

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	PURltech (Passive system with FBC)
Installation date	28/Jan/2015
Report period	01/Aug/2015 – 15/Aug/2015 (fifteen days)
K value – DPF upstream	1.80 [1/m]
K value – DPF downstream	0.02 [1/m]

Table 2- DPF Maintenance History

Filter maintenance date	DPF core was removed on Jul 22 nd and was cleaned on Aug 12 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)	28753 km
Bus mileage over the period	2724 km
Working days over the period	13 days
Stop days	2 days
Data logger working days	13 days
Working hours over the period	157 hours 28 minutes
Average working hours per day (including stop days)	10 hours 30 minutes
Bus average speed	17.3 km/hr
Idle speed time to all working time ration	-
Total Bus fuel consumption over the period	1740 lit
Fuel consumption per hour	11.05 lit/hr
Average fuel consumption	0.64 lit/km
Total Bus additive consumption over the period	-
Average additive consumption	-
Additive consumption to fuel ration	-

Notice: Due to some technical problem related to data logger, rpm data missed and engine speed related information are blank. DPF was installed on bus on Aug 12th and was working only for three days during this period. So additive consumption measurement was really hard and unreliable.

Temperature, Pressure and Engine Speed Overview

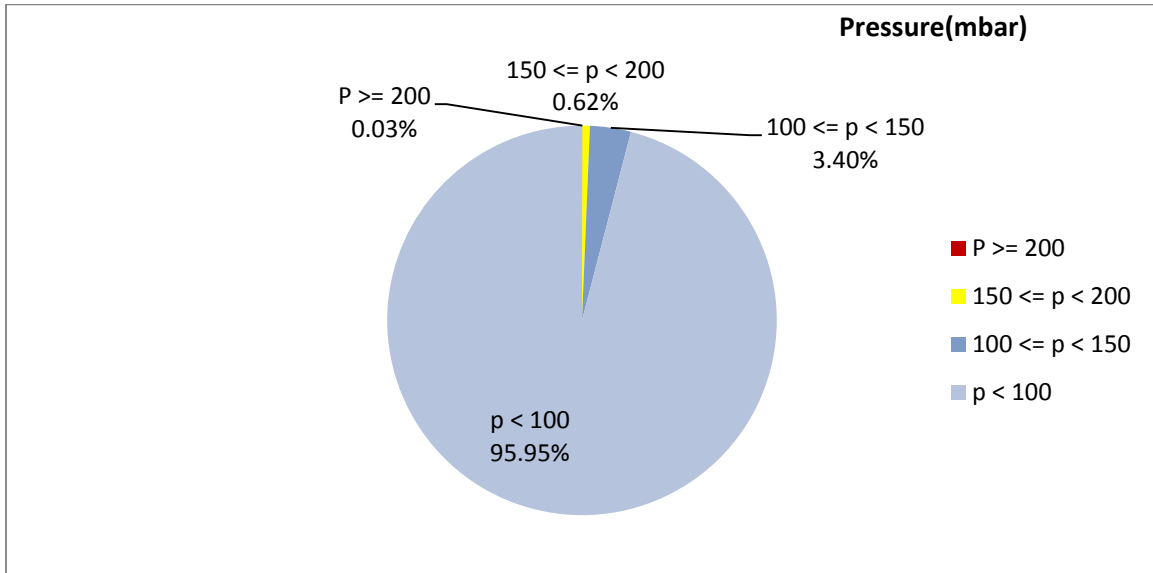


Figure 1- Pressure distribution over the working hours

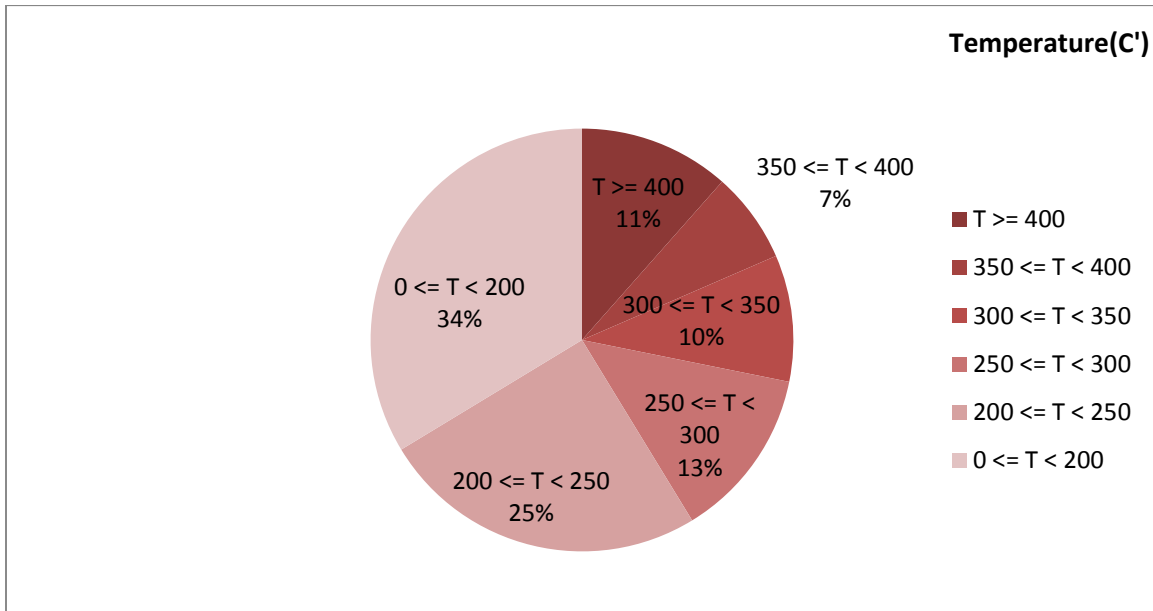


Figure 2-Temperature distribution over the working hours

Notice: Figure 1 and 2 data belong to DPF existence period (Aug 12th, 13th, 14th).

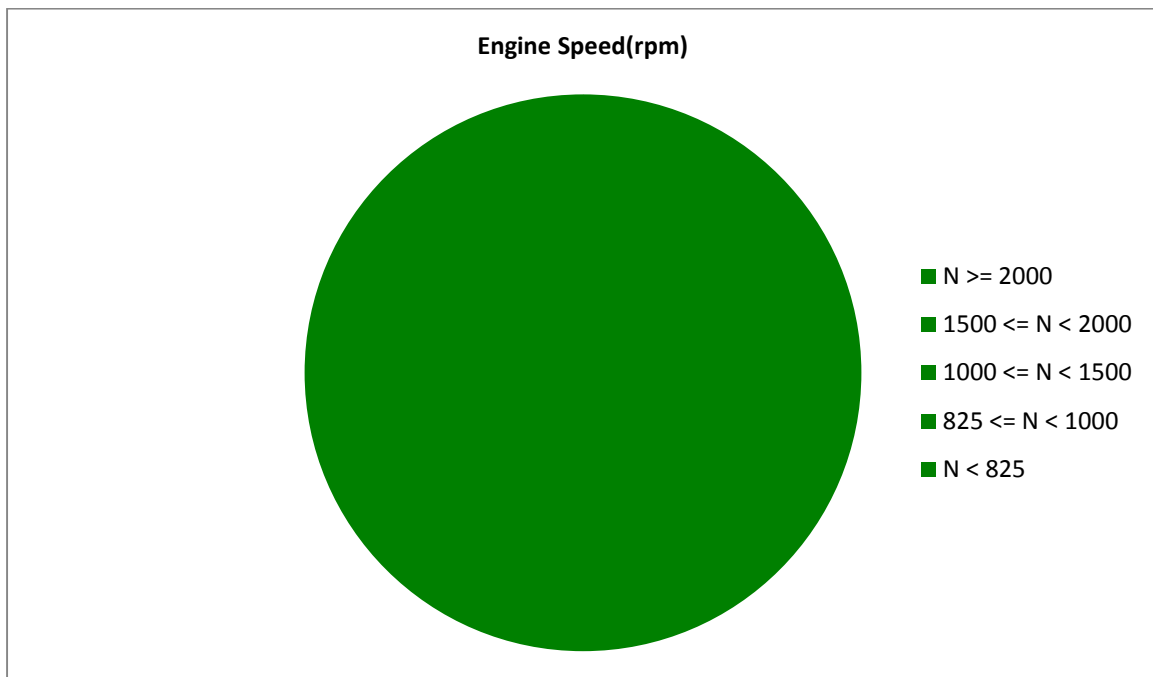


Figure 3- Engine speed distribution over the working hours

Table 4- Mean values

Mean temperature (C)	Mean pressure(mbar)	Mean engine speed(rpm)
274.31	9.11	-

Table 5- Mean values without idling

Mean temperature (C)	Mean pressure(mbar)	Mean engine speed(rpm)
-	-	-

Table 6- Max-min values

Max-min temperature(C)	Max-min pressure(mbar)	Max-min engine speed(rpm)
606-50	204-0	-

Notice: Due to technical problem, rpm sensor data missed. So parameters like idling speed was left blank.

Notice: Low pressure values were because of muffler existence from Aug 1st to 12th.

Detailed Pressure Analysis

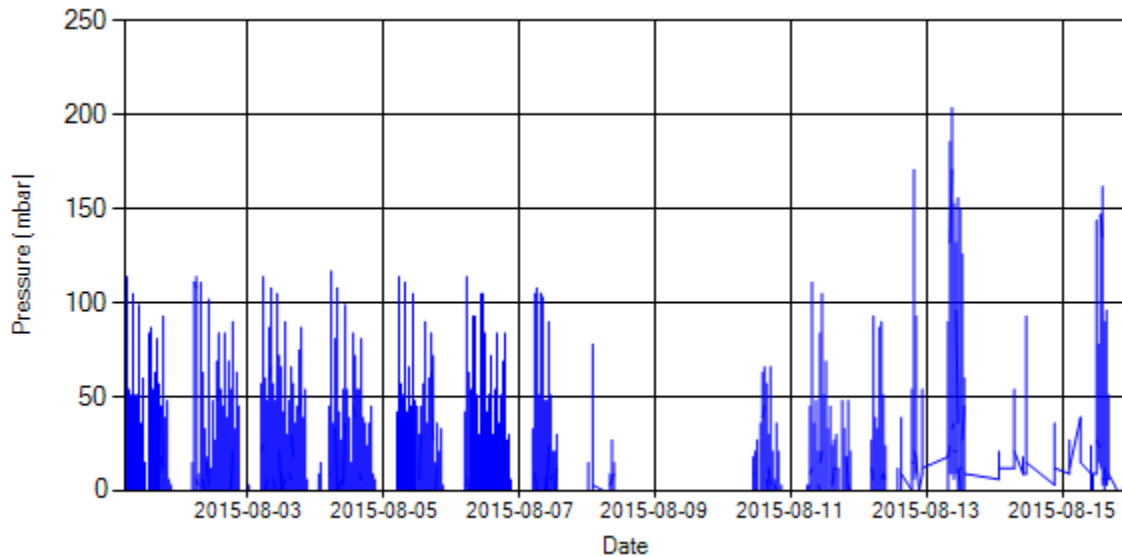


Figure 4- Pressure distribution over the period

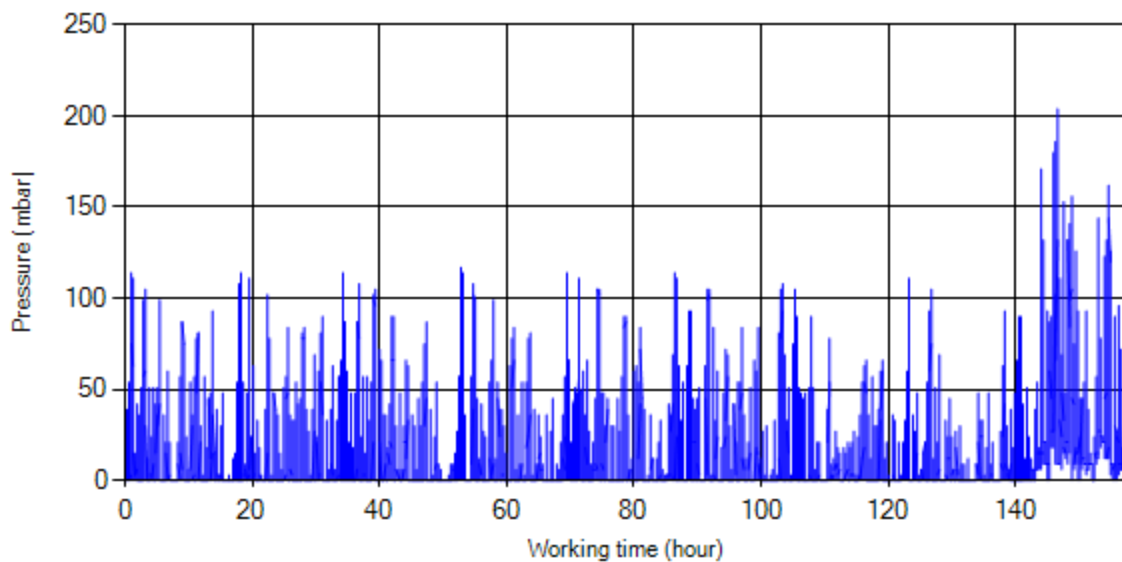


Figure 5- Pressure vs. working hours

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

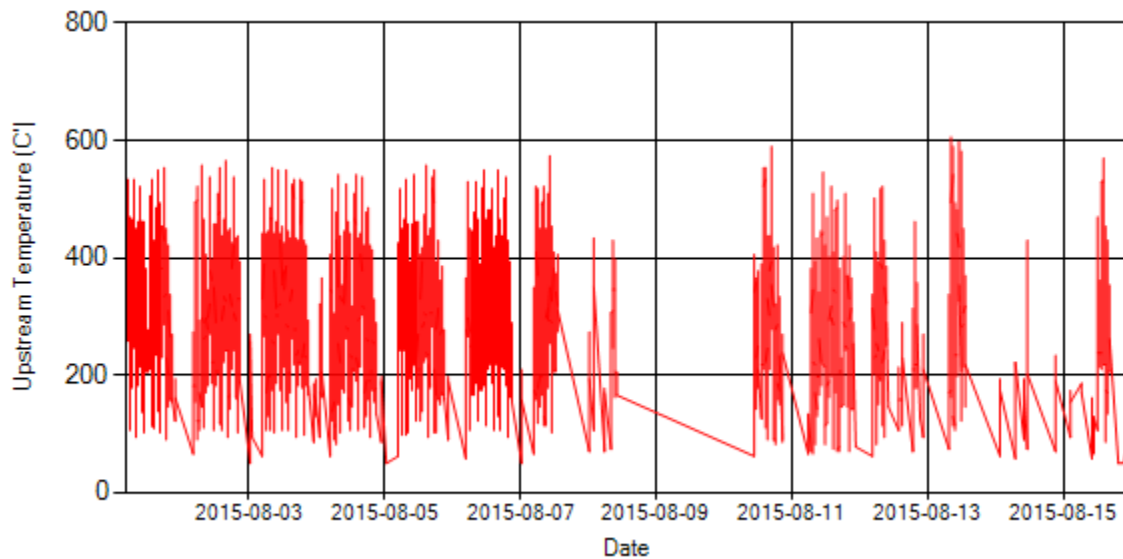


Figure 6- Temperature distribution over the period

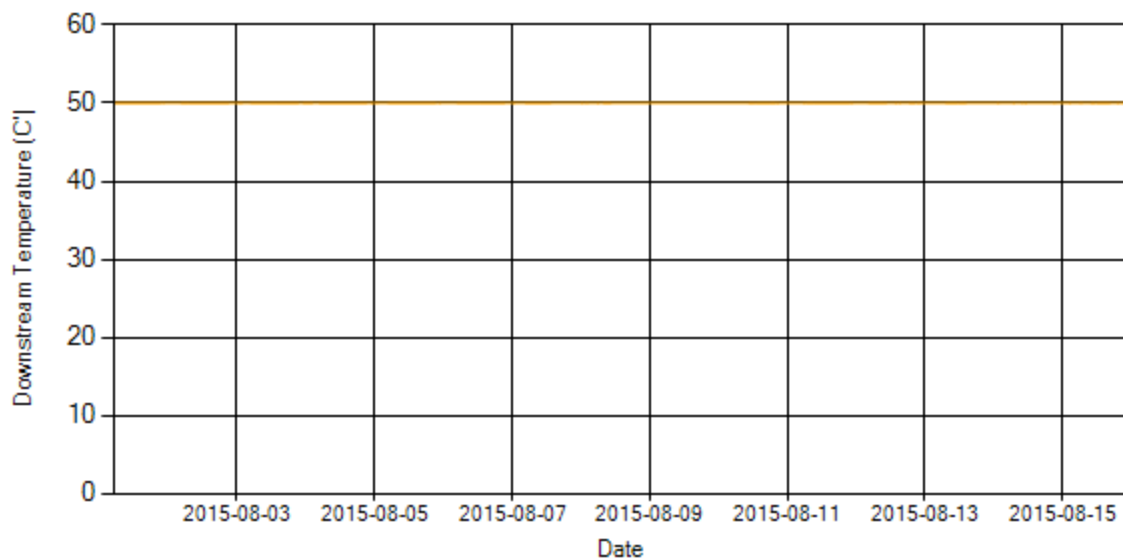


Figure 7- Temperature distribution over the period

Notice: Temperature 2 sensor had problem during this period and showed constant 50 values.

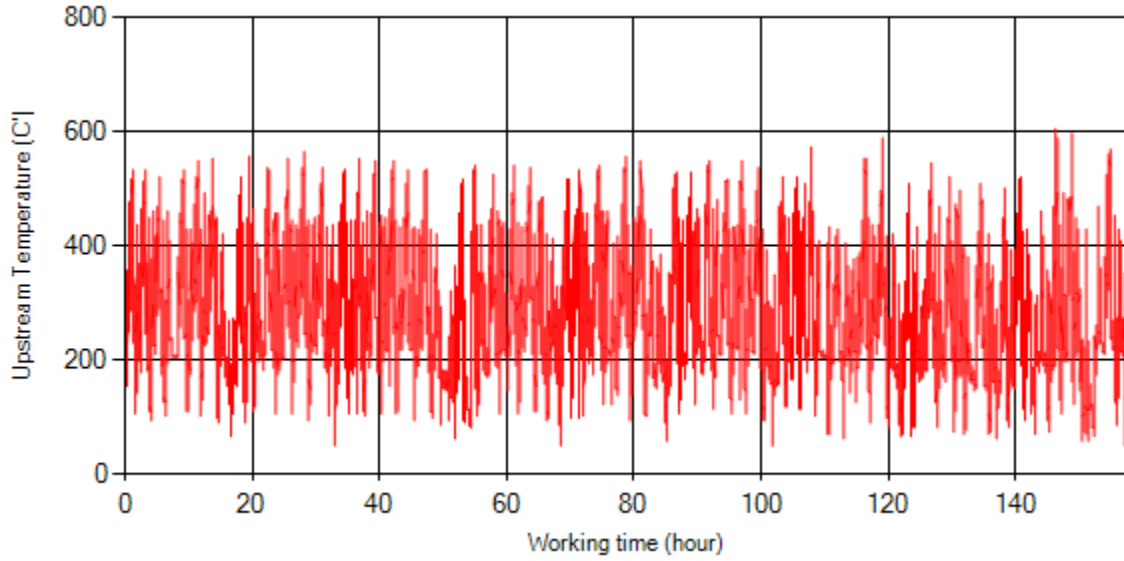


Figure 8- Temperature vs. working hours

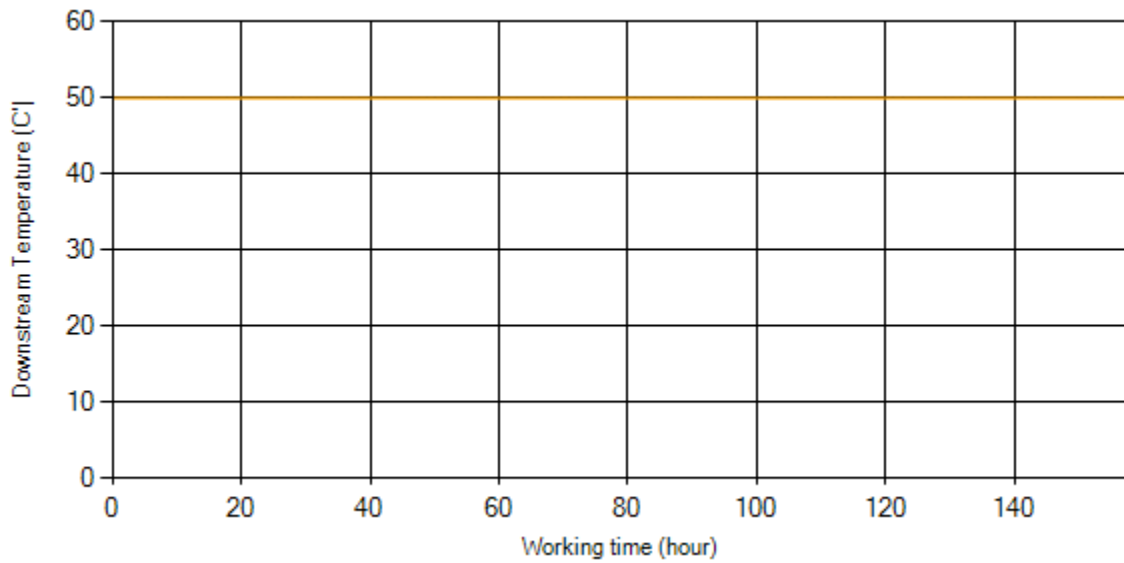


Figure 9- Temperature vs. working hours

Engine Speed Diagrams



Figure 10- Engine speed distribution over the period

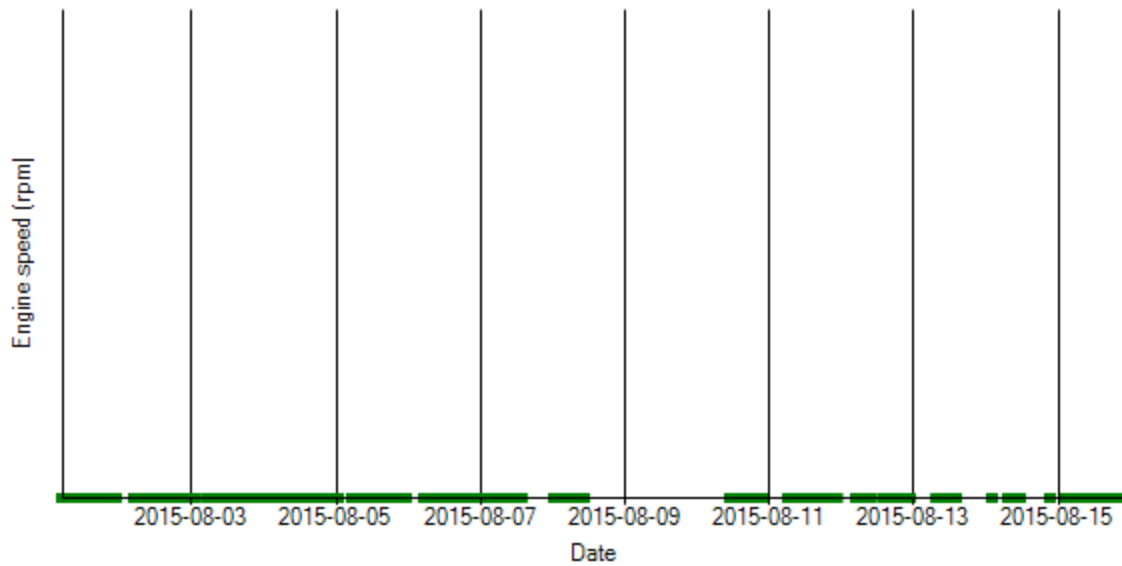


Figure 11- Engine speed diagram for calculating CPK's working days

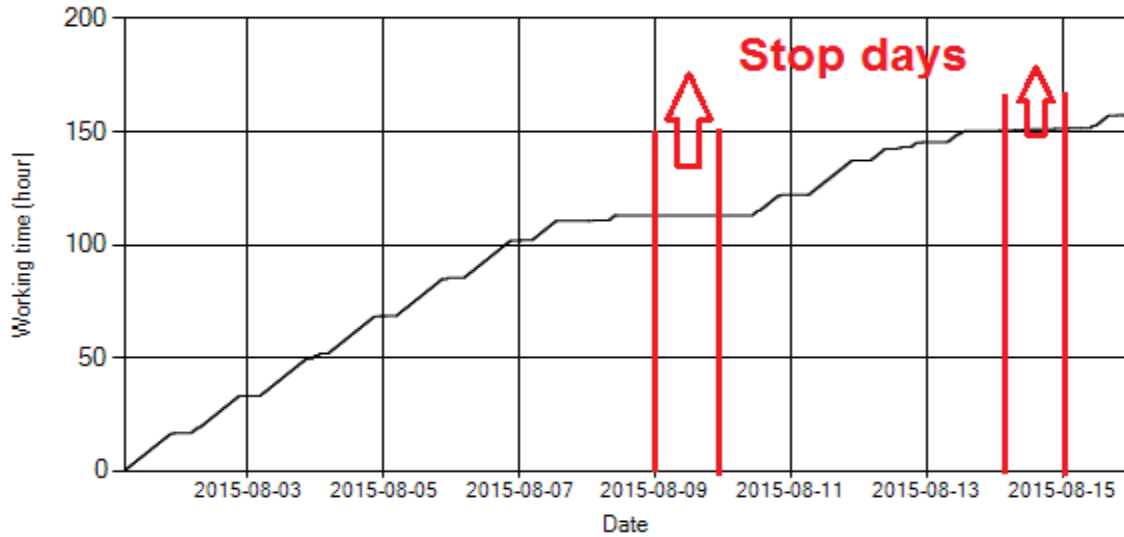


Figure 12- Time diagram for calculating CPK's working days

Notice: Data logger sampling time can be calculated from Figure 12. The lines parallel with Date axis show days without data logger data. As depicted in Figure 12, Aug 9th and 14th were stop days.

Pressure-Engine Speed diagrams

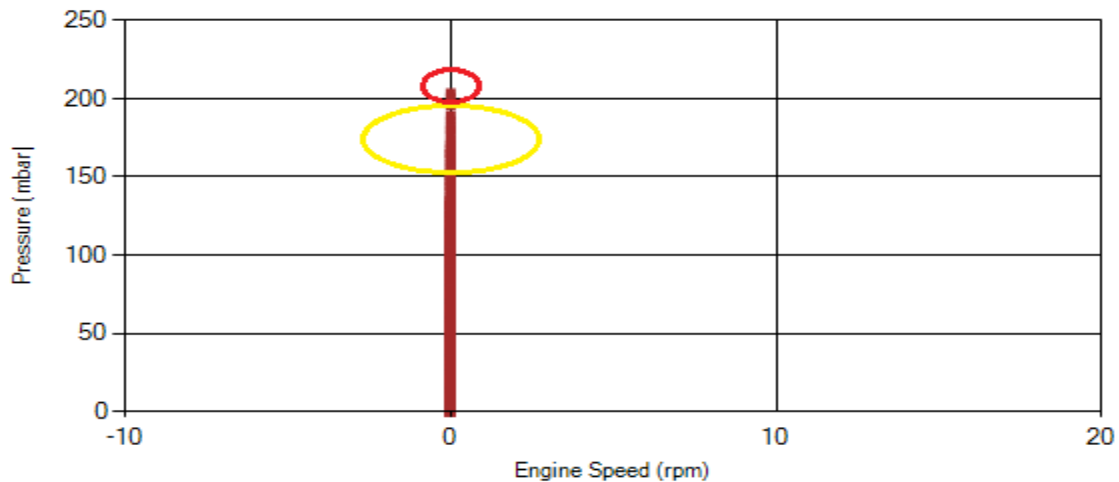


Figure 13- Pressure against engine speed

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

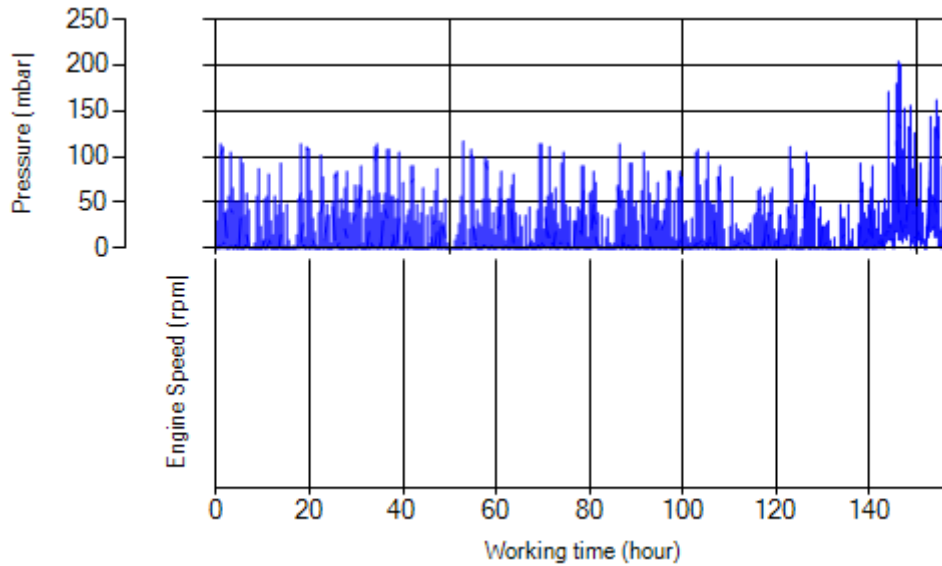


Figure 14- P, N distribution vs. working hours

Temperature-Engine Speed diagrams

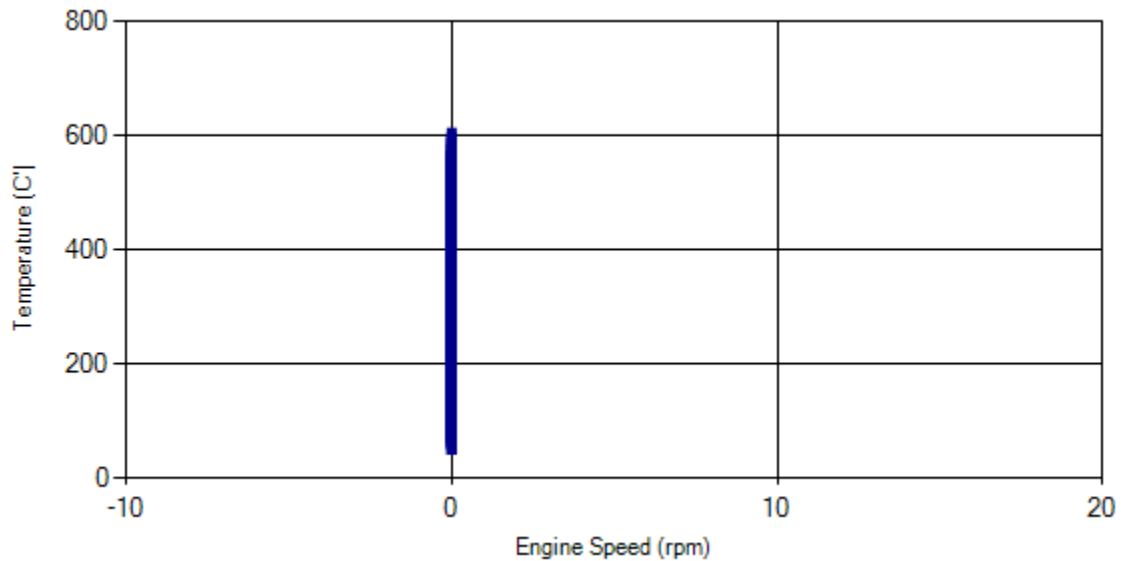


Figure 15- Temperature against engine speed

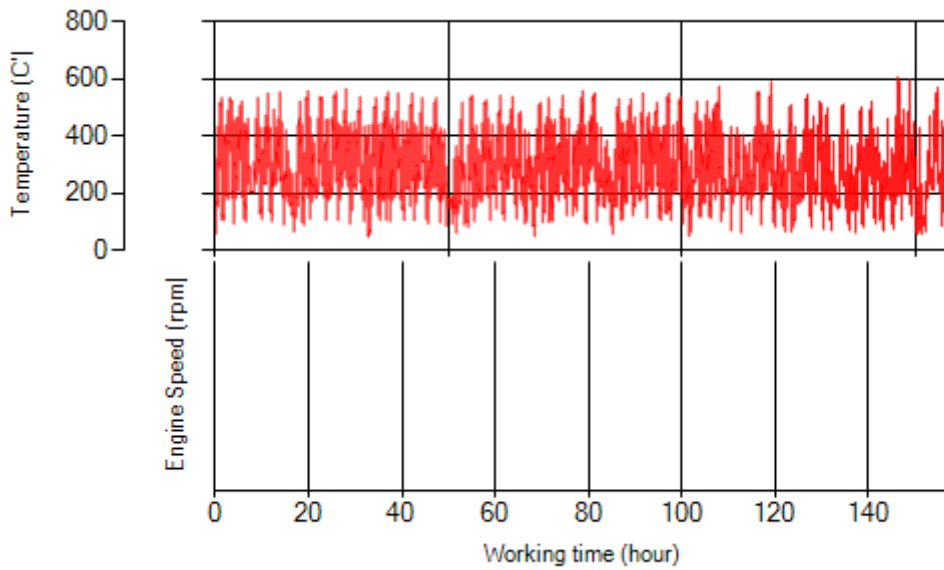


Figure 16- T, N distribution vs. working hours

Filter Operation Analysis

Considering data logger data after filter installation:

- As depicted in figure 1, only 0.03% of total working time pressure is above 200 mbar and 0.65% above 150mbar.
- Figure 2 displays flow temperature before the DPF. It can be obviously observed that 11% of total working time temperature is above 400 °C and 18% above 350°C.

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