



**BAILEYS**  
PERFORMANCE SOLUTIONS

**POWER UTILITY COMPANY**

**EMPOWERMENT THRU ASSESSMENT**

**FOR DIESEL ENGINE**

**MAKE: ..... SERIAL NO: ..... DATE OF INSTALLATION: .....**

### **INTRODUCTION**

#### **Task Definition:**

- To recreate optimum factory recommended and documented performance values applicable to the Diesel Engine subject of this assessment
- To ascertain that optimum fuel efficiency is achieved between recommended service intervals and
- To ascertain that optimum emission levels in the areas of CO<sub>2</sub>, NO<sub>x</sub>, HC and Sulfur PPM are achieved in line with the available Diesel Fuel Qualities provided
- To balance, calibrate and adjust all vital Fuel Injection System Parameters providing the platform for accurate assessment of Air Charging Performance Criterion and possibly air synchronization work required by the Turbo Systems Manufacturer

#### **Task Outcome Definition:**

- To achieve precisely metered Diesel Fuel consumption in ltrs against precisely metered KW output generated on the basis of:
  - 1 Liter of Diesel Fuel creates <> 4.4 KWh electricity to be supplied into the grid  
(this value can go up to <> 5.0 KWh in highly efficient engine versions – please consult Data Handbook)
- To increase the uptime of Diesel Engine operation between service intervals not only in the area of fuel injection/turbo charging but also in the broader field of the interdependent engine frame maintenance and service work
- To optimize the overall operational expenditure profile for the assessed Diesel Engine by:
  - o Improved power output and therefore increased metering volume and billing potential
  - o Reduced fuel consumption against the increased power output resulting in optimized base costs per KWh
  - o Increased uptime of Diesel Engine operating hours between service intervals and therefore increased KWh production periods resulting in increased metering volume and billing potential
  - o Reduced qualitative (emission mix) and quantitative (emission volume) pollutants released into the atmosphere

***Your information is vital to arrive at a Perfect Solution***

# Q&A protocol in the Interest of Optimum Power Generation Diesel Fuel System Appraisal Document

## Section 1 Data and References

This section will allow you to ascertain that the correct and comprehensive Engine, FIS and Air Charger Data & references are available and employed by specialists in the conduct of service, maintenance and repairs of Fuel Injection Systems. Since components may vary from engine to engine serial reference, the appraisal needs to be conducted for each individual engine unit!!

• Engine Serial No, labels and related Reference Handbooks are available, complete and accessible to the service, maintenance and repair specialists	Y	N
• Fuel injection Serial No and related Reference Handbooks are available, complete and accessible to the service, maintenance and repair specialists	Y	N
• Air Charger (Turbo ) Serial No and related Reference Handbooks are available, Complete and accessible to the maintenance and repair specialists	Y	N
Are engine Operating Hours recorded on a daily and weekly basis	Y	N
Performing under derated engine load <70%	Y	N
Performing under nominal engine load >70 to 95%	Y	N
Performing under engine overload >95% up to 110%	Y	N

### Service, Maintenance and Repair Documentation

This section will allow you to ascertain that the correct and comprehensive Service, maintenance and repair work has been carried out by internal or external specialist teams. For this exercise it is important to assess the service history relevant to the latest engine overhaul work or the service work effected over the past 36 months of operation

• Service and Maintenance on Fuel Injection Nozzles Only		<b>Hours</b>
o Are Fuel Injection Nozzles exchanged every 1000 2000 3000 4000 hours or later	Enter >	
In regular intervals	Y	N
In unregular intervals	Y	N
o Are Genuine Factory approved replacement parts employed when replacing Injection Nozzles	Y	N
o Are Service work sheets retained reflecting the scope of work certified and effected on Fuel Injection Nozzles	Y	N
• Service and Maintenance on Fuel Injection Pump Units Only		
o Are Fuel Injection Pumps exchanged every 6000 12000 18000 20000 hours or later	Enter >	
In regular intervals	Y	N
In unregular intervals	Y	N
o Are Fuel Injection Pumps maintained on Utility Site	Y	N
o Are Fuel Injection Pumps maintained at Mfr's accredited Service Location	Y	N
o Are Service work sheets retained reflecting the scope of work certified and effected on Fuel Injection Pumps	Y	N
Service and Maintenance on Air Charging Systems Only		
o Does the Air Charging System (Turbo Unit(s)) form an integral part in the scope of maintenance work of the Fuel Injection System (fuel, air, compression)	Y	N
o Is the Air Charging System maintained by the Mfr's accredited Service Agent at the Utility's Site In regular intervals	Y	N
o In unregular intervals	Y	N
o Are Service work sheets retained reflecting the scope of work certified and effected on Turbo Charger(s)	Y	N

## Section 2 Benchmarking and Key Performance Indicators – Commercial

This section will allow you to establish the "Status Quo" (actuels) in the operation of Diesel Engines in conjunction with A/C Generators with the aim to arrive at quantitative and qualitative steering instruments appropriate for your Utility

### Commercial Considerations Relating to the performance of Diesel Engines on Site of the Utility

Performance levels meeting public Power demands – this data relates to the "billing potential and the actual billing reality"

• Does the validated Diesel Engine meet Constant Power Demand	Y	N
Peak Power Demand	Y	N
Overload Power Demand	Y	N
• Does the validated Diesel Engine meet Nominal KWh (4.4) per Liter (1.0) Diesel fuel consumption under CPD/PPD condition	Y	N
Overload Capacity (110%) up to 1 hour max operation time	Y	N

Consumption Levels prevailing in meeting Power Demands – this data relates to the "potential cost of material (production) and the actual cost reality"

• Does the validated Diesel Engine meet Constant Power Demand when operating under nominal KWh rating	Y	N
Constant Power Demand but operate at derated KWh output	Y	N
Constant Power Demand but operate at consistently excessive Overload Capacity	Y	N



