

## EXTRACTION CONTROL

### Variable Control Priority with Bump-less Transfer

#### Ask Yourself these Questions.....

- Do you operate a Condensing or Non-Condensing Steam Turbine Generator that has Extraction(s) and/or Admission(s), such as:
  - ✓ Single Auto-Extraction (SAX)?  
or,
  - ✓ Double Auto-Extraction (DAX)?  
or,
  - ✓ Triple Auto-Extraction (TAX)?
- Are your Plant Operators Frustrated with Changing Steam Conditions?
- Does your Power Sale Contract require you to Maintain a Constant Electrical Load?
- Are you experiencing Lack of Unit Control that leads to Alarms, Trips and/or System shut-downs or Process curtailments?
- Are you losing valuable time and revenue in how you are currently operating?

If you answered "Yes" to any of the above questions, then you need to be proactive and further evaluate the "Built-in Features" of TurboNet DASH 1®

**Come talk to us about these exciting features and fully realize how TurboNet DASH 1® capabilities can help you to maintain your Power, Process and Revenue Needs.**

#### General

The TurboNet DASH 1® is a robust, low-cost Digital Control System (DCS) that has been designed by Turbine Diagnostic Services, Inc. (TDS) to specifically to control gas and steam turbine generators of all sizes and configurations. TurboNet DASH 1® is expandable to control and monitor all turbine generator functions, and if desired, the Balance of Plant (BOP) controls, as well. While the basic TurboNet System will control the turbine generator and associated subsystems for status monitoring and alarm functions, the system is expandable with options such as: a sequence of events recorder, a historian, vibration monitoring, generator auto-sync and remote monitoring and troubleshooting.

TurboNet DASH 1® design and evolution was influenced by start-up field engineers that understand and have installed different control systems. With face-to-face customer interaction, these seasoned engineers have an understanding of the design features required for turbine generator control and have an appreciation for the requirement for user friendly features that customers insist on. The many features incorporated in the TurboNet DASH 1® are in demand and desired by operators, technicians, and engineers alike. These features enable users to effectively operate, troubleshoot, and program their control system needs for today's efficient, reliable facilities.

This publication will briefly discuss the *Ultimate Operability Solution* for Owners/Operators of Turbine Generator Units who are seeking Admission and/or Extraction Control for Improved Operability and System Stability while sustaining Revenue and Process Steam Requirements.

#### Enhanced Control

Enhanced Programming of TurboNet DASH 1® allows Operator Priority Selection of:

- Load Control
- Inlet Pressure Control (IPC)
- High Pressure Extraction/Admission Control (HPXPC)
- Medium Pressure Extraction/Admission Control (MPXPC)
- Low Pressure Extraction/Admission Control (LPXPC)
- Exhaust Pressure Control

#### Operator Ease – Variable Control Priority

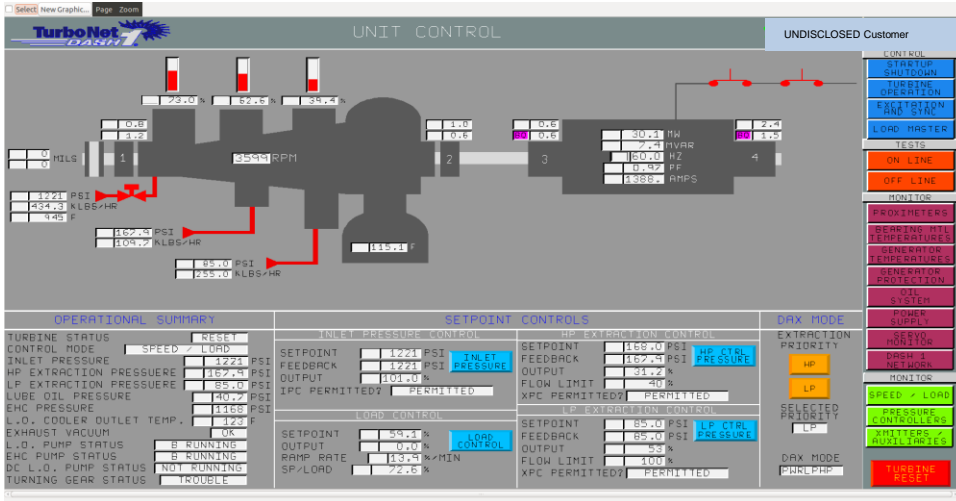
The Owner/Operator can change the priority of any control variable at any time based on the operating condition changes that may occur in the plant. These changes allow for the operator to select which Control variable is sacrificed by the Controller as it hits a limit of stroke or flow. The operator may change these priorities at any time on-line resulting in a bump-less transfer of control modes, so the process or load does not swing as a result of the transfer.

TDS can also implement the DAX turbine control with a totalizer based load controller and is capable of holding a constant load or meet an hour ending totalized power generation while still maintaining control over the extraction headers "within limits."

Please refer to Page 2 for actual examples of operator screen shots.

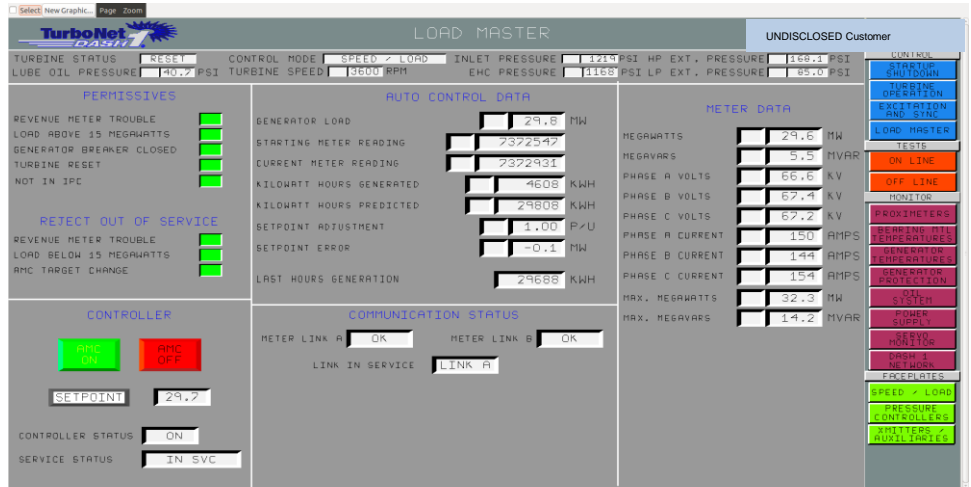
Pictured below are actual Examples of Operator Screens using Enhance Control features of Turbine Diagnostic Services, Inc.'s TurboNet DASH 1® Variable Control Priority with Bump-less Transfer.

## MAIN OPERATOR CONTROL SCREEN



Operating in Totalizer Based Load Control, Load Swings become a **"thing of the past"** And, Bump-less operation now becomes **"the norm"**

## ELECTRICAL LOAD MASTER SCREEN



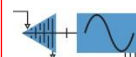
The Electrical Load Master Screen allows the operator to **"set the electrical load"** and to **"visually see the data"** from the Revenue Meter

**Turbine Diagnostic Services, Inc. (TDS)** is a full service turbine generator field service organization based in Odessa, Florida. TDS specializes in conducting steam & gas turbine generator planned & emergency maintenance controls troubleshooting, and vibration analysis & balancing services.

TDS has developed the **TurboNet DASH 1®** Control System from the ground up and each unit is custom configured to meet your specific needs. Contact Turbine Diagnostic Services, Inc. for a demo of our TurboNet DASH 1® system at our headquarters in Odessa, Florida. Contact us at: (727) 375-8700, extension 1228 or [sales@turbinedoctor.com](mailto:sales@turbinedoctor.com) to Schedule a Visit, Review Installation Options, Discuss Design Features in Detail or to Request a TurboNet DASH 1® Product Specification.



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"The Turbine Doctor"®