

Overall Information

Table 1- Overall Information

Vehicle plate number	78515
CPK data logger number	LN: 001490, DN: 1954, Sim Number +980000000000
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 producer company	Dinex_01(Passive system with FBC)
Installation date	22/Oct/2014
Report period	16/Jun/2015 – 30/Jun/2015 (fifteen days)
K value – DPF's upstream	1.10 [m^{-1}]
K value – DPF's downstream	0.06 [m^{-1}]

Table 2- Maintenance Table

Filter maintenance date	Filter core was changed on 15/Feb/2015.
Dosing status	Dosing value was reduced to 30% of its initial value on March February 15 th

Table 3- Fuel and Additive Consumption Information

Bus mileage (from DPF installation date)	36176
Bus mileage over the period	2720 km
Working days over the period	13 days
Stop days	2 days
Data logger working days	9 days
Working hours over the period	$134.75 + (4 \times 14.97)$ = 194 hours, 38 minutes*
Average working hours per a day (including stop days)	12 hours, 58 minutes
Bus average speed	13.98 km/hr
Idle speed time to all working time ration	59%
Total bus fuel consumption over the period	1760 lit
Fuel consumption per hour	8.5 lit/hr
Average fuel consumption	0.65 lit/km
Total bus additive consumption over the period	0.45 lit
Average additive consumption	0.165 cc/km
Additive consumption to fuel ration	255 cc per 1000 lit (continuous dosing)

Notice: As depicted in Figure 12, data logger didn't sample for four days due to technical problems. So we add average working hours to calculated working hours from the data logger.

Temperature, Pressure and Engine Speed Overview

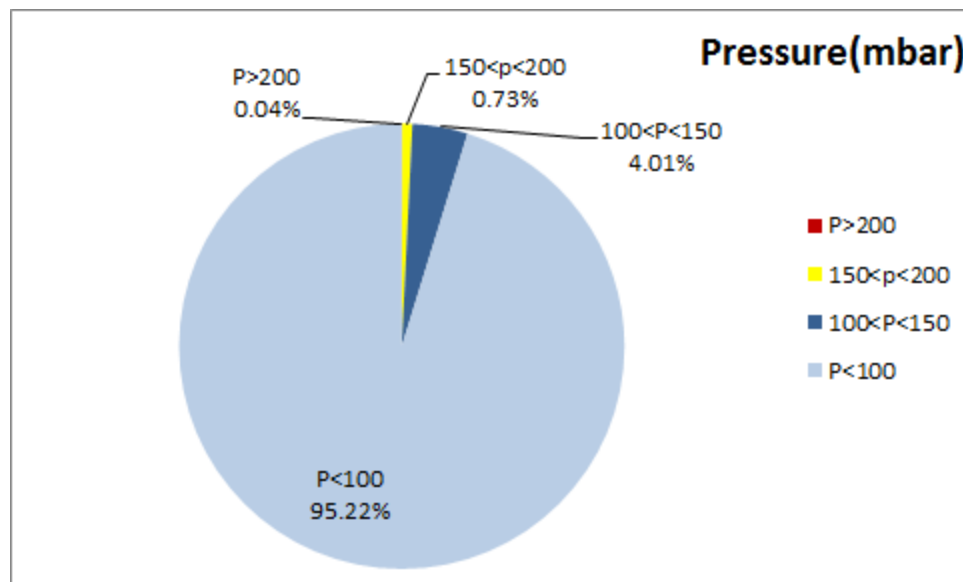


Figure 1- Pressure distribution over the working hours

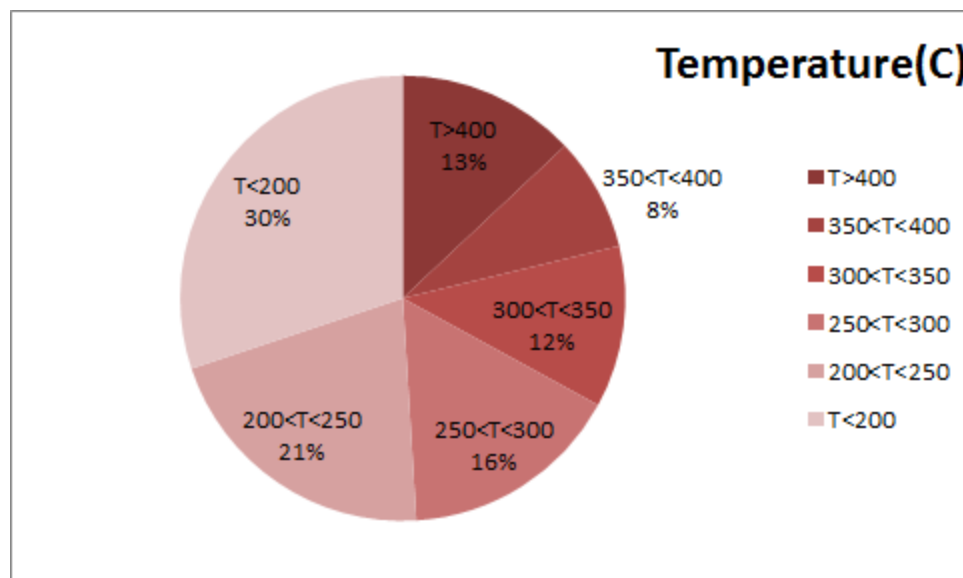


Figure 2-Temperature¹ distribution over the working hours

¹ - Flow temperature (DPF's upstream)

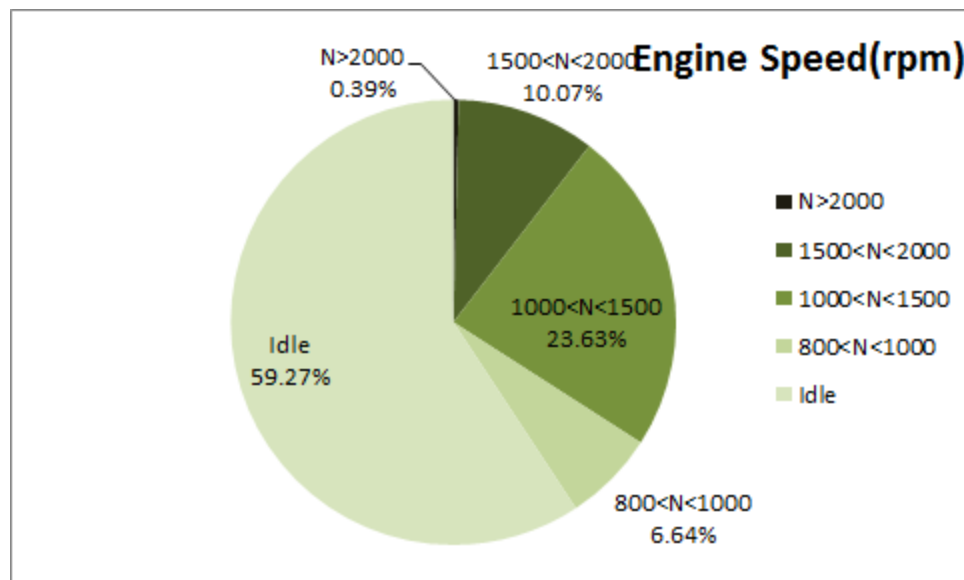


Figure 3- Engine speed distribution over the working hours

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)
267.60	21.98	863

Table 5- Mean values without idling

Mean temperature(C)	Mean pressure(mbar)	Mean engine speed(rpm)
329.24	47.62	1297

Table 6- Max-min values

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
562-50	210-0	2496-256

²- Flow temperature (DPF's upstream)

Detailed Pressure Analysis

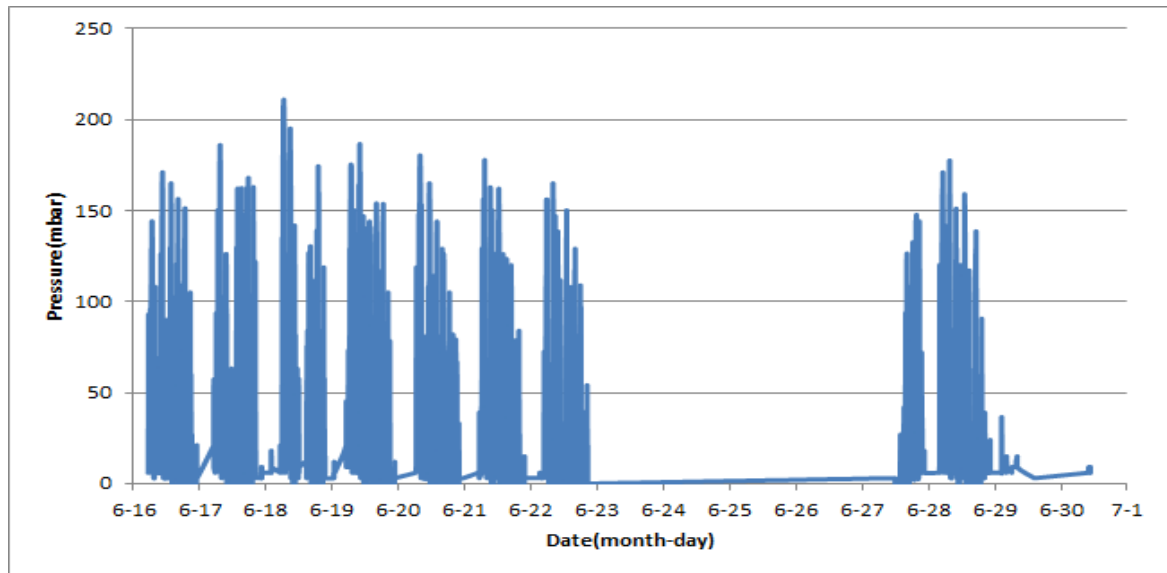


Figure 4- Pressure distribution over the fifteen days

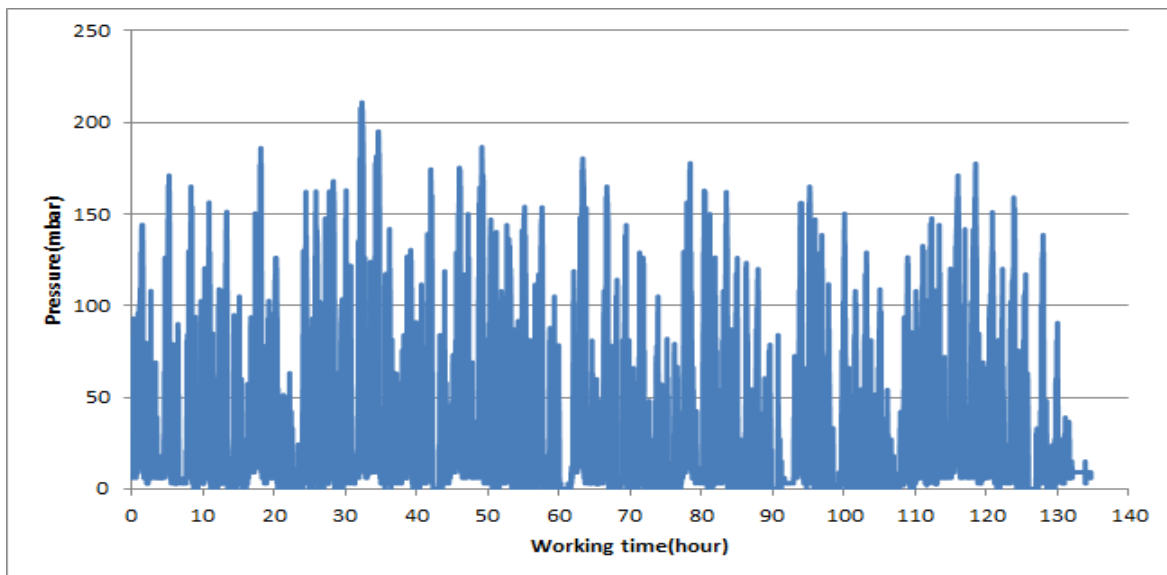


Figure 5- Pressure vs. working hours

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

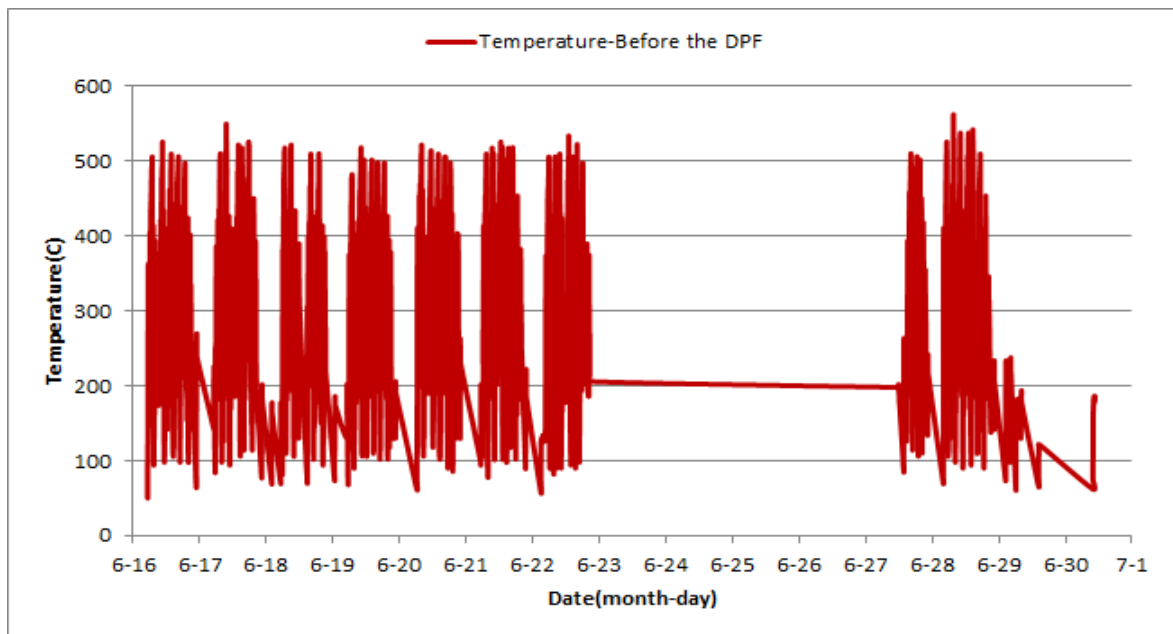


Figure 6- Temperature distribution over the fifteen days

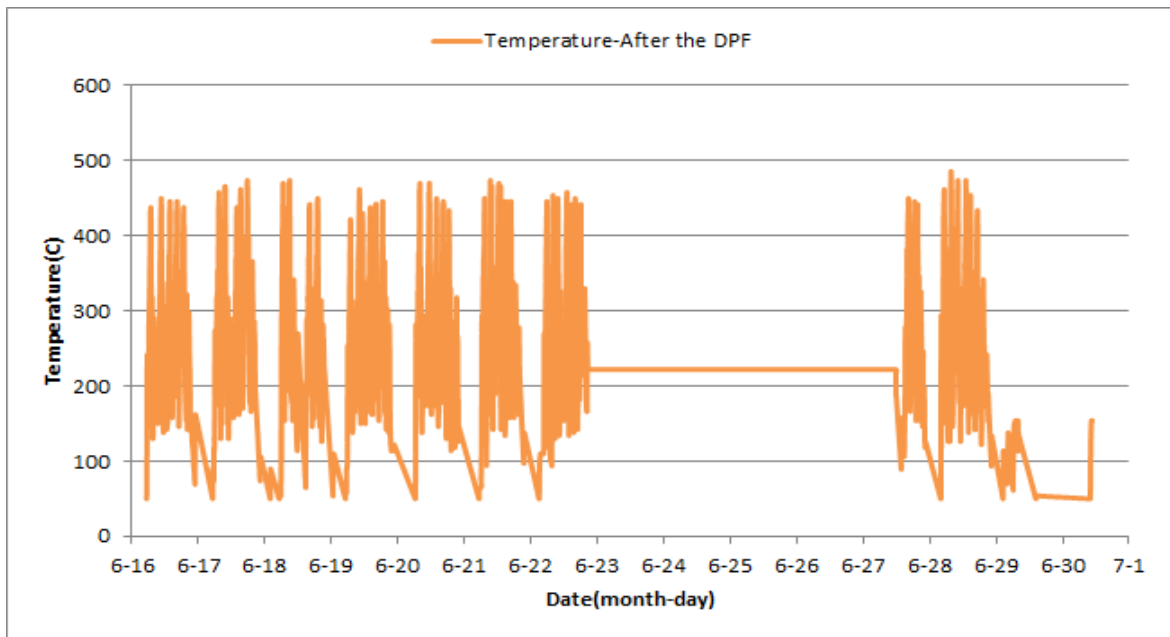


Figure 7- Temperature distribution over the fifteen days

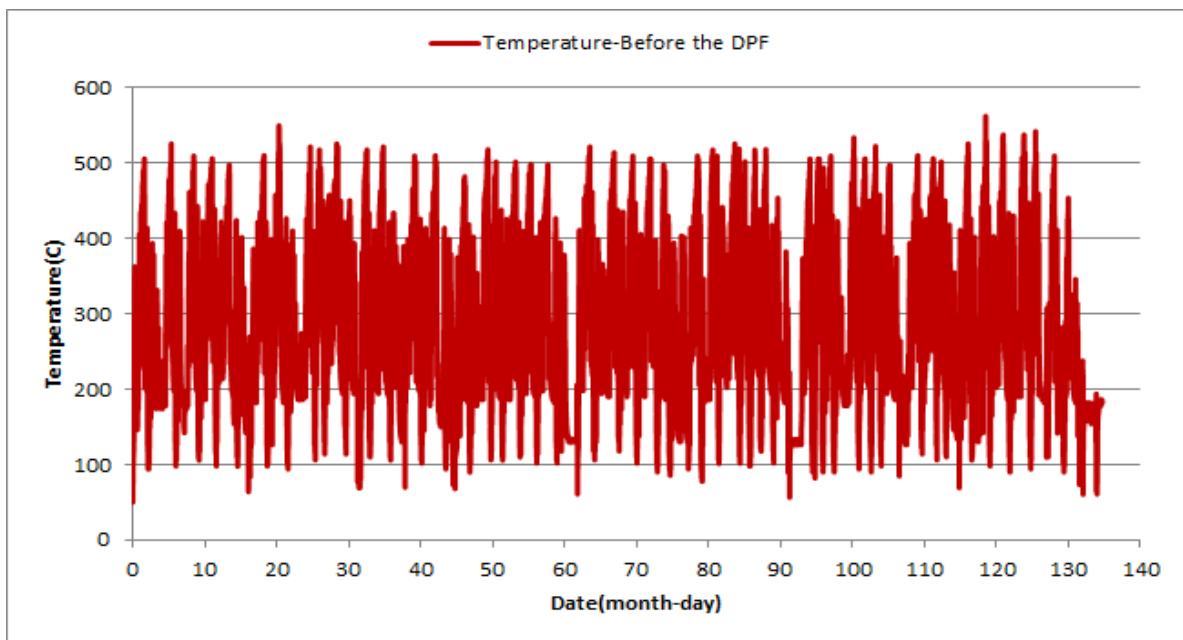


Figure 8- Temperature vs. working hours

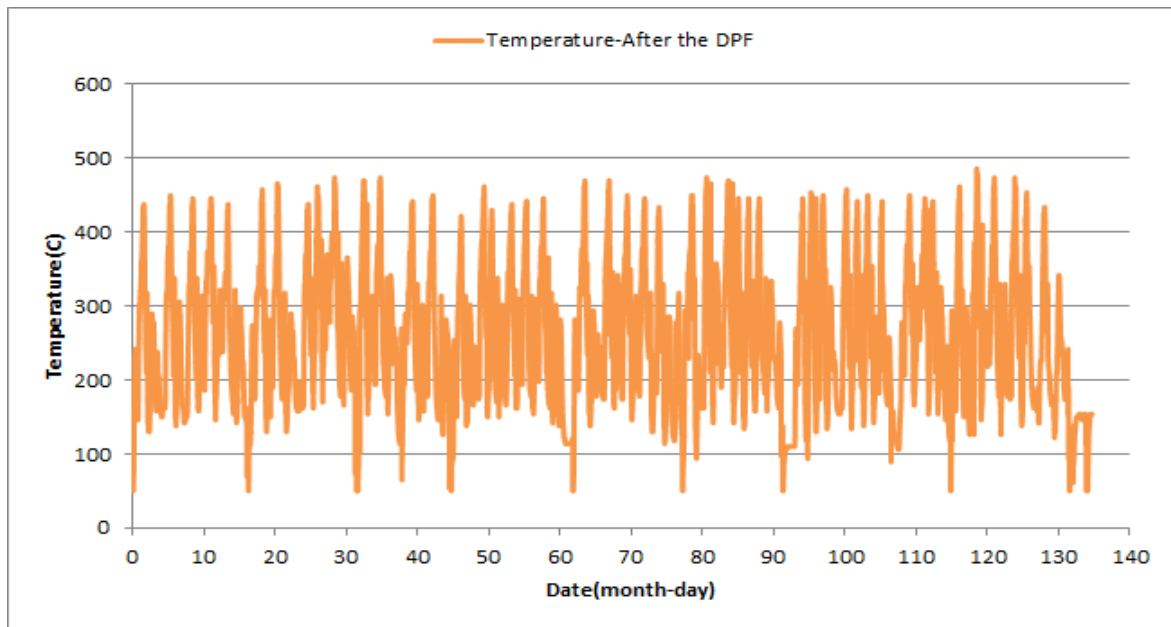


Figure 9- Temperature vs. working hours

Engine Speed Diagrams

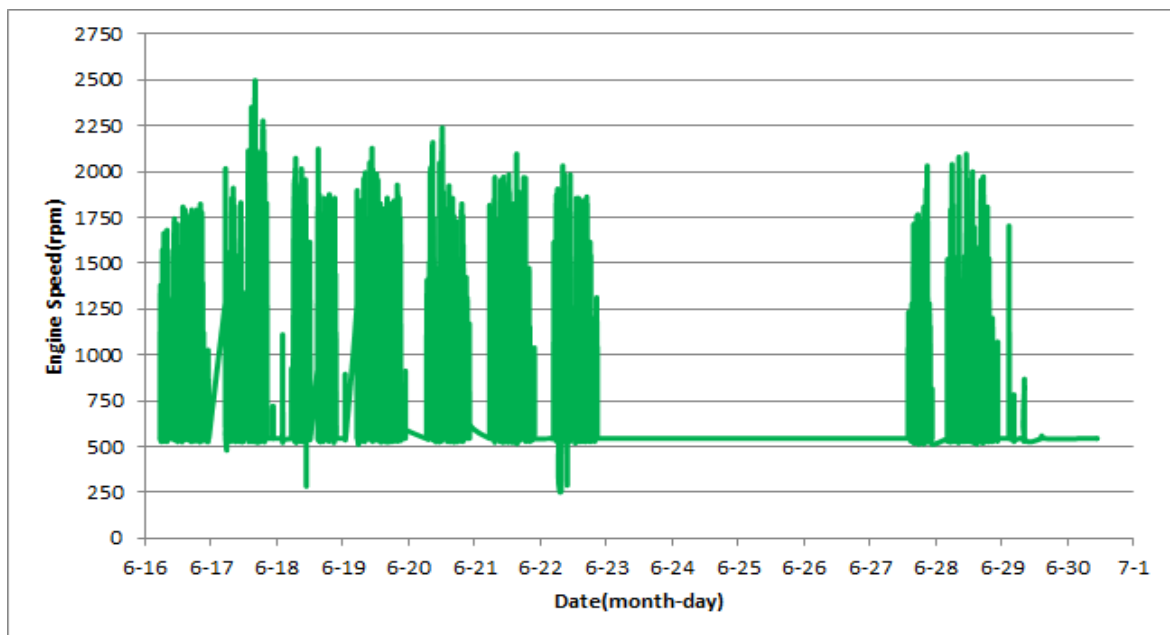


Figure 10- Engine speed distribution over the fifteen days

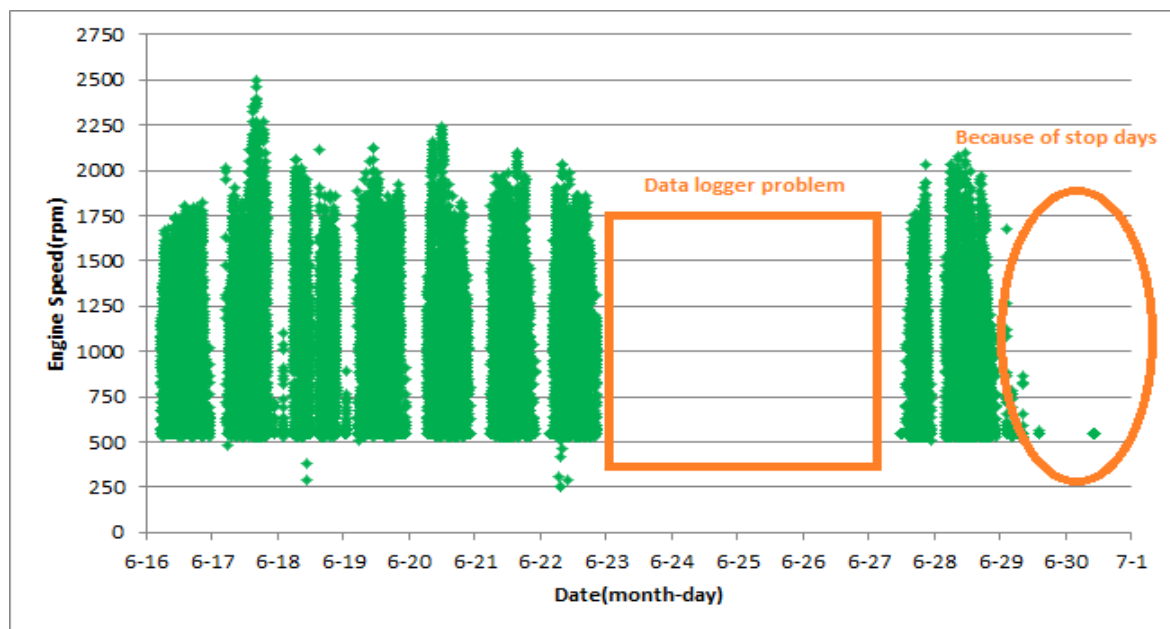


Figure 11- Engine speed diagram for calculating CPK's working days

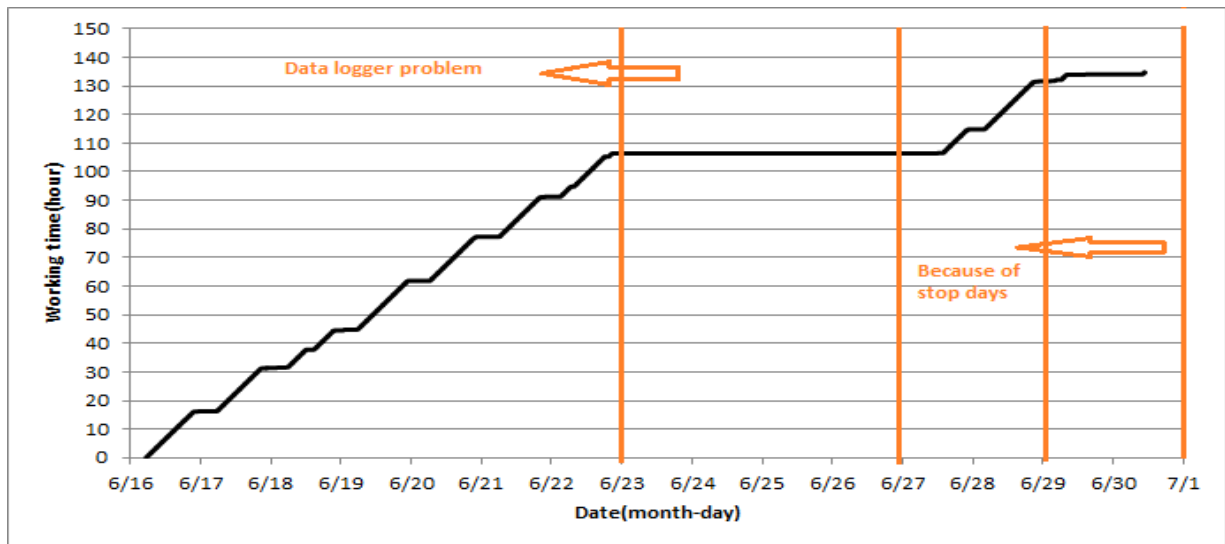


Figure 12- Time diagram for calculating CPK's working days

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.

Pressure-Engine Speed diagrams

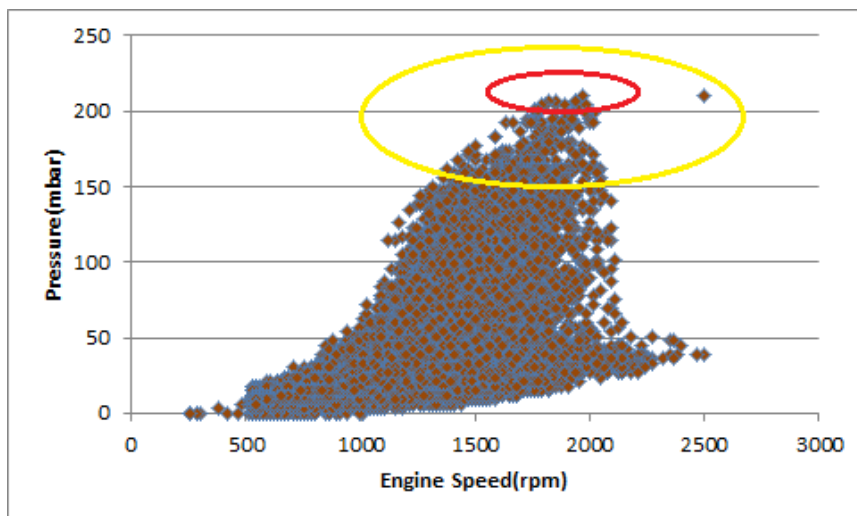


Figure 13- Pressure against engine speed

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

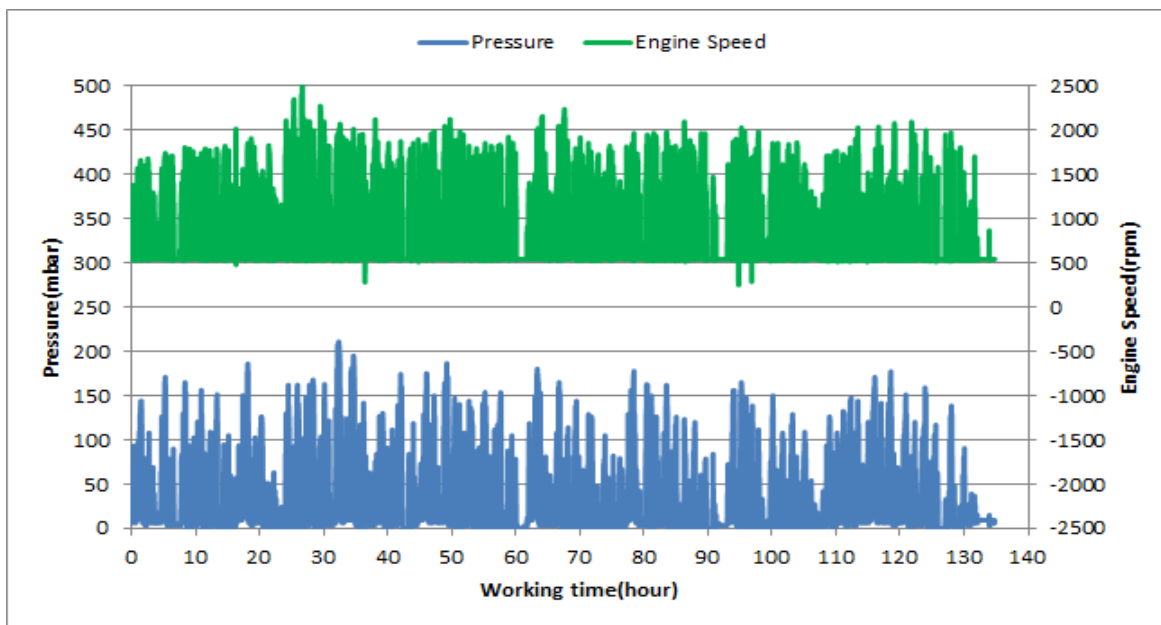


Figure 14- P, N distribution vs. working hours

Temperature- Engine Speed Diagram

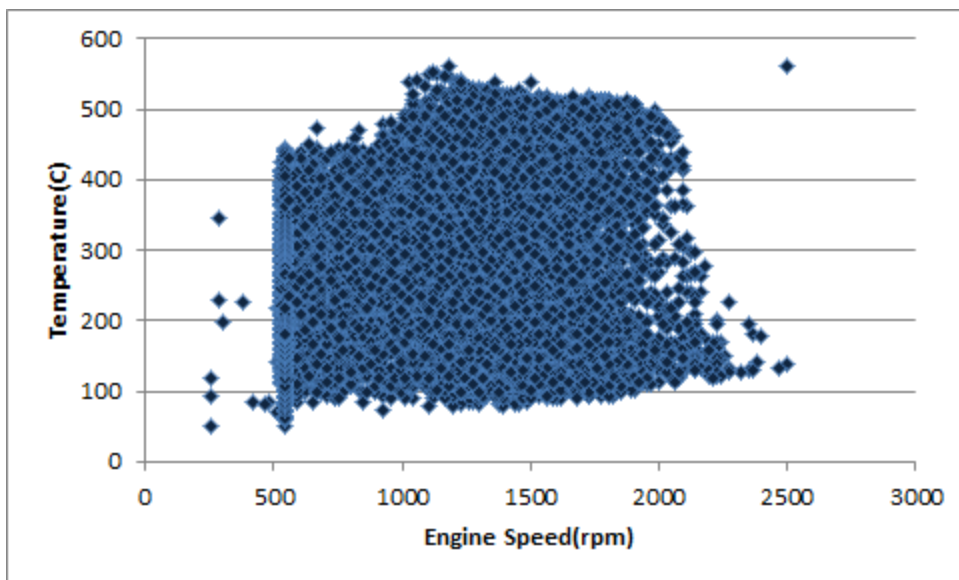


Figure 15- Temperature against engine speed

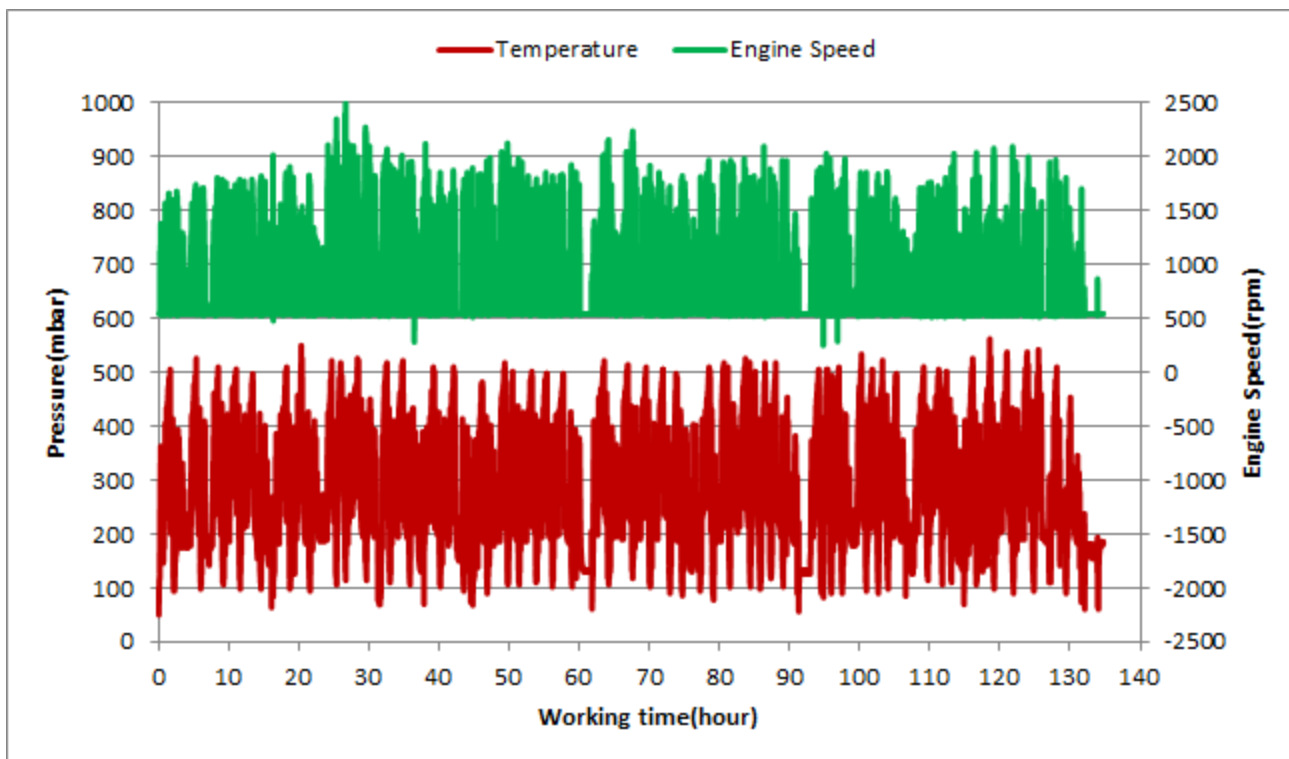


Figure 16- T, N distribution vs. working hours

Filter Operation Analysis

- As depicted in Figure 1, 0.04% of total working time pressure is above 200 mbar and only 0.77% above 150mbar.
- Figure 2 displays flow temperature before the DPF. It can be obviously observed that 13% of total working time temperature is above 400 °C and 21% above 350°C.

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