



TGA is a network of experts with extensive OEM, utility, and engineering consulting experience who have designed units operating worldwide, developed novel service strategies, and engineered major unit upgrades. We saw a need to provide independent advice to the power industry in today's challenging environment and combined our efforts to form TG Advisers.

A description of our core services follows.

TROUBLESHOOT

Troubleshooting

TG Advisers has the expertise to troubleshoot a wide variety of turbine and generator operating issues including vibration, performance shortfalls, and chronic mechanical failures.

ANALYZE

Failure Analysis

TG Advisers is versed in several format failure analysis techniques. We typically use the *Kepner Tregoe* process for most probable root cause failures. Depending on your needs we can participate, facilitate, or lead a formal failure analysis process. In addition, our company offers a full range of materials' testing, examination services, and finite element analysis. We also have a well-renowned metallurgist on staff to support failure forensic assessments.

Steam and Gas Turbine-Generator Health Assessments

Our process provides a method to identify high failure risk areas and also optimize outage intervals based on actual machine condition. Recent inspection reports alone will not allow for the most effective planning since many failure modes are time dependent and/or chronic in nature. Through our *Turbine Generator Health Assessment Process*, we conduct interviews with operations personnel, review available inspection reports dating as far back as unit commissioning, and incorporate detailed knowledge of the design basis and materials with critical service issues into a risk-weighted action plan for the next outage along with a 10-year budget. TG Advisers has completed more than 350 plant assessments including fleet programs at NRG, FirstEnergy, Emera, Nova Scotia Power, and all nuclear units in the US, Spain and Belgium.

ASSESS

Plant Due Diligence Assessments

Many of our clients are actively purchasing and selling units around the world. Together with our assessment process, we can provide a comprehensive review of a unit, including its environmental condition, operating structure, and profitability thereby supporting any buy or sell evaluation for your firm's consideration. Sometimes fatal unit flaws in a power plant's operations are not recognized by teams who do not have the advantage of possessing the technical depth of our TGA team. We have combustion, balance of plant, environmental, and turbine generator experts who can quickly assess a unit and provide realistic operational, maintenance and capital outlay projects for the long term.

Plant Heat Rate and Performance Assessments

Is your plant short on capacity or has the plant's fuel consumption taken a turn for the worse? Let the TG Advisers' team evaluate the current performance state of your unit and recommend repairs or testing to capture lost generation.

Plant Upgrade Assessments

Many on our team have developed both reliability and performance upgrades operating well over 35 years. Our team can help assess your unit and provide options to address more aggressive merchant plant goals for reliability and output.

Continued



MITIGATE RISK

Steam and Gas Turbine Generator Design Reviews

A structured technical review with an experienced and unbiased third party is an excellent method to mitigate risks. If conducted early in the planning process, such an evaluation can be used to identify areas which should be addressed through contractual requirements. Weak points where an independent assessment should be conducted can be incorporated into the project schedule. TG Advisers has more than 30 years of OEM design and repair experience on both fossil and nuclear applications. The TG Advisers' team offers a proven design review process to identify design weaknesses up front and address concerns before major commitments are made.

Torsional Vibration Testing & Analysis

TG Advisers is a recognized industry expert in torsional assessment and testing of complete turbine generator trains. Torsional vibration failures have been recognized by the industry as one of the leading causes of catastrophic unit damage resulting in outages which have extended more than six months and resulted in claims in excess of \$500M. The TGA team can evaluate your risk profile and assess the need for testing and/or modification. Our team has over 35 years of experience in this highly complex failure mode.

IMPROVE O & M

*Save Time and Significant Money with the Team of Experts at TGA!
Our services can help you optimize your operations.*

Improved Start Times

Many of our clients have units that are struggling to achieve online opportunities and associated revenues. Our team is well versed at modelling and assessing your current startup procedures and providing methods to significantly reduce these time periods. In some cases, start times have been reduced by 30 to 40% allowing key assets to participate in a merchant environment at a much higher participation rate.

Shop Surveillance Services

Do you have components in the shop for repair or manufacture? Is your job one of many being worked on in the facility? TG Advisers can provide independent shop surveillance services to ensure critical repairs/new unit work is completed to specification and adheres to approved standards and practices of the industry. Many from our team have come from OEMs that have performed these services for years.

Capital and Maintenance Optimizations

Repair, replace or upgrade?

TG Advisers can help! We have the technical and financial background to calculate complex trade-offs and evaluate vendor proposals for blades, rotors, or complete units.

Outage Cycle Optimization

TG Advisers shows customers how millions can be saved by transitioning from a fixed schedule of major outages to a customized schedule of smaller component focused outages. Cycle outage optimization not only results in a more suitable inspection regime but also provides significant cost savings.

TRAINING

Technical Training

TG Advisers is a known global leader in providing targeted steam and gas turbine generator training. Our 40 plus years of design, troubleshooting, and operating experience in the power plant industry translates into training modules with proven solutions for the prevention of failures on your units. We can customize our training to meet the needs of your facility and can offer onsite locations of your choice.

EXPERT ADVICE

Ask an Expert Support

Have a question and want an independent or second opinion? TG Advisers provides online phone or site support for a fixed hourly rate or retainer at substantially discounted costs from published OEM rates. In addition, customers who purchase a Health Assessment are eligible for a discount. Need to go out for bid for a complex repair or replacement part? Received a number of bids and want an independent review? TG Advisers can prepare the technical portion of bid specifications with the knowledge of what is important. We know how to evaluate vendor submittals and what to look for in their technical and price proposals.

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