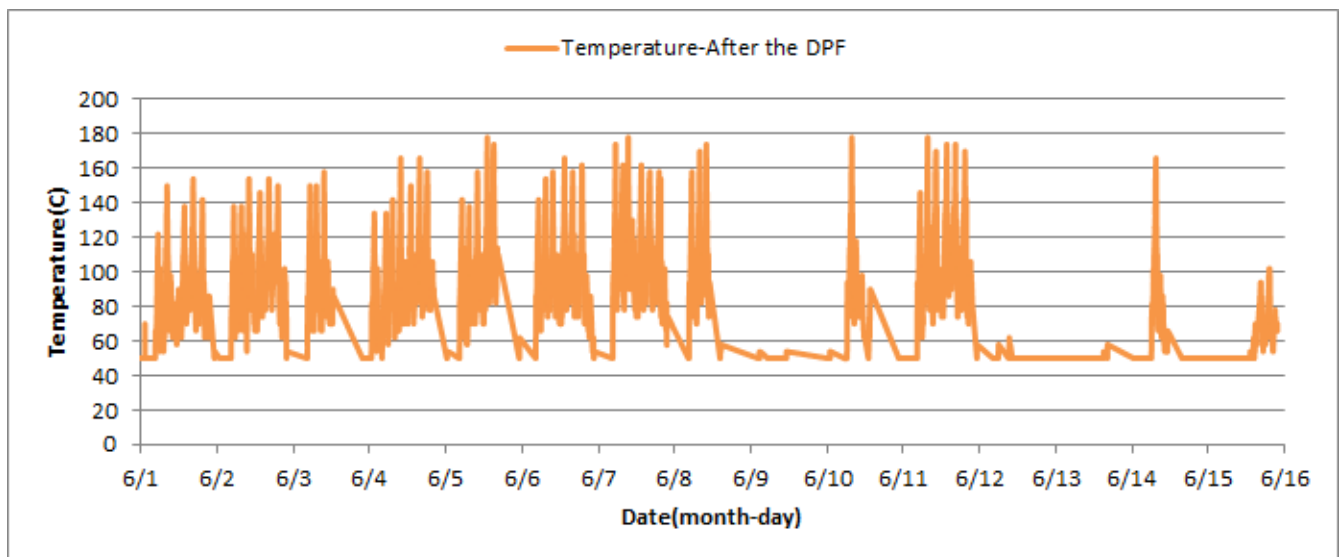


Figure 7- Temperature distribution over the fifteen days

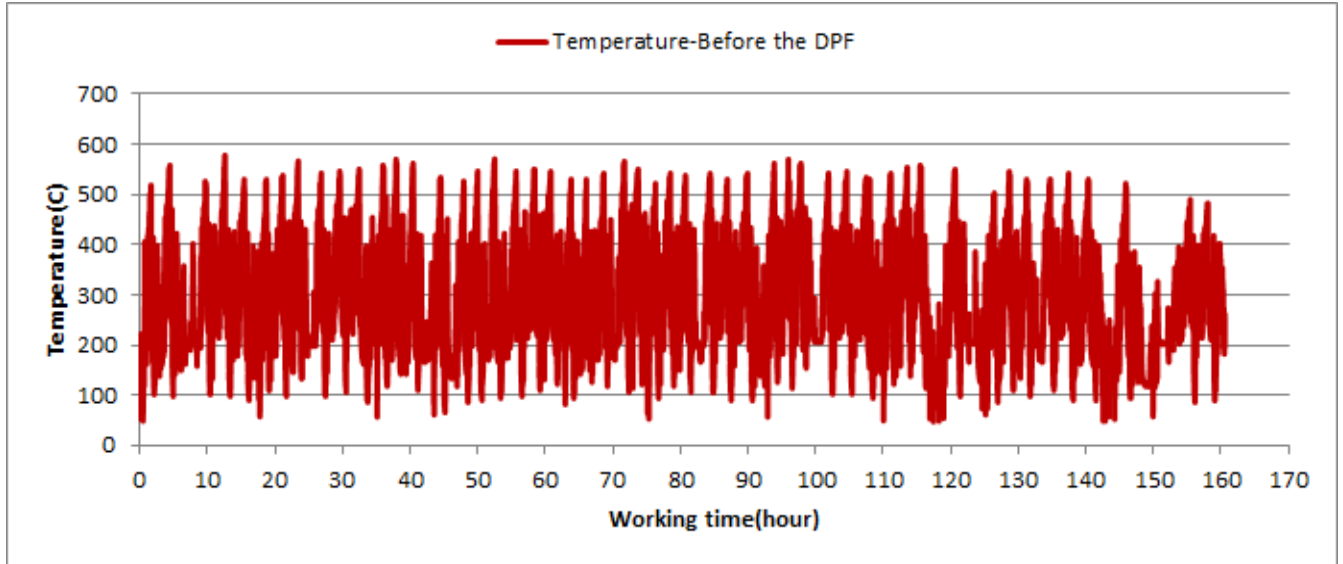


Figure 8- Temperature vs. working hours

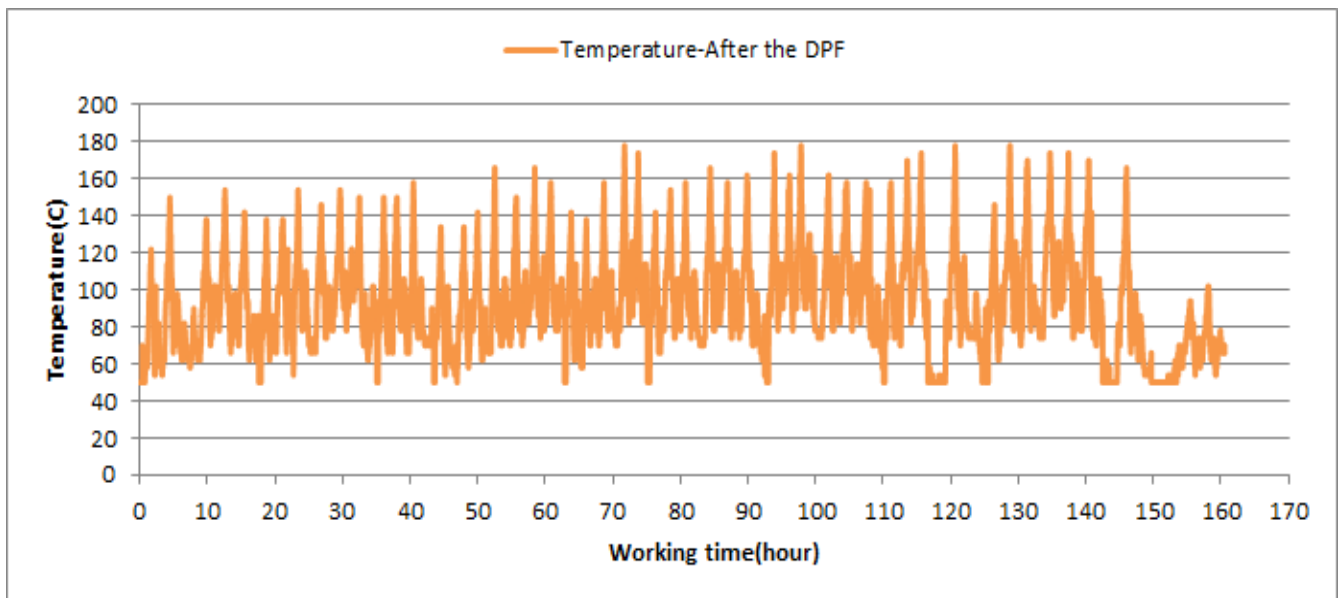


Figure 9- Temperature vs. working hours

Engine Speed Diagrams

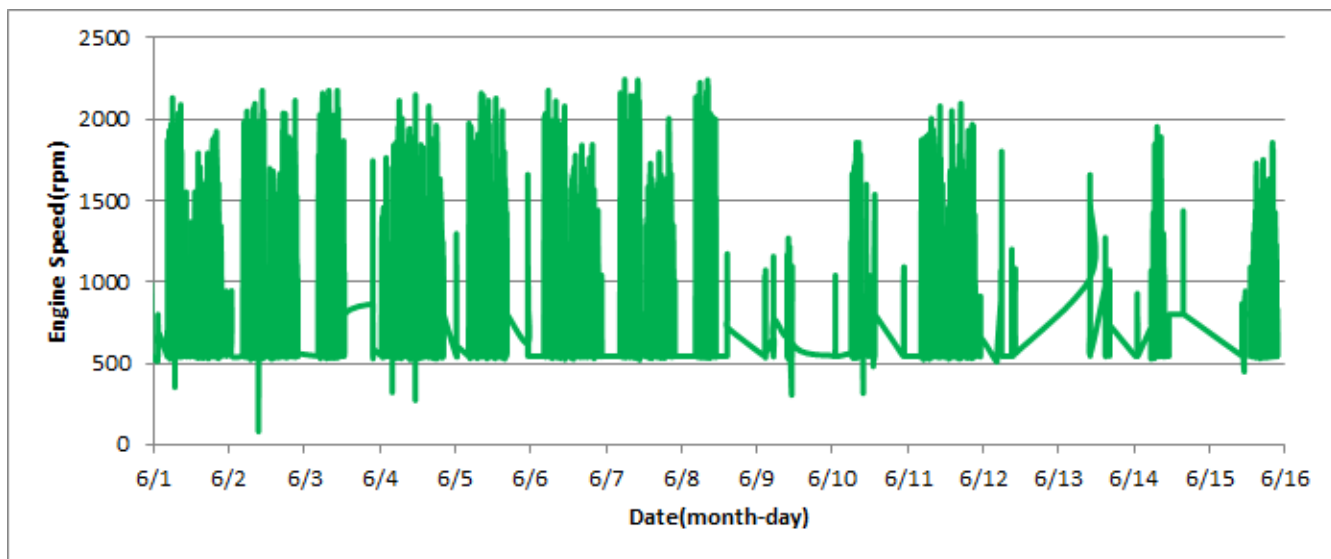


Figure 10- Engine speed distribution over the fifteen days

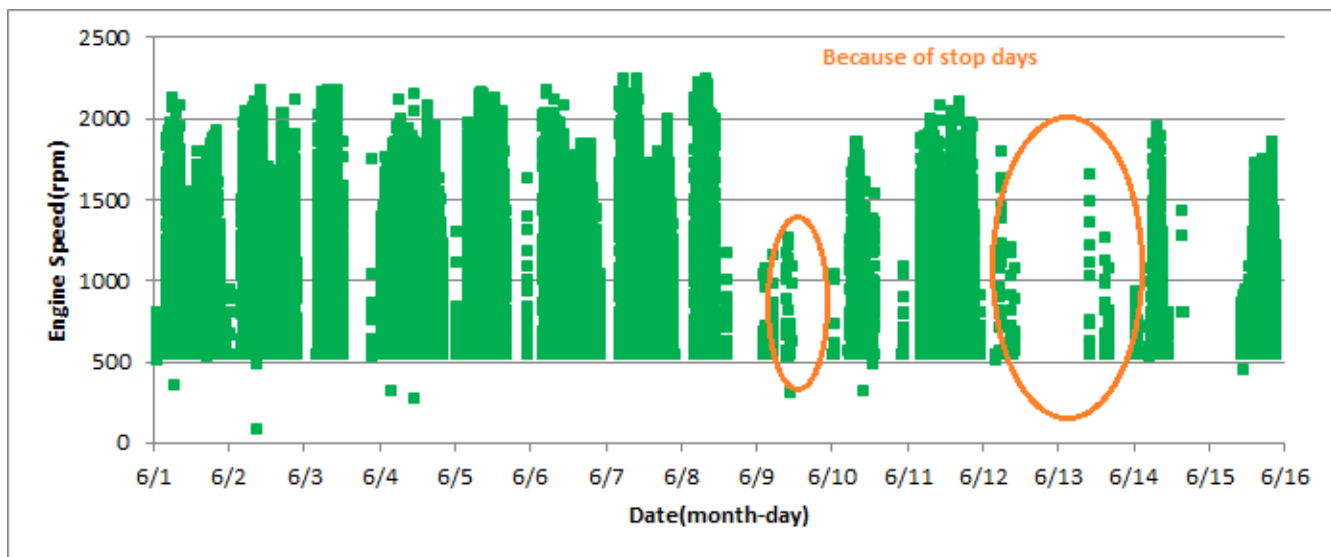


Figure 11- Engine speed diagram for calculating CPK's working days

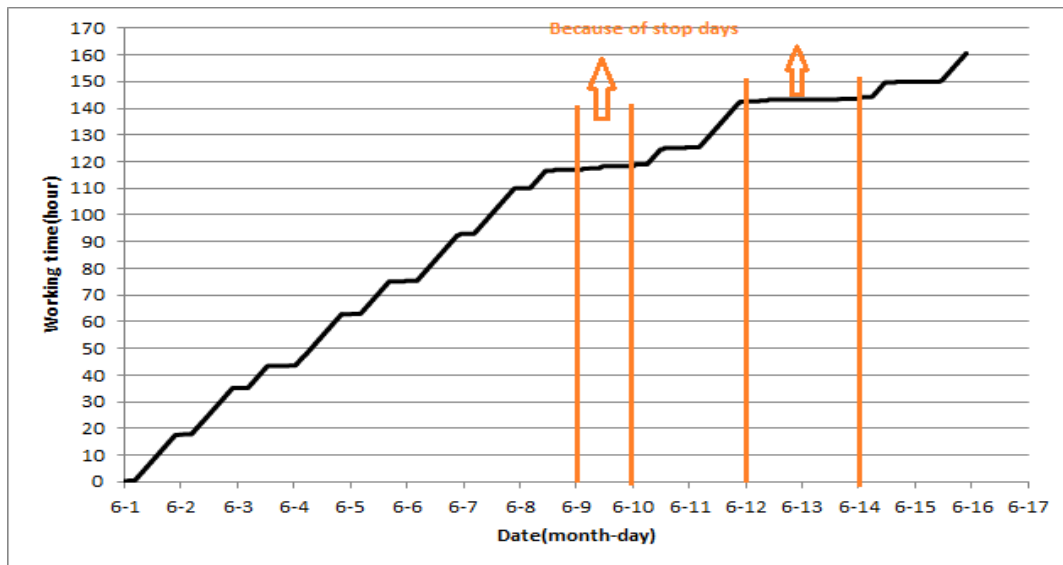


Figure 12- Time diagram for calculating CPK's working days

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 didn't sample three days.

Pressure-Engine Speed diagrams

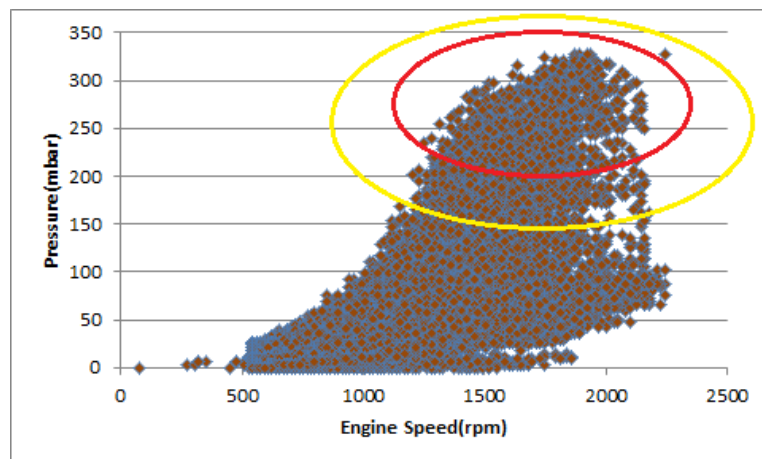


Figure 13- Pressure against engine speed

Notice: Red alarm (pressure > 200 mbar) and yellow alarm (200 > pressure > 150) ranges were indicated in figure 13.

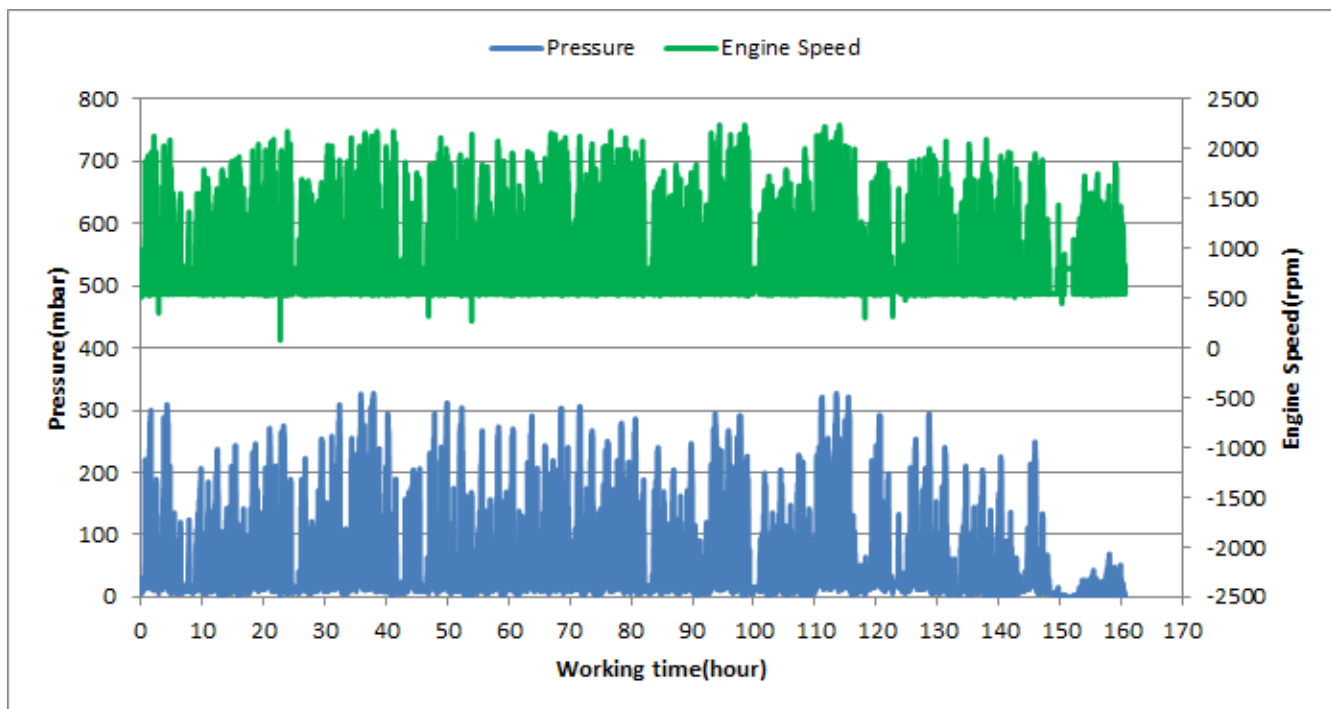


Figure 14- P, N distribution vs. working hours

Temperature- Engine Speed Diagram

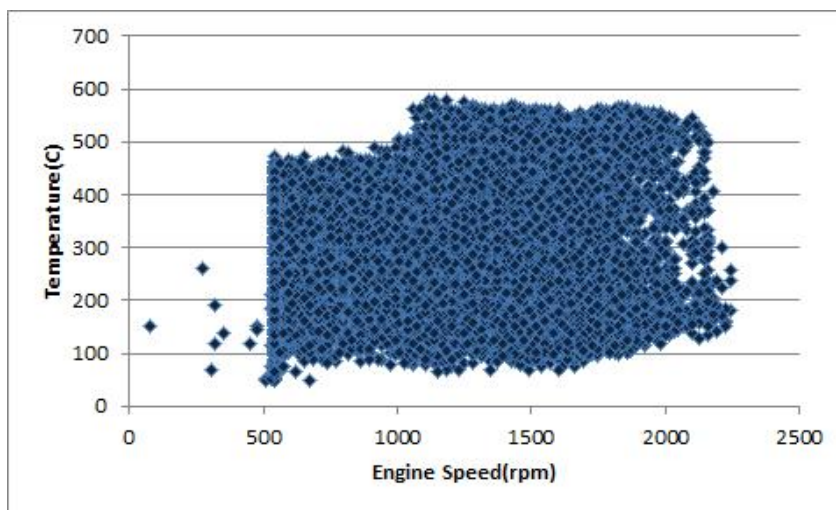


Figure 15- Temperature against engine speed

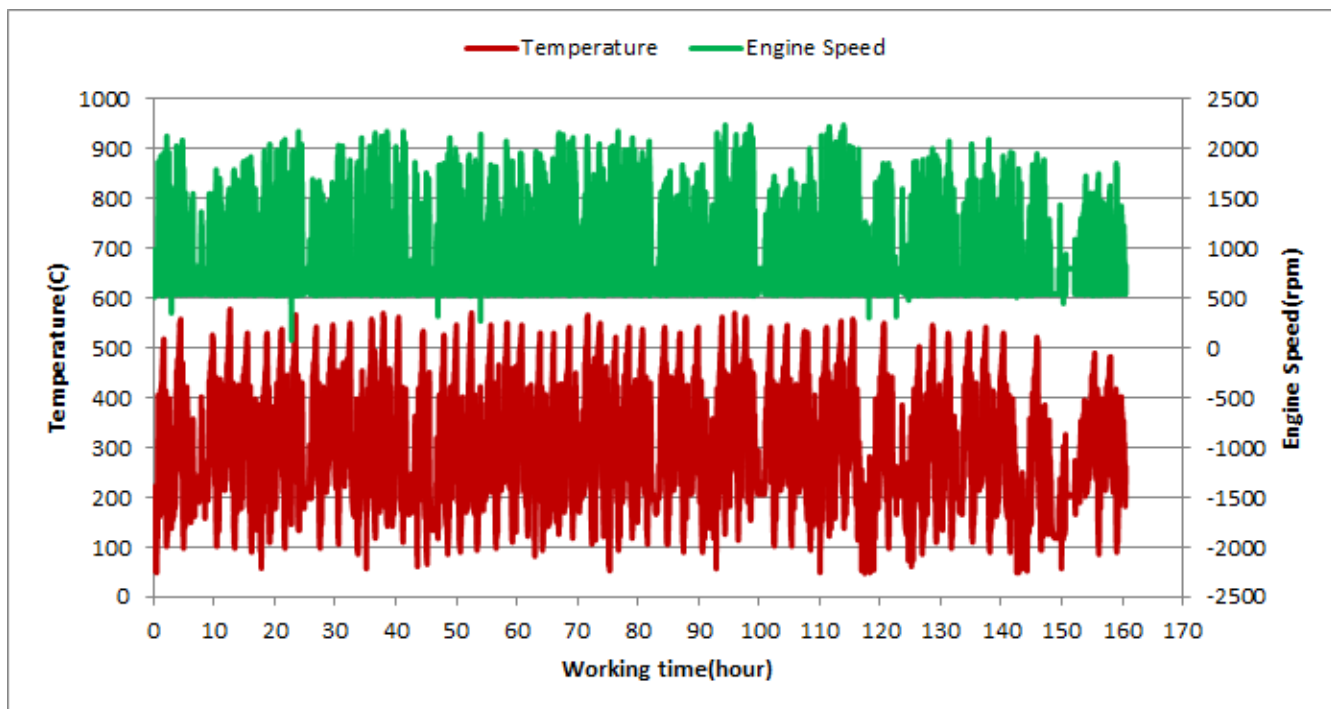


Figure 16- T, N distribution vs. working hours

Filter Operation Analysis

- As depicted in Figure 1, 3% of total working time, pressure is above 200 mbar and 6% above 150mbar.
- Figure 2 displays flow temperature distribution for DPF's upstream. It can be obviously observed that 14% of total working time temperature is above 400 °C and 23% above 350°C. Considering Figure 1, it can be obtained that, high temperature distribution in figure 2 was the result of high backpressure. So this high temperature distribution was deceptive and can't guarantee adequate filter operation.

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

Notice: DPF core was cleaned on Jun 13th.