

## Overall Information

**Table 1- Overall Information**

Vehicle plate number	85423
CPK data logger number	LN: 001505, DN: 2001, Sim Number +989218469621
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	HJS_02 (active system with FBC – electrical heater)
Installation date	19/Feb/2015
Report period	1/Jun/2015 – 15/Jun/2015 (fifteen days)
K value – DPF's upstream	1.03 [ $m^{-1}$ ]
K value – DPF's downstream	0.02 [ $m^{-1}$ ]

**Table 2- Maintenance Table**

Filter maintenance date	DPF has been working from installation date 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)	19344 km
Bus mileage over the period	2555 km
Working days over the period	15 days
Stop days	0 day
Data logger working days	15 days
Working hours over the period	189 hours, 47 minutes
Average working hours per a day (including stop days)	12 hours, 59 ,minutes
Bus average speed	13.46 km/hr
Idle speed time to all working time ration	58%
Total bus fuel consumption over the period	1612 lit
Fuel consumption per hour	8.50 lit/hr
Average fuel consumption	0.63 lit/km
Total bus additive consumption over the period	0.733 lit
Average additive consumption	0.287 cc/km
Additive consumption to fuel ration	455 cc per 1000 lit (batch dosing with tank level)

## Temperature, Pressure and Engine Speed Overview

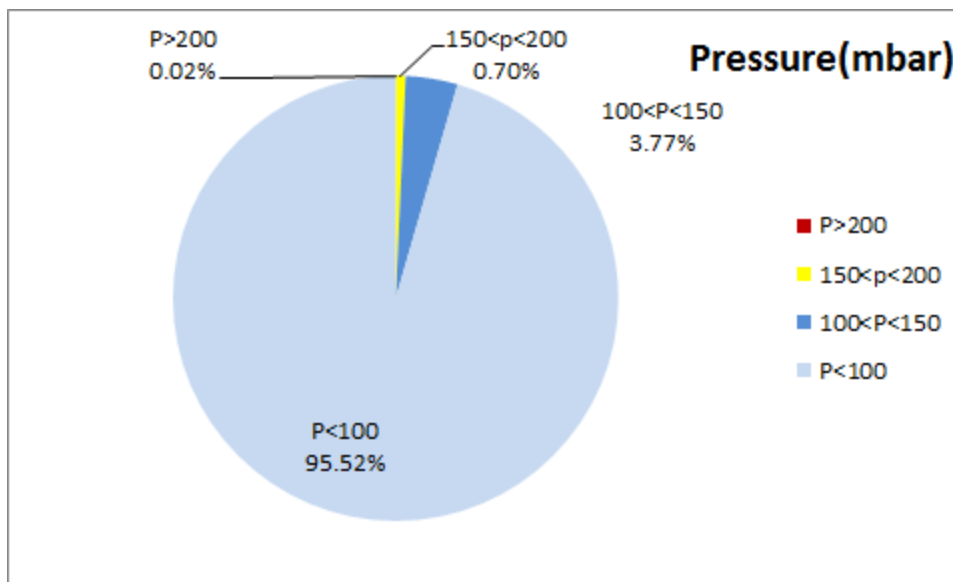


Figure 1- Pressure distribution over the working hours

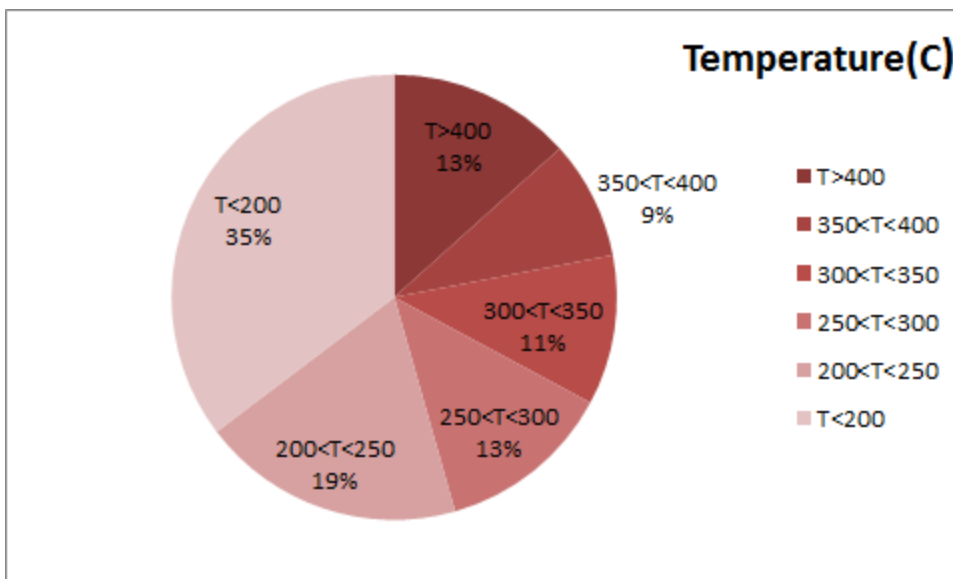
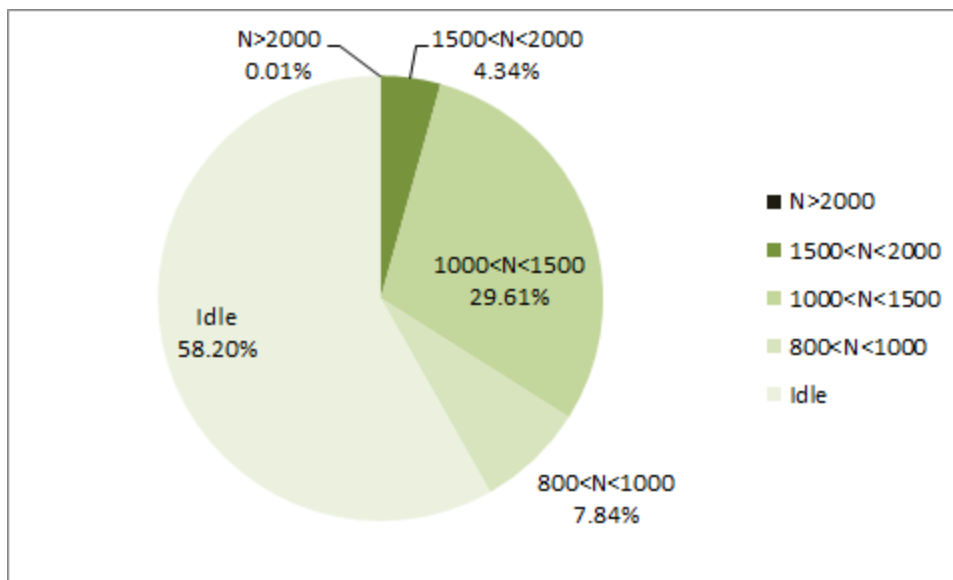


Figure 2-Temperature<sup>1</sup> distribution over the working hours

<sup>1</sup> - 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 <sup>2</sup> (C)	Mean pressure(mbar)	Mean engine speed(rpm)
263.48	21.47	833

**Table 5- Mean values without idling**

Mean temperature(C)	Mean pressure(mbar)	Mean engine speed(rpm)
332.90	46.19	1206

**Table 6- Max-min values**

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
594-50	222-0	2112-256

<sup>2</sup> - Flow temperature (DPF's upstream)

## Detailed Pressure Analysis

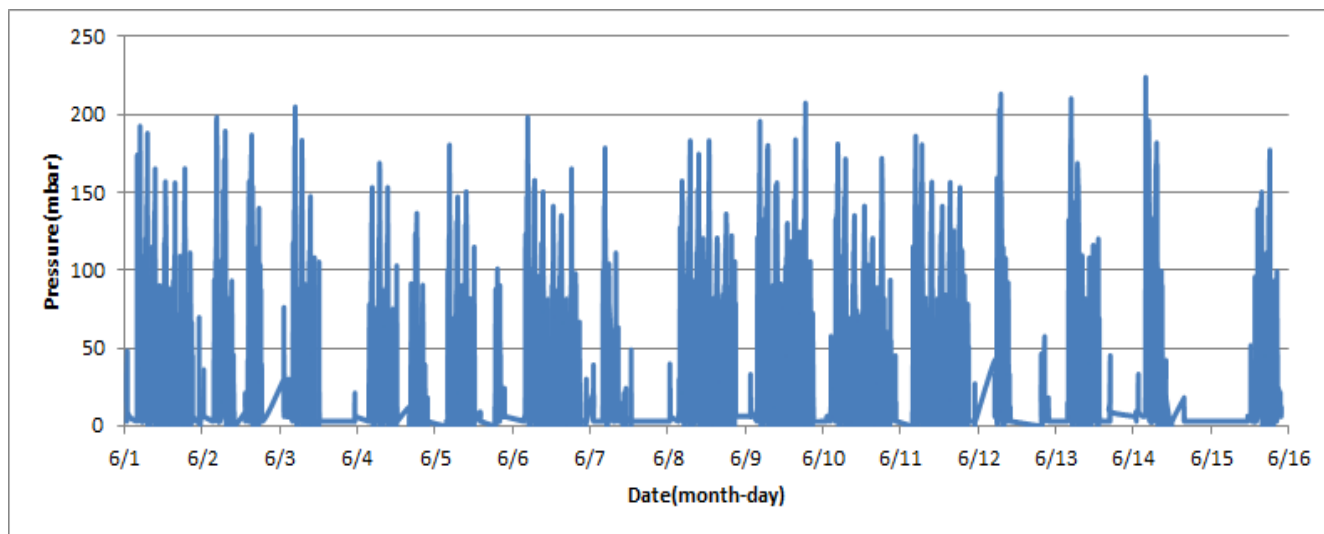


Figure 4- Pressure distribution over the fifteen days

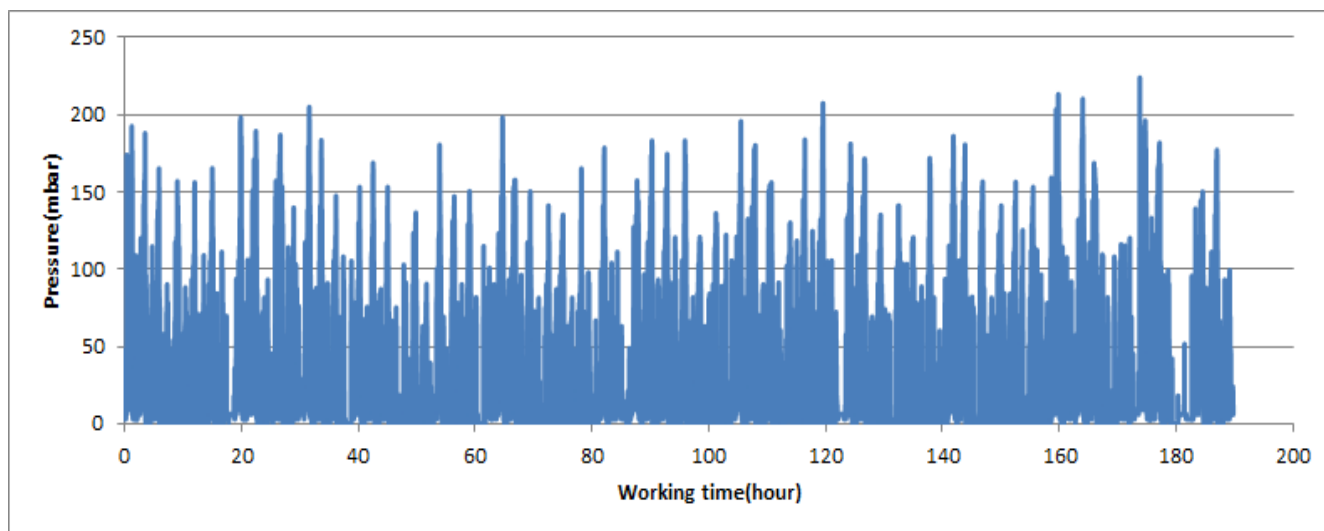


Figure 5- Pressure vs. working hours

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

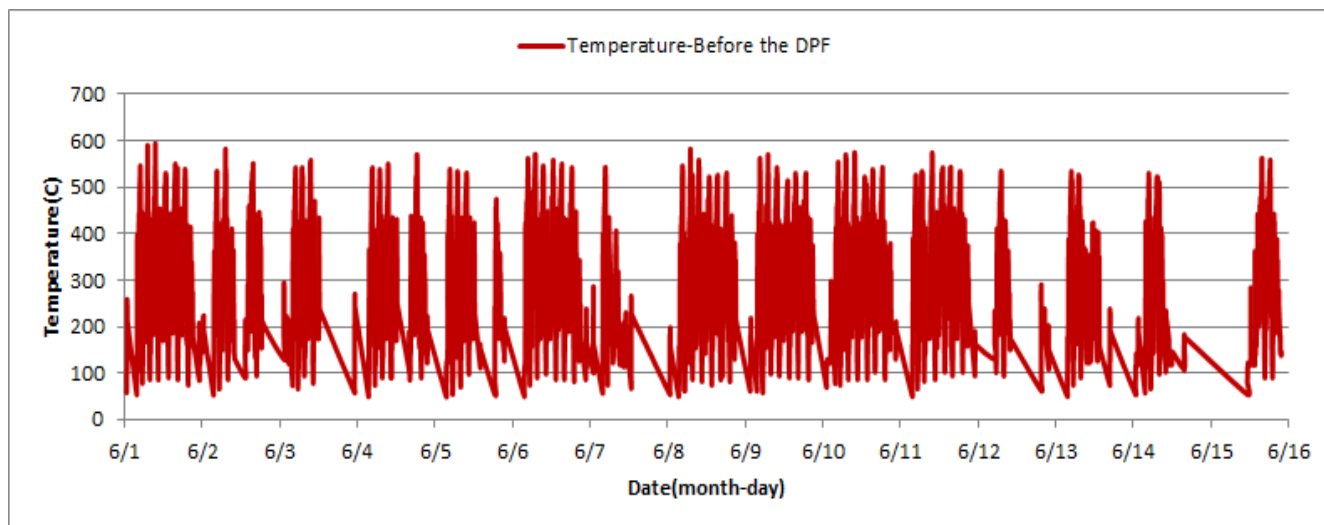


Figure 6- Temperature distribution over the fifteen days

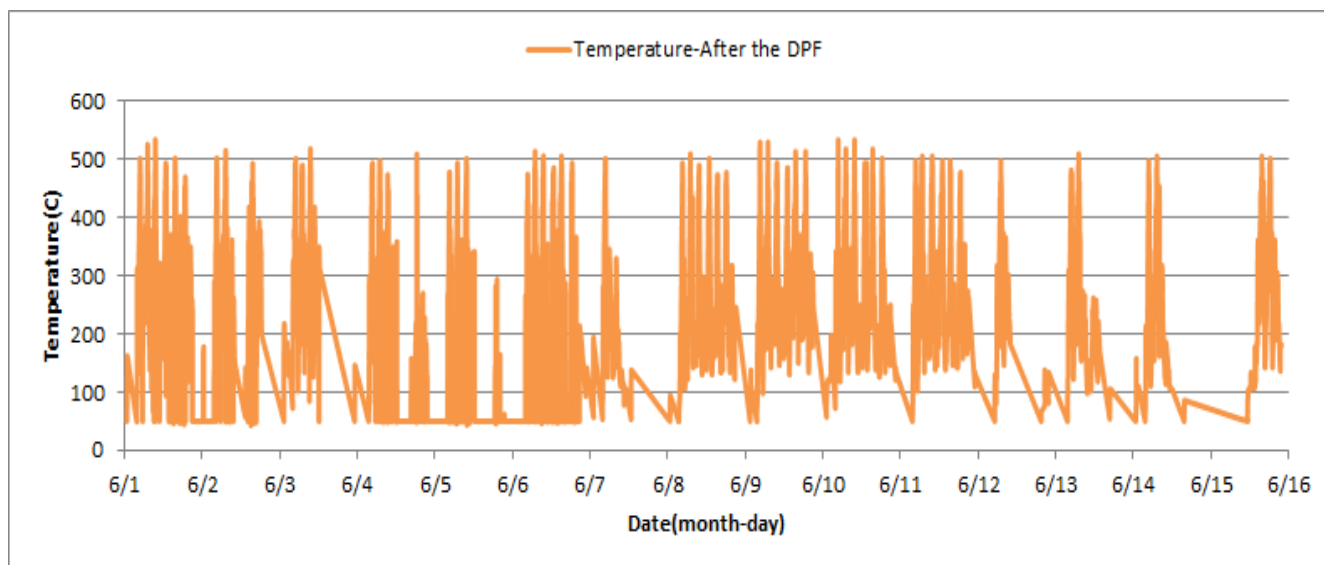


Figure 7- Temperature distribution over the fifteen days

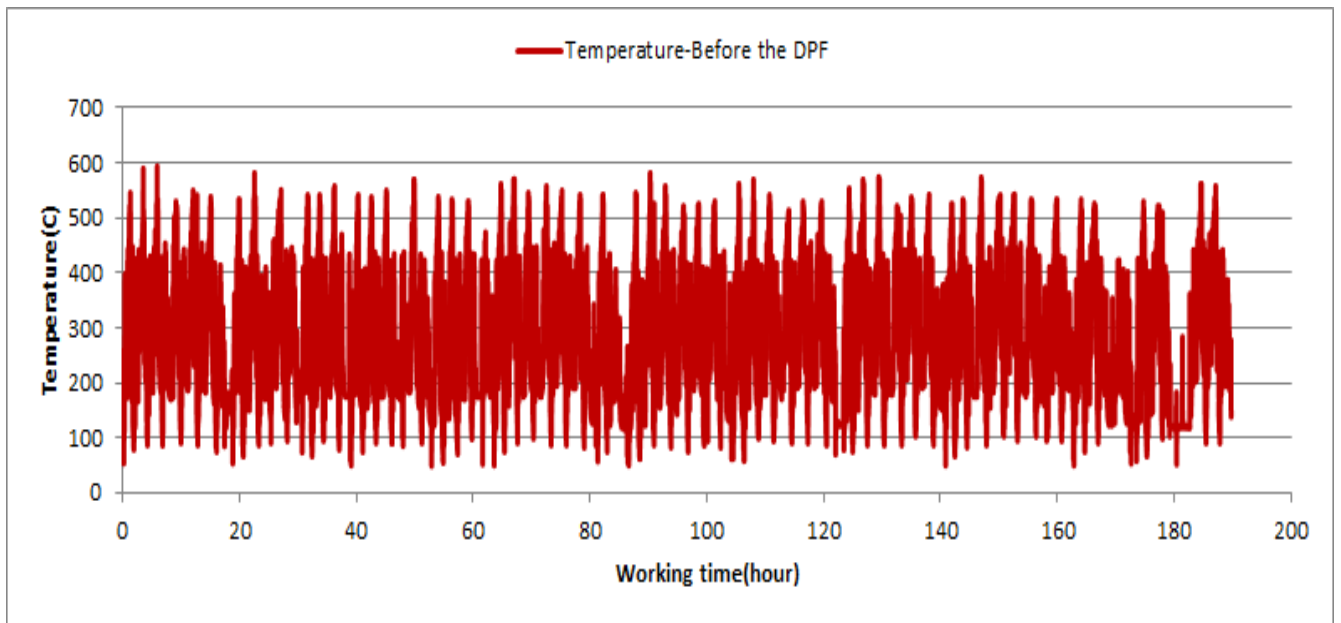


Figure 8- Temperature vs. working hours

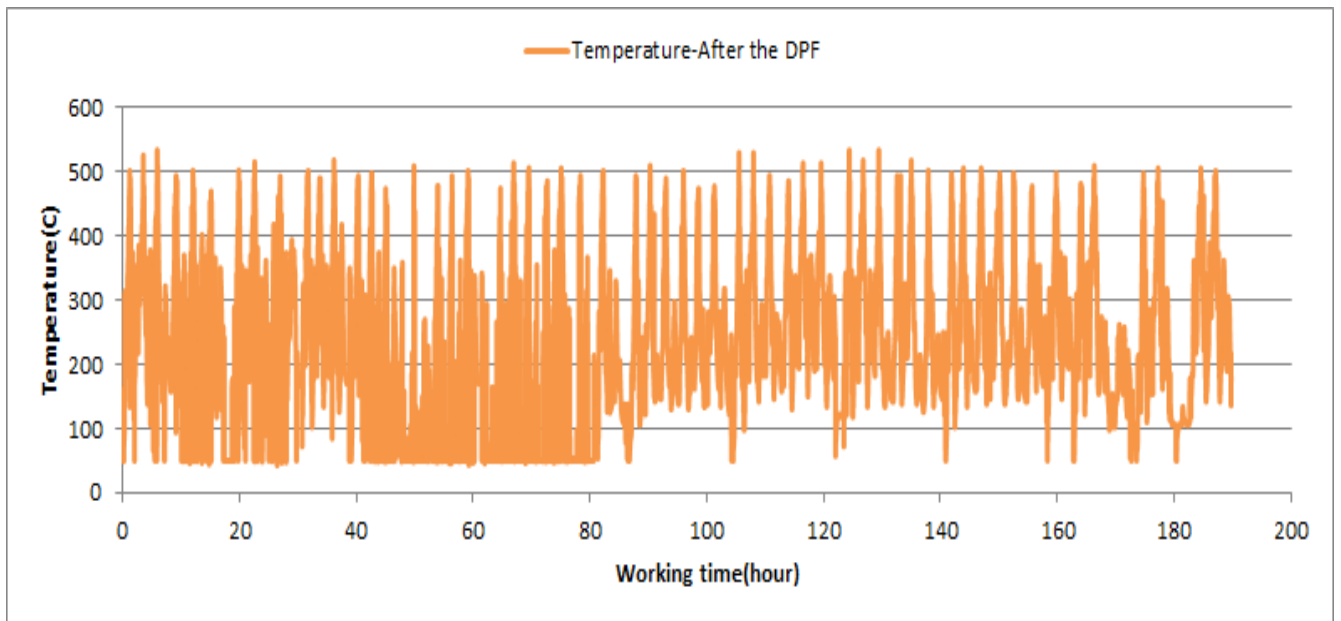


Figure 9- Temperature vs. working hours

## Engine Speed Diagrams

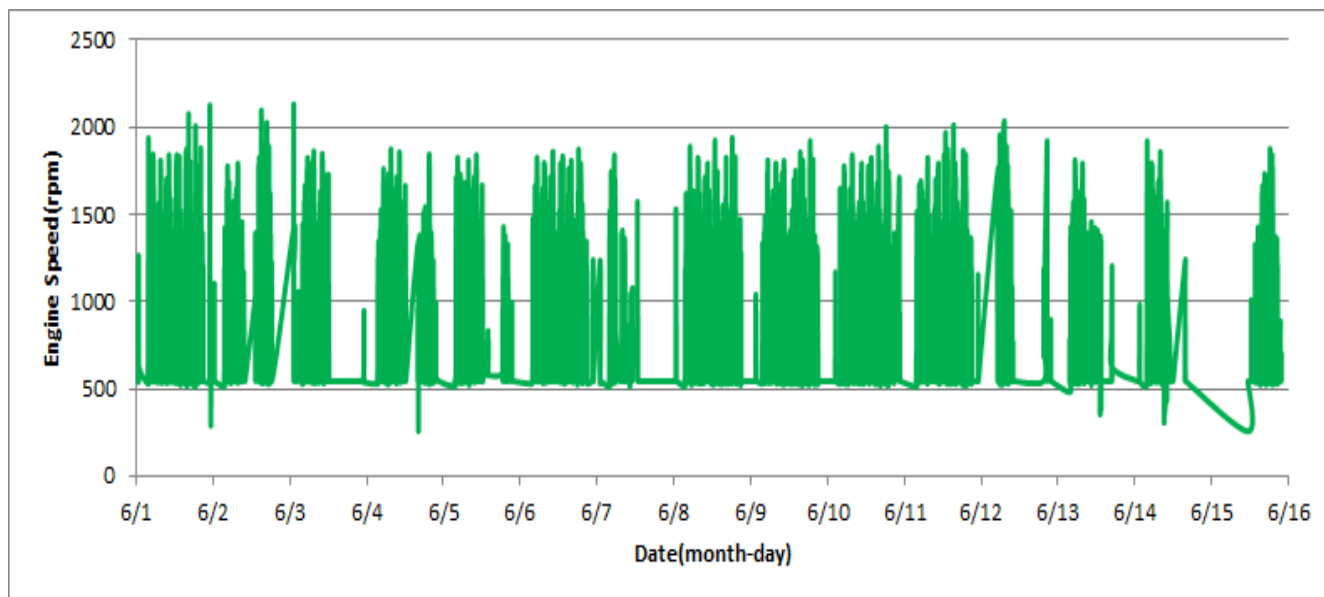


Figure 10- Engine speed distribution over the fifteen days

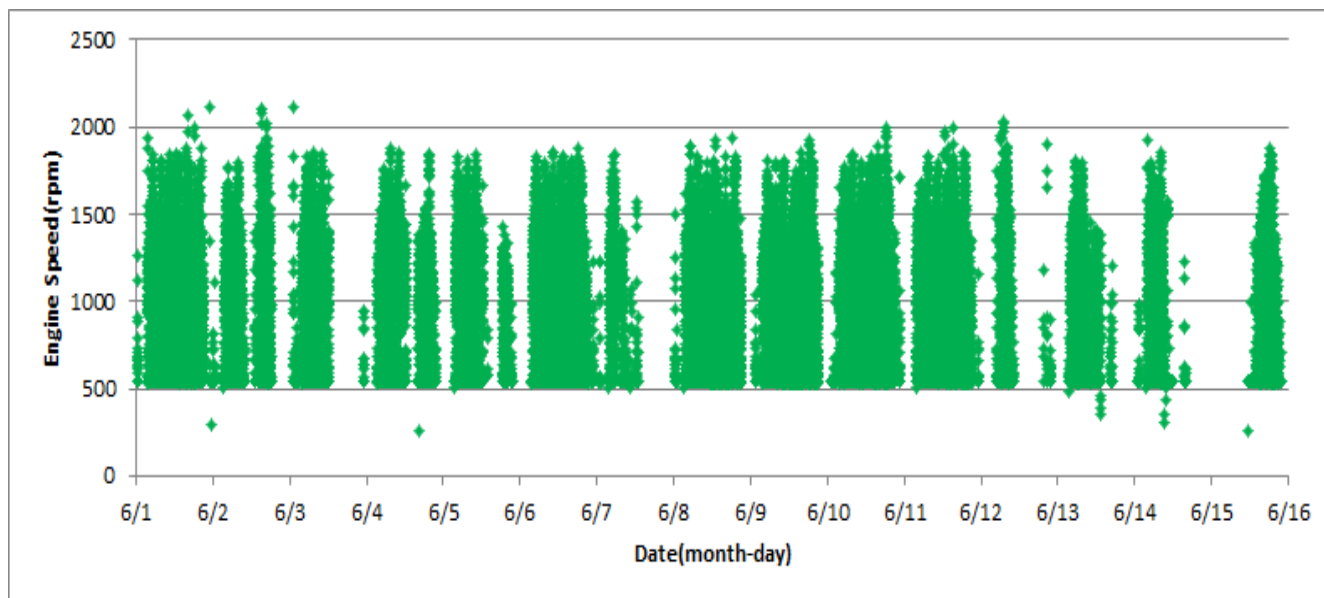


Figure 11- Engine speed diagram for calculating CPK's working days



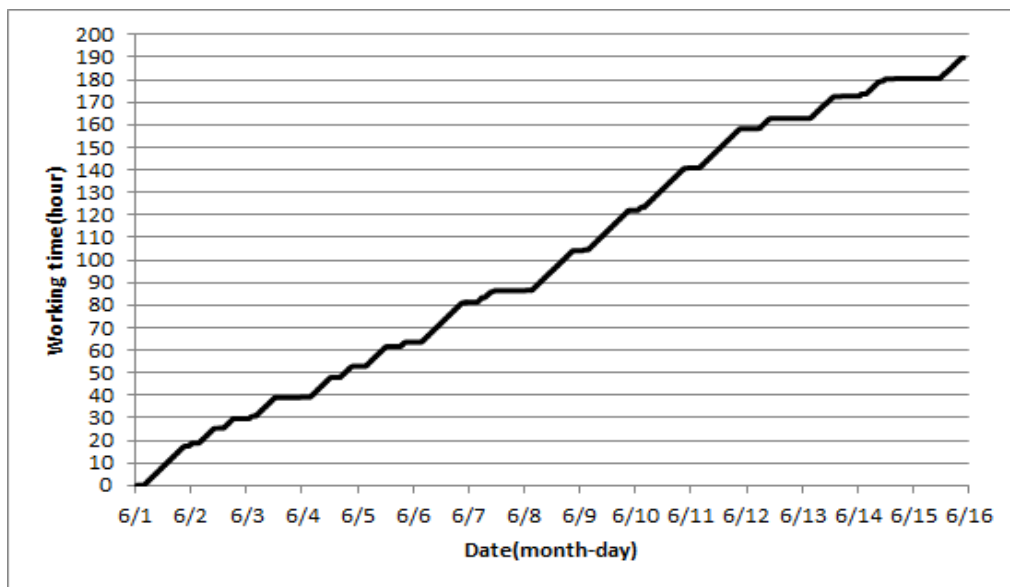


Figure 12- Time diagram for calculating CPK's working days

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

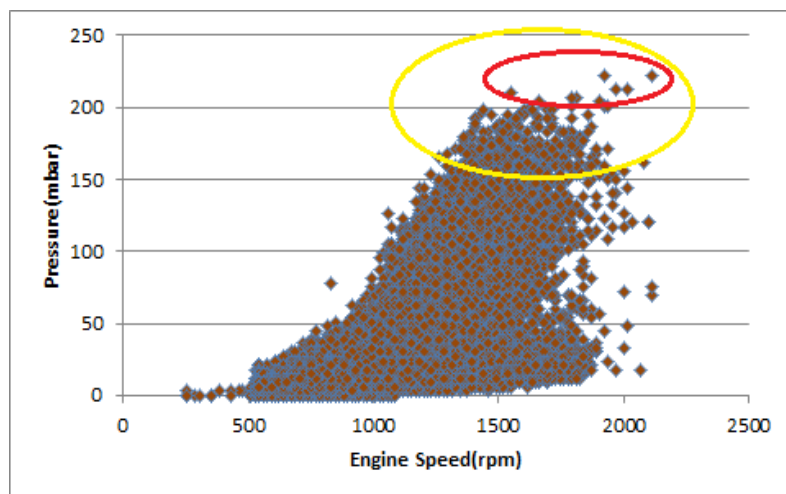


Figure 13- Pressure against engine speed

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

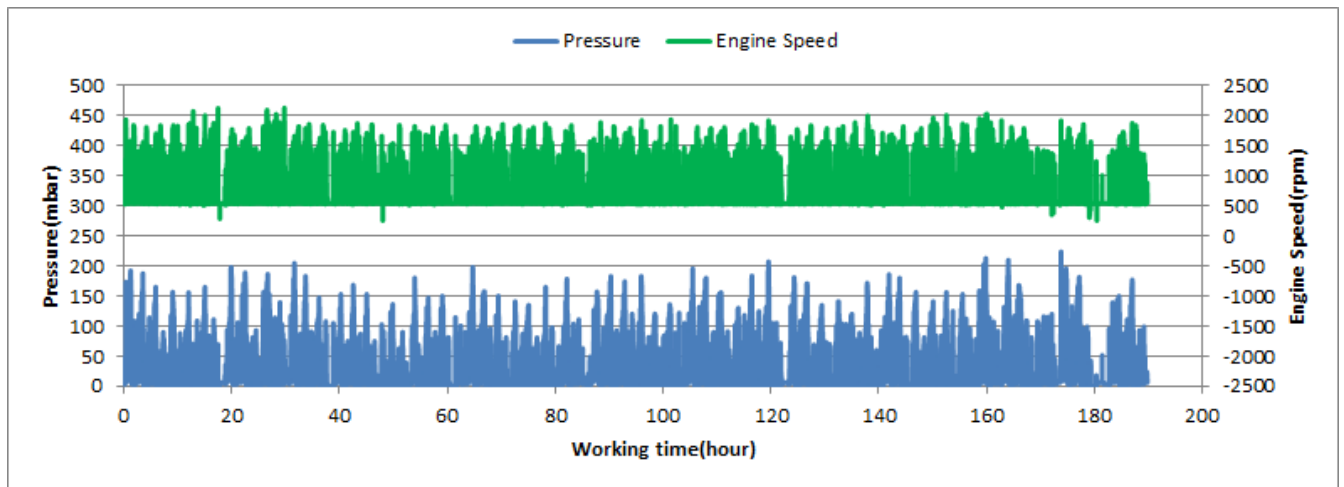


Figure 14- P, N distribution vs. working hours

Notice: Active regeneration prediction is hard from figure 14. It seemed active regeneration didn't happen due to high temperature distribution. For more exact comment, DPF's ECU needs to be checked.

## Temperature- Engine Speed Diagram

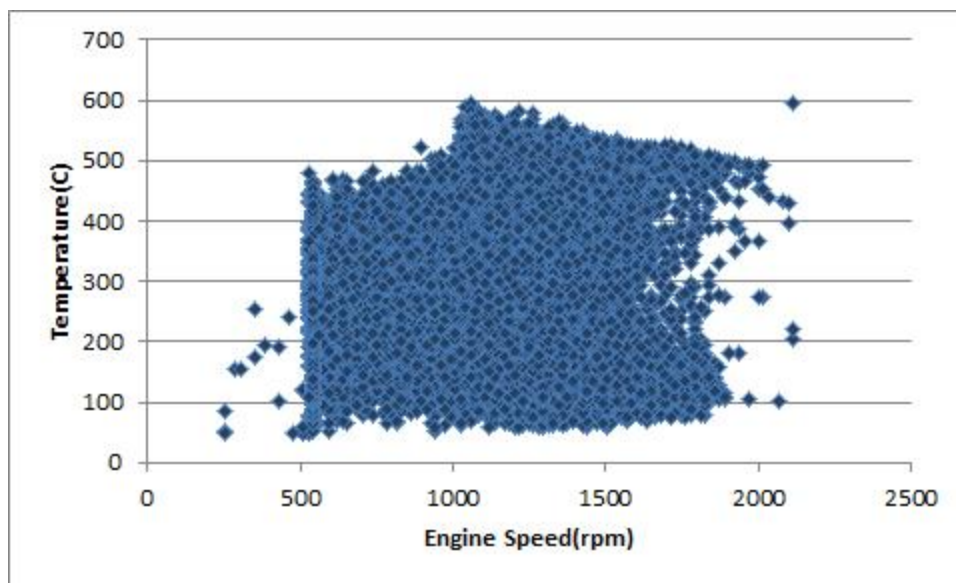


Figure 15- Temperature against engine speed

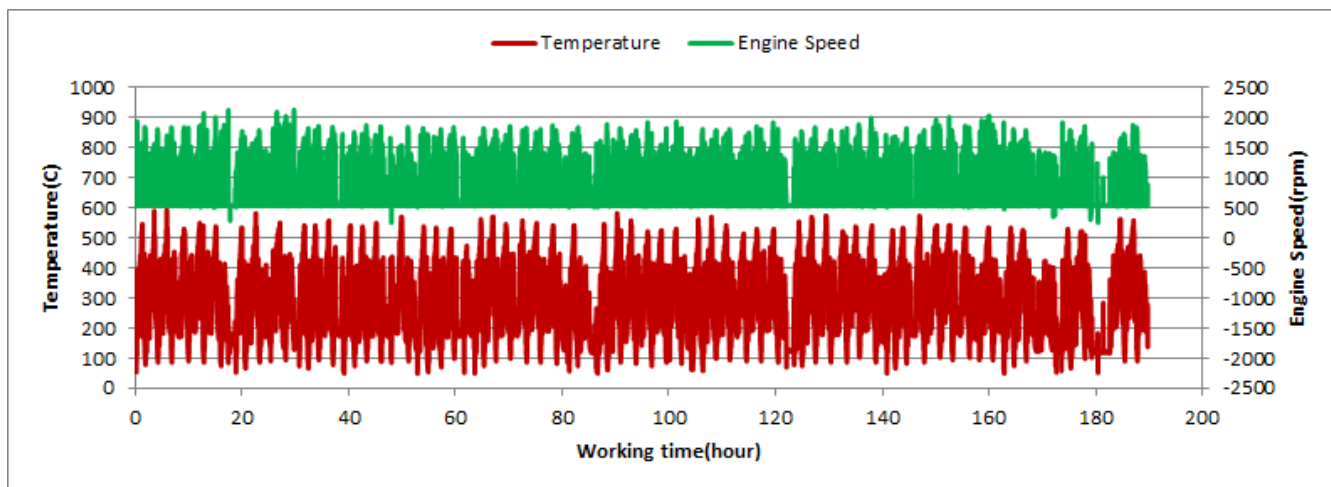


Figure 16- T, N distribution vs. working hours

## Filter Operation Analysis

- As depicted in Figure 1 only 0.02% of total working time, pressure is above 200 mbar and 0.72% above 150mbar. So it can be concluded that operation of this filter is fully acceptable in this condition.
- Figure 2 displays flow temperature distribution for DPF's upstream. It can be obviously observed that 13% of total working time, temperature is above 400 °C and 22% above 350°C.
- This vehicle operates in line 4, so due to path characteristic of this line, engine operates in high speed.

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