

Overall Information

Table1- Overall Information

Vehicle plate number	78524
CPK data logger number	LN: 001443, DN: 1930, 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 producer company	PURIttech (Passive system with FBC)
Installation date	28/Jan/2015
Report period	16/Jan/2016 – 31/Jan/2016 (sixteen days)
K value – DPF upstream	1.80
K value – DPF downstream	0.04

Table 2- DPF Maintenance History

Filter maintenance date	<p>DPF core was removed on Jul 22nd and was cleaned on Aug 12th for the first time. Considering system relatively high backpressure, filter isolation defect and air filter's deformation, DPF core was removed on Sep 16th and installed on Nov 17th.</p> <p>The third cleaning was unavoidable after only 6 days working and was done on 29th Nov. System only worked for two days and DPF was replaced by muffler on Nov 30th.</p> <p>DPF was installed for the fourth time on Jan/19/2016 and was replaced by muffler after only three days working because of high backpressure.</p>
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)	55248 km
Bus mileage over the period	2827 km
Working days over the period	14 days
Stop days	2 days
Data logger working days	14 days
Working hours over the period	249 hours 25 minutes
Average working hours per day (including stop days)	15 hours 35 minutes
Bus average speed	11.33 km/hr
idle speed time to all working time ration	57.1 %
Total Bus fuel consumption over the period	1620 lit
Fuel consumption per hour	6.5 lit/hr
Average fuel consumption	0.57 lit/km
Total Bus additive consumption over the period	- lit
Average additive consumption	- cc/km
Additive consumption to fuel ration	- cc/1000lit

Notice: DPF was on the bus only for three days. So additive consumption volume was not measurable.

Temperature, Pressure and Engine Speed Overview

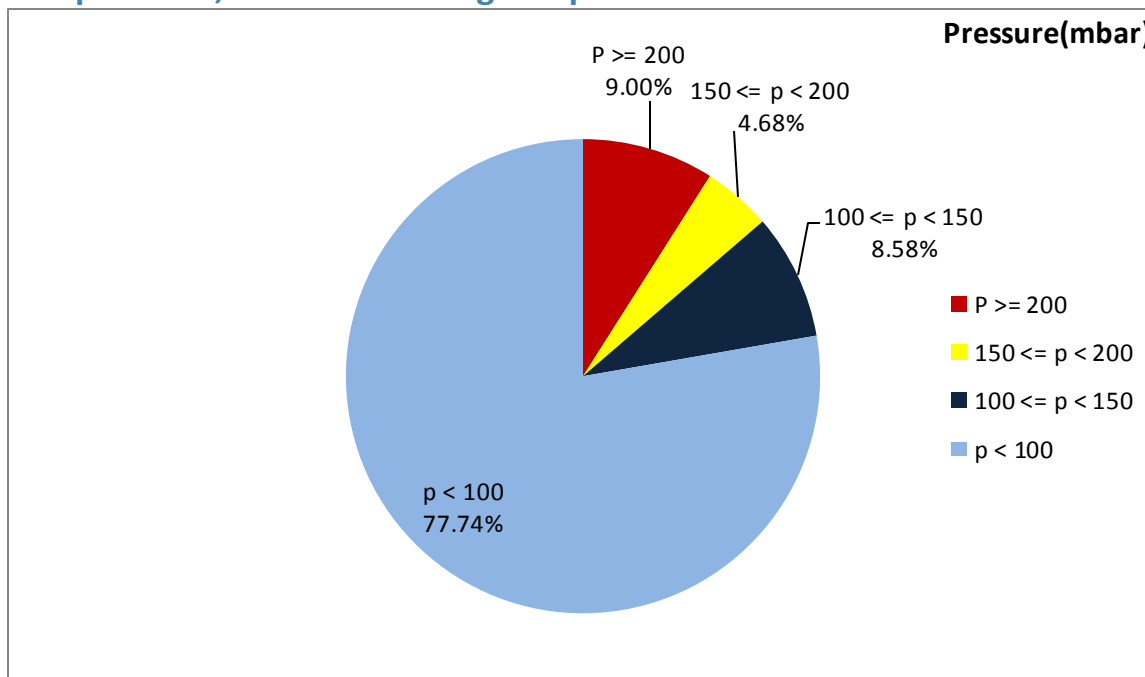


Figure 1- Pressure distribution over the working hours

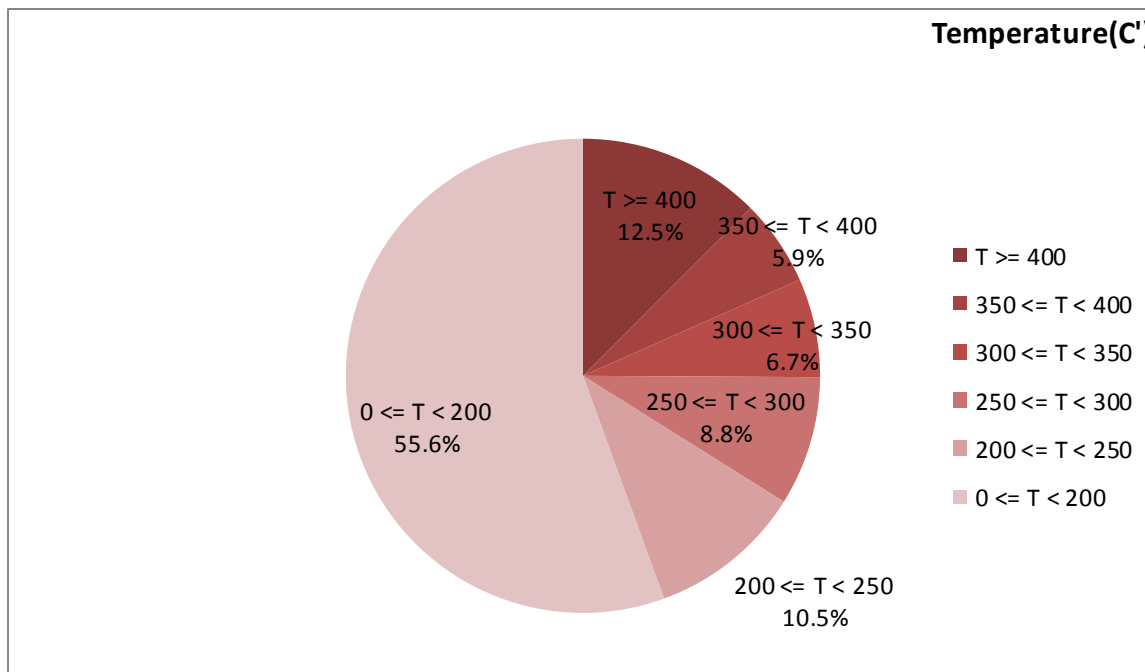


Figure 2-Temperature distribution over the working hours

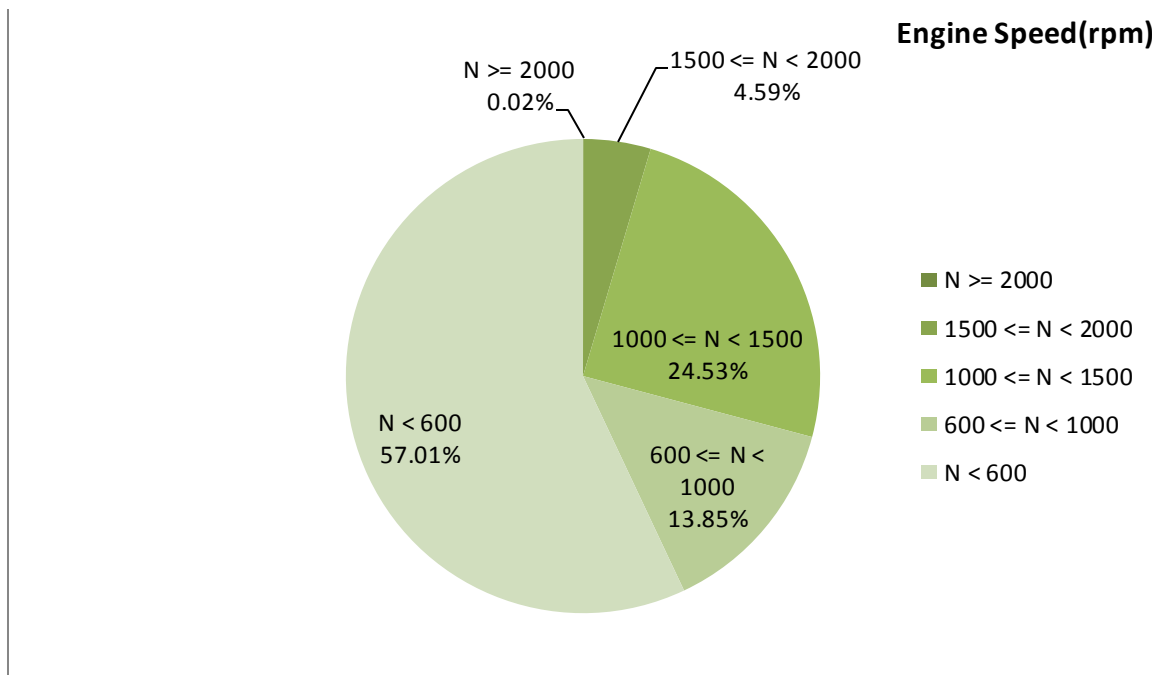


Figure 3- Engine speed distribution over the working hours

Table 4- Mean values

Mean temperature (C)	Mean pressure(mbar)	Mean engine speed(rpm)
233.09	77.18	795

Table 5- Mean values without idling

Mean temperature (C)	Mean pressure(mbar)	Mean engine speed(rpm)
322.18	133.22	1126

Table 6- Max-min values

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
714-50	582-0	2144-304

Notice: Figures 1 to 3 and tables 4 to 6 were calculated considering three days working from Jan 19th to 21st to show DPF performance.

Detailed Pressure Analysis

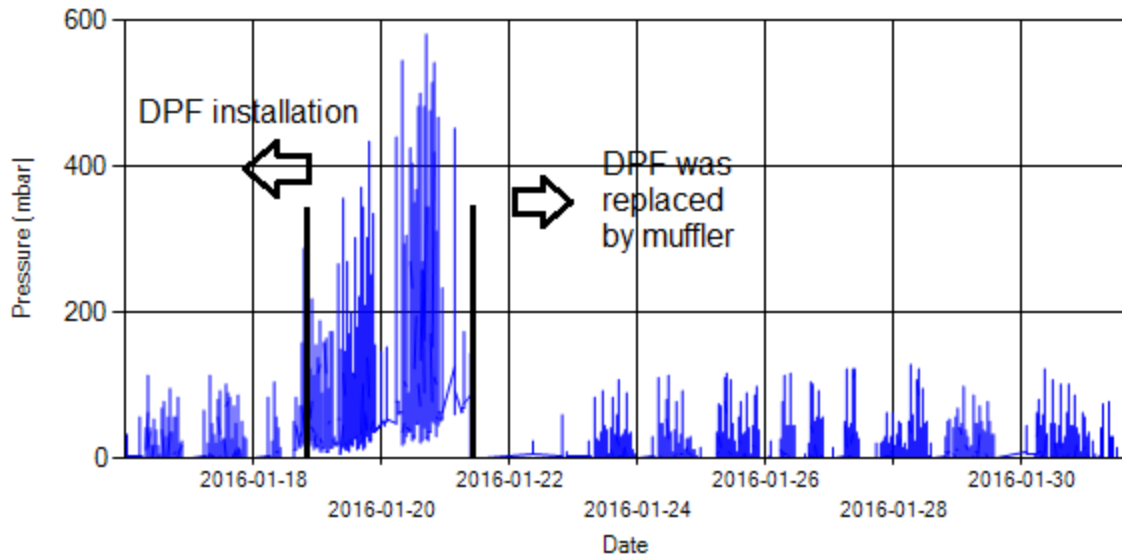


Figure 4- Pressure distribution over the period

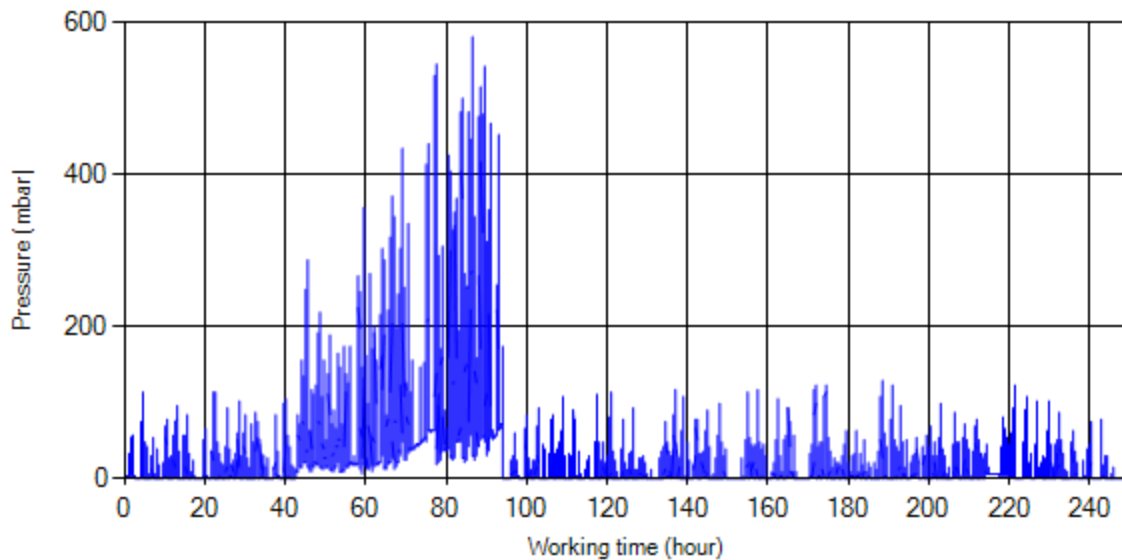


Figure 5- Pressure vs. working hours

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

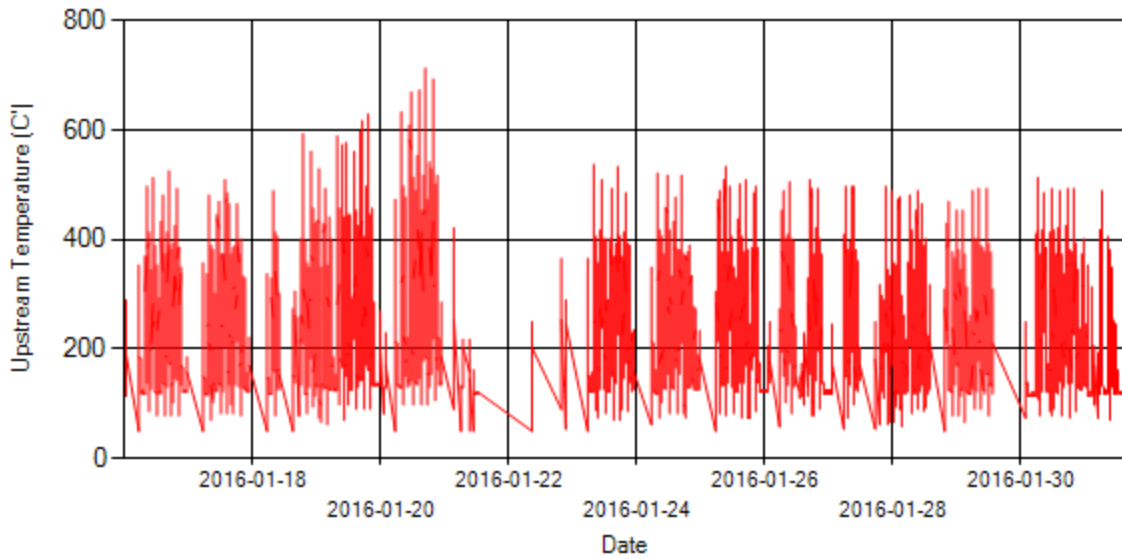


Figure 6- Temperature distribution over the period

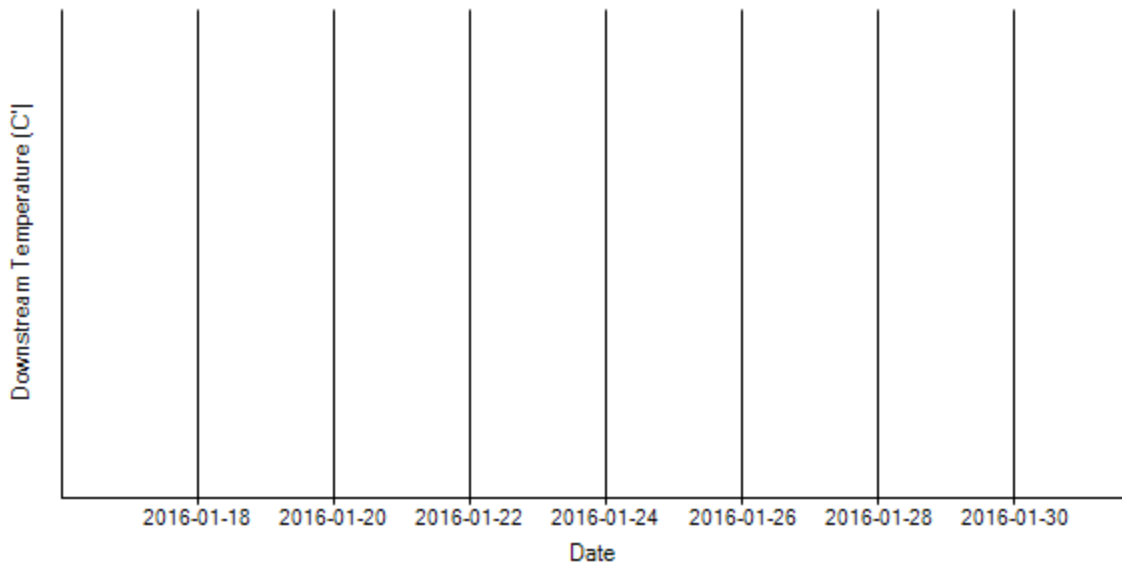


Figure 7- Temperature distribution over the period

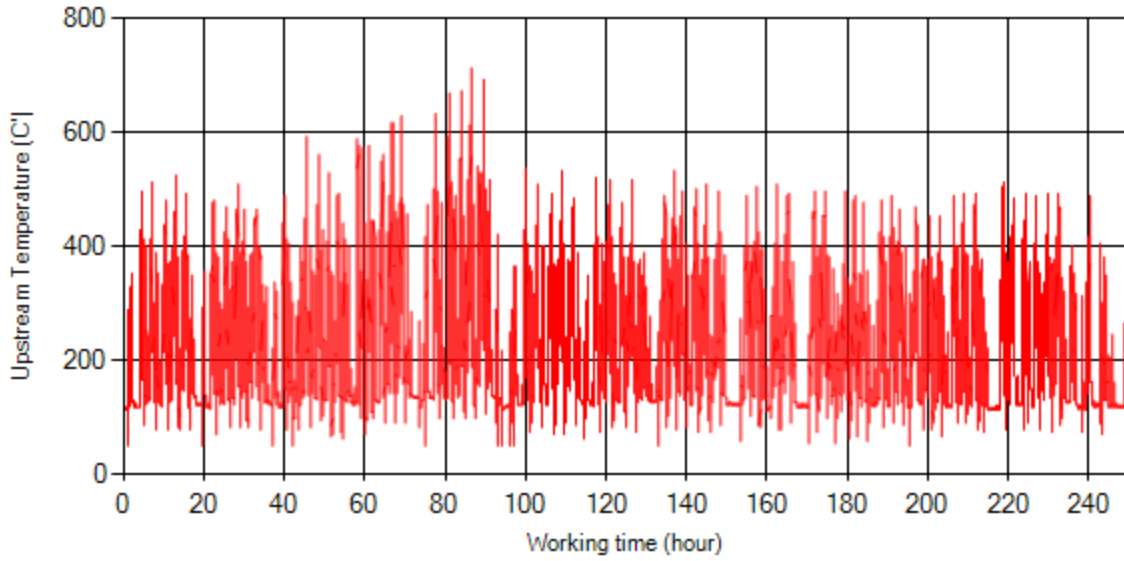


Figure 8- Temperature vs. working hours

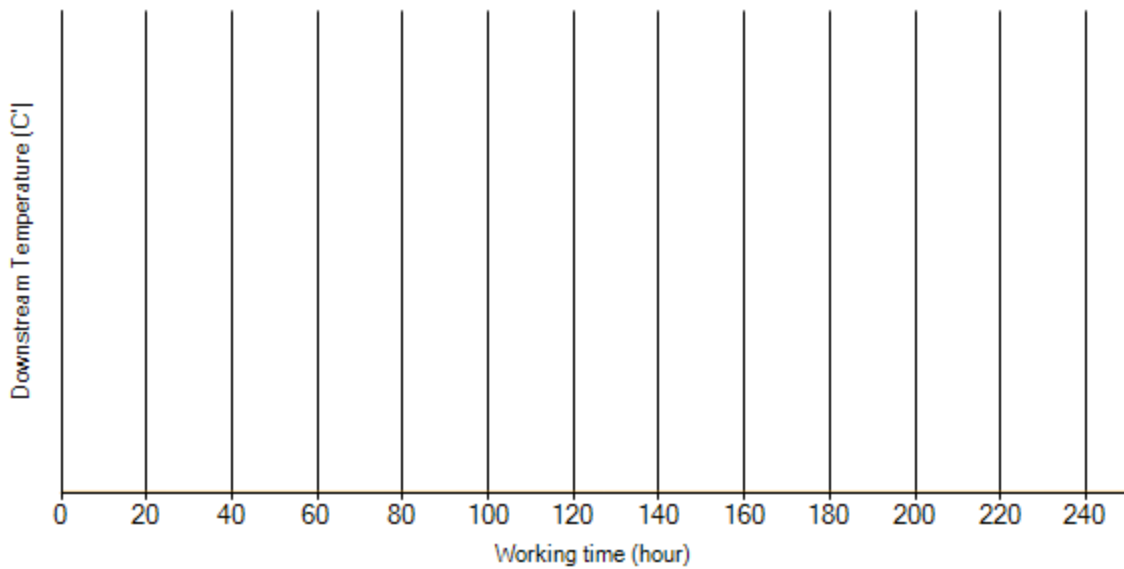


Figure 9- Temperature vs. working hours

Notice: DPF down stream temperature's data missed because of data logger problem.

Engine Speed Diagrams

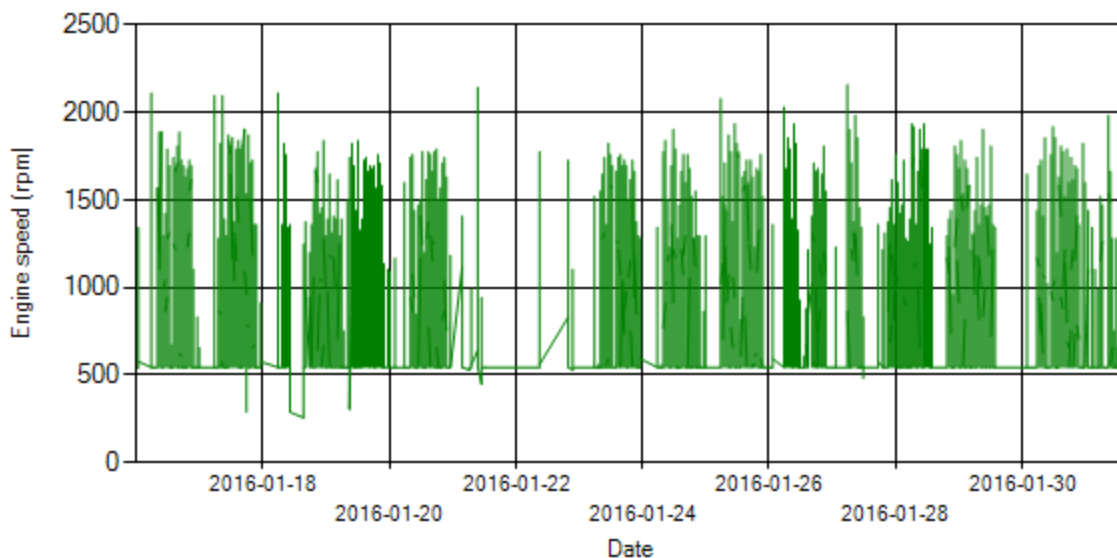


Figure 10- Engine speed distribution over the period

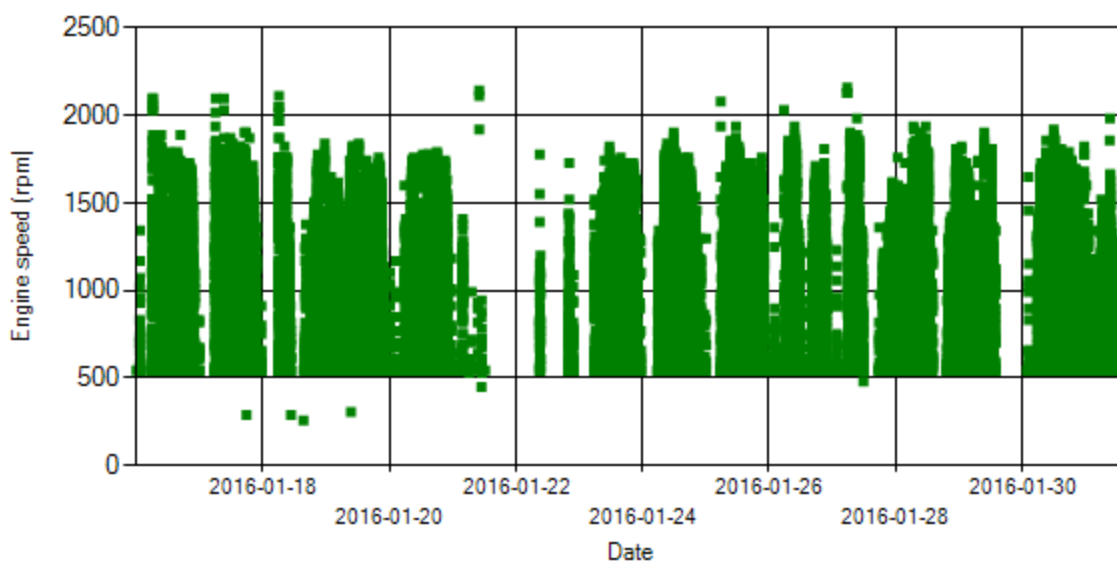


Figure 11- Engine speed diagram for calculating CPK's working days

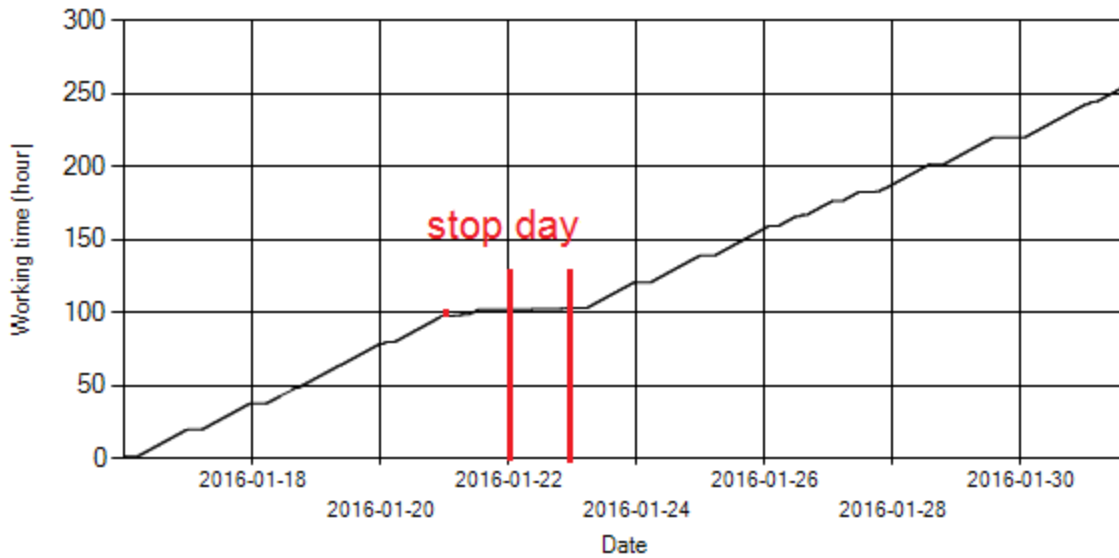


Figure 12- Time diagram for calculating CPK's working days

Notice: Data logger sampling time can be calculated from Figure 12. The lines parallel with Date axis show days without data logger data.

Pressure-Engine Speed diagrams

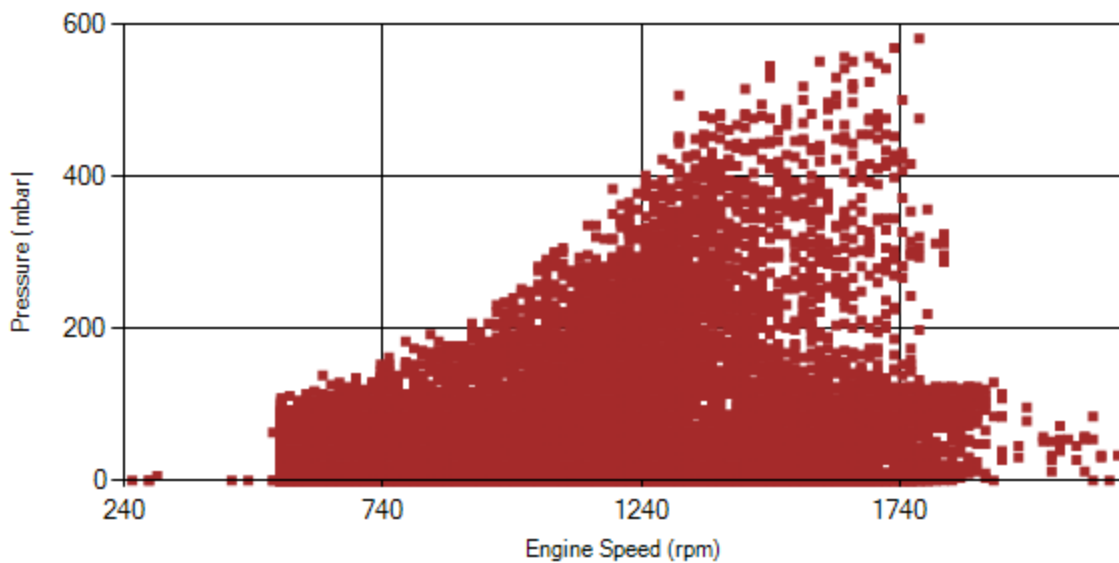


Figure 13- Pressure against engine speed

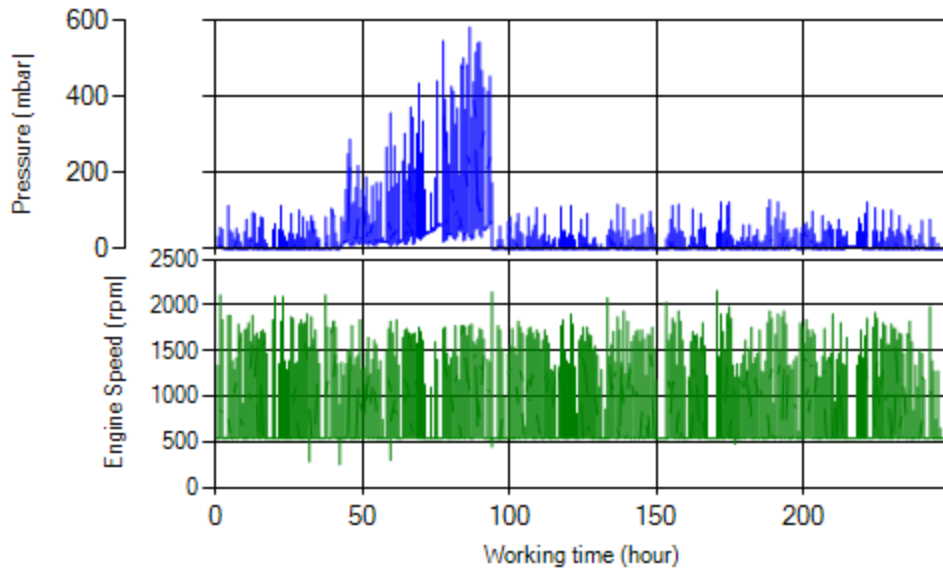


Figure 14- P, N distribution vs. working hours

Temperature-Engine Speed diagrams

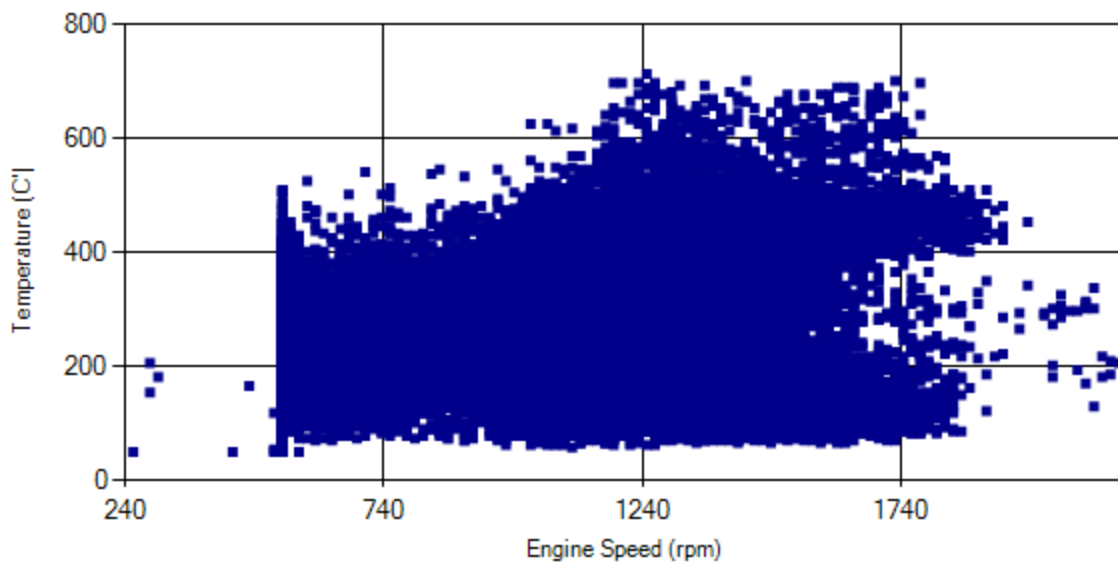


Figure 15- Temperature against engine speed

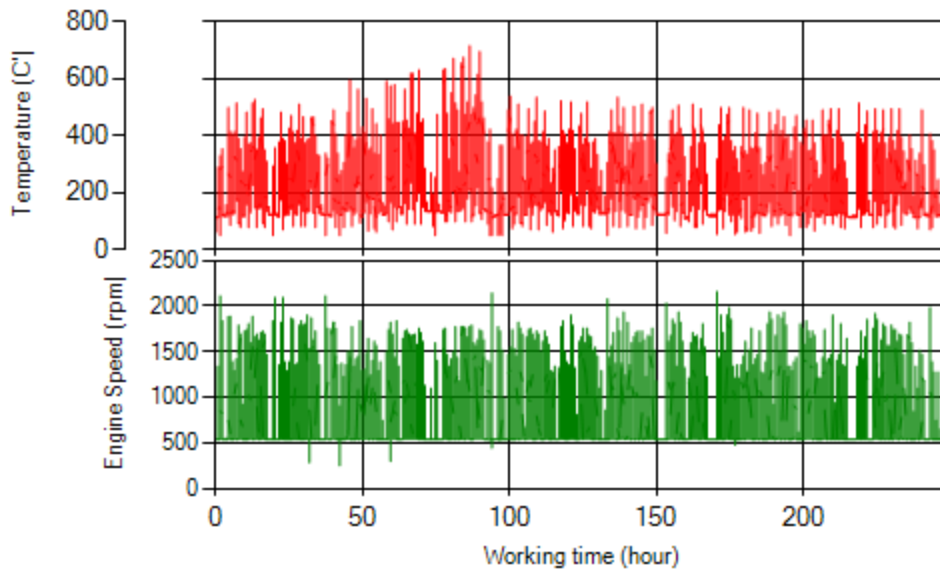


Figure 16- T, N distribution vs. working hours

Filter Operation Analysis

Considering DPF installed days:

- As depicted in Figure 1, 9% of working time, pressure was above 200 mbar. This high pressure distribution during early three days after DPF cleaning is unacceptable.
- Figure 2 displays flow temperature before the DPF. It can be obviously observed that 12.5% of total working time temperature is above 400 °C and maximum temperature was 714 °C during this period.
- Considering all these data, Cleaning was unsuccessful like last two cleaning.

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