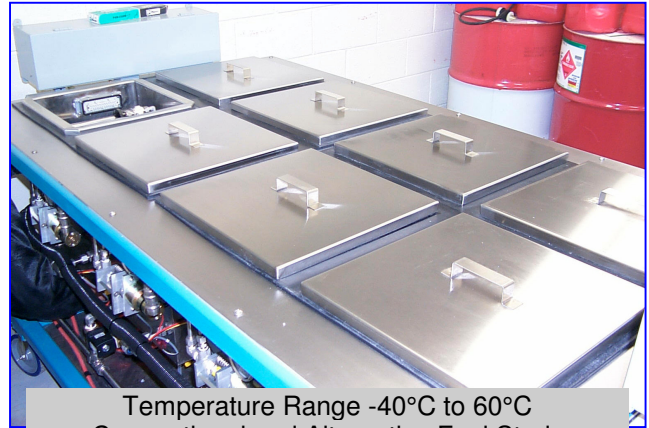


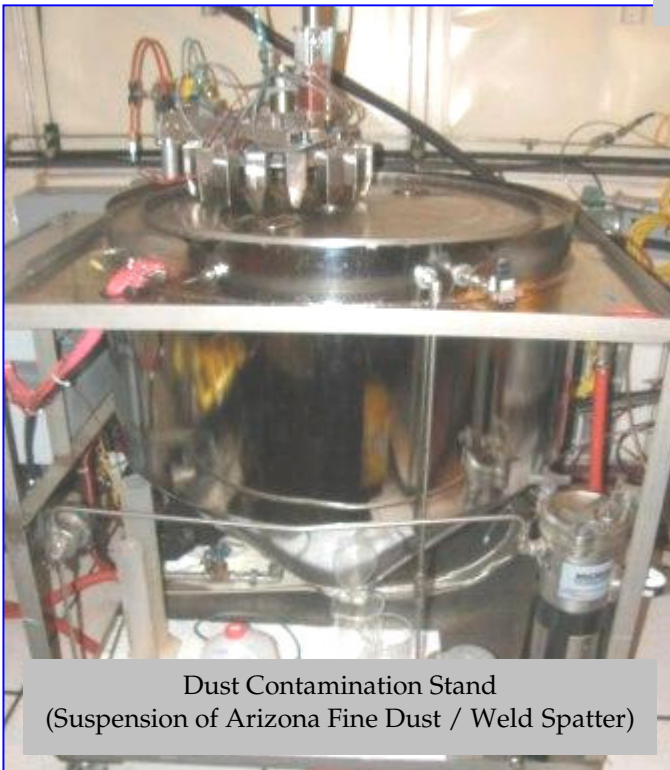


## Fuel Pump Durability Testing

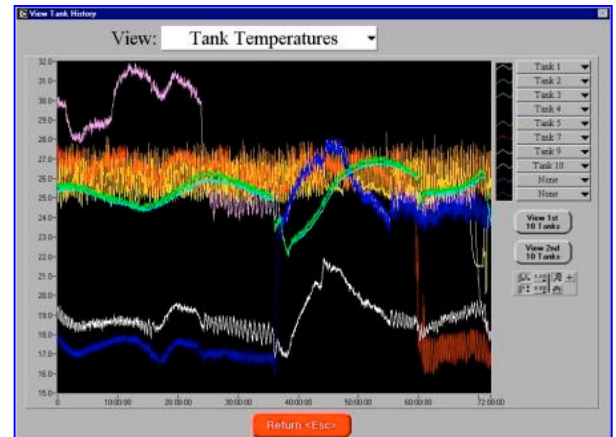
Ten (10) test stands are currently available with each typically containing up to sixteen units. Conventional, alternative, and diesel fuel can be accommodated. Temperature, pressure, operating voltage, pump current, and voltage (for each sample) are continuously logged throughout the test. Fuel temperatures are controlled and can range from -40 °C to 60°C.



Temperature Range -40°C to 60°C  
Conventional and Alternative Fuel Study



Dust Contamination Stand  
(Suspension of Arizona Fine Dust / Weld Spatter)



### Available Fuel Pump Durability Procedures:

Alternative Fuel Validation  
Contamination  
Corrosion Resistance

Dry Running  
High Voltage  
and more...

Thermal Cycle  
Vibration

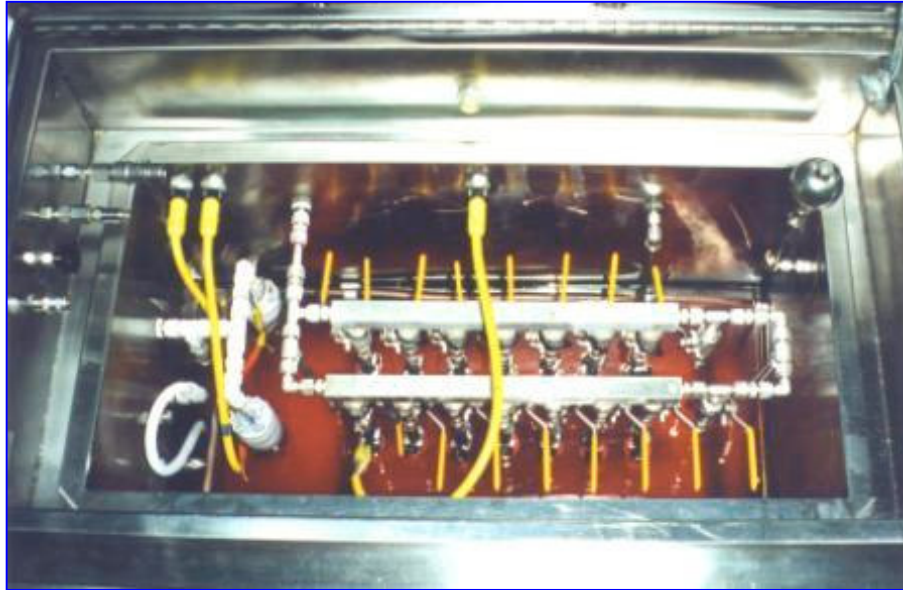


**Independent Engineering Laboratories, Inc.**

*Innovation Beyond Limitation*

## **Fuel Pump Performance Testing**

*iEL* has successfully developed test equipment and procedures that are capable of correlating with our client's in-house stands. In addition to standard performance conditions, NVH characteristics can be quantified using techniques that are generally unavailable elsewhere. Recorded parameters include the following: Voltage, Pressure, Current, Flow, Temperature, and RPM.



### **Available Fuel Pump Performance Procedures:**

Check Valve	Performance During Cold Starts
Deadhead System Pressure	Performance During Low Temperature
Forward Leakage	Performance With Temperature
Hot Idle Stability	Pressure Pulsation
Magnetic Cold Knockdown	Pressure Rise Time
NVH Characteristics	Pump Mapping
Performance at Standard Conditions	Vapor Lock

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### **Direct Injection High Pressure Pump Applications:**

With our on-site design team, *iEL* can easily design and build the required spin fixturing necessary to accommodate Direct Injection High Pressure Pumps. We not only offer complete durability testing but also performance testing for our clients.