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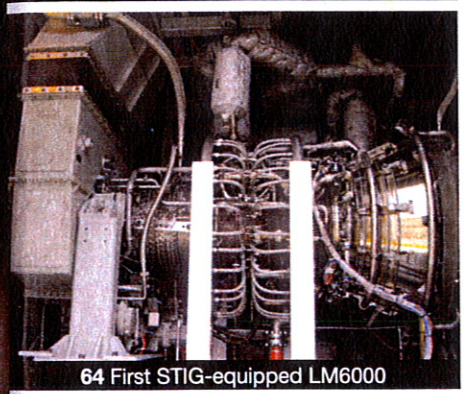
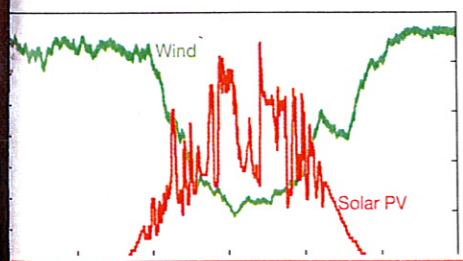
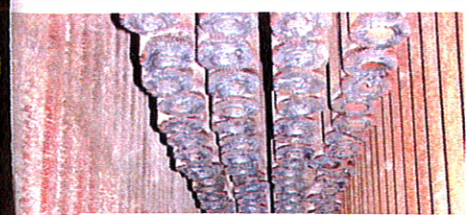
20 7F tip cracking

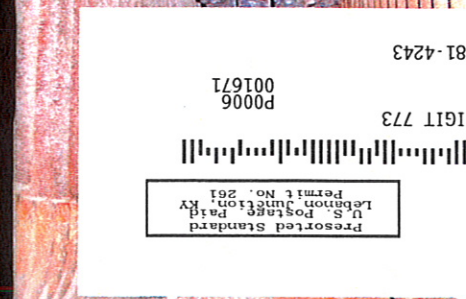


64 First STIG-equipped LM6000



80 Intermittent wind and solar





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The sales point was that liquid cooling turns the flame-scanner sight tube into a condenser during startup, creating water droplets on the sensor lens which refract UV radiation and can cause nuisance trips. Marsman added that GE Technical Information Letter 1579 R1 raises additional concerns of potential damage to the turbine from leaking coolant.

Conversion from a liquid-cooled scanner to a fiberoptic one is easy, Marsman told the group. Simply remove the existing UV tube or silicon carbide sensor and all related coolant tubing, capping it off. Then screw the fiberoptic probe—basically a glass eyeball inside a stainless steel fitting—onto the sight port.

Mount the electronics box, which includes the sensor, in a remote location away from turbine heat and vibration. Use an armored fiberoptic cable to connect the probe to the electronics box; connect all the wires.

The self-checking flame scanner is designed fail-safe. Performance can be data-logged and trended. Marsman made a point of the system being repairable, not an expensive throwaway. In the unlikely event the system fails, he added, it can be replaced with the turbine in operation.

CRV Plate protects against varnish

Hans Overgaag, *AnsaldoThomassen,* Rheden, The Netherlands
US contact: Cary Forgeron, Analysts Inc
www.analystsinc.com

Hans Overgaag, one of the developers of the Cross Relief Valve (commonly referred to as the CRV Plate), came from Europe to explain how this device virtually eliminates varnish from critical servo-valve components. Simply put, it ensures a continuous flow of oil through the valve independent from control-system settings and commands, but without interfering with the servo's control functions.

Readers are referred to "CRV Plate helps protect servo-valve components against varnish," available at www.ccj-online.com/archives.html, click 1Q/2010, click article name.

PAG: Alternative to mineral oils

Dr Govind Khemchandani, *Dow Chemical Co,* Freeport, Tex
www.americanchemtech.com

The focus of Govind Khemchandani's presentation was the advantages of non-varnishing polyalkylene glycol (PAG) synthetic turbine fluid over mineral oils in high-temperature GT service. You may recall that the Dow Chemical formulation is marketed as EcoSafe® TF-25 in North America by American Chemical Technologies Inc, Fowlerville, Mich.

This subject was covered in the COMBINED CYCLE Journal most recently in the 3Q/2009 issue. The article, which is integrated into the 2009 7F Users Group report (p 18), contains much of the information most users would require for decision-making—including two case histories. Access the article at www.ccj-online.com/archives.html.

More technical detail is available in a paper by Khemchandani, "Tribological characteristics of PAG-based synthetic turbine fluid." To obtain a copy, write Kevin Kovanda, president of ACT, at kkovanda@americanchemtech.com.

CDM uses fiberoptic transducers

Rick Lopushansky, *Davidson Instruments,* The Woodlands, Tex
www.davidson-instruments.com

Rick Lopushansky introduced the 7F users in his session to Davidson Instruments' temperature-tolerant (up to 1000F on a continuous basis) fiberoptic-based pressure transducers for monitoring combustion dynamics. He said the transducers are designed for mounting directly on the turbine casing of 7FA as well as inside the J-tube of Siemens 501 engines without the need for engine mods. Lopushansky added that the product had passed 7FA field tests.

For the 7FA, the transducer projects through the casing and is positioned flush with the inner liner in close proximity to the combustion zone. The device has a flexible tip to prevent damage caused by misalignment of the holes in the casing and the liner. Cooling is by way of the 800F air circulating between the casing and liner.

Use of fiberoptics eliminates the need for the acoustic tubes, purging systems, electronic transducers, and charge amplifiers found on most other systems, Lopushansky continued. The signal conditioner can be configured to provide either an analog or digital output and is compatible with conventional spectrum analyzers and CDMS monitoring software.

Output of the CDMS can be displayed on a monitor showing separate alarm thresholds for cold, hot, and screech tones. The combustion dynamics signals also can be moni-

tored remotely via the Internet, allowing experts to review results using predictive-maintenance and special diagnostic algorithms.

Control-valve repair solutions

Andy and Steven Balough, *Megawatt Machine Services,* Somerset, NJ
www.megawattmachine.com

The Balough brothers had a timely message for 7F owner/operators who had heard only two days earlier about the failure of a main-stop-valve seat, and the downstream damage it caused, from a colleague presenting on a steam-turbine major (p 36, Fig 17).

Frequent cycling causes valve trim to wear prematurely. The duo suggested that users consider upgrading material specs for trim when specifying new valves and when shop visits are necessary for repairs—particularly if you're seeing the same problem a second or third time. They discussed base-metal upgrades, heat treatments, and hard coatings and overlays.

One of the problems owner/operators sometimes face is that they don't know their high-energy valves are in need of repair until they are opened and inspected during an outage. If new trim is needed, ordering from the OEM can be expensive and delivery times long.

A third-party shop might have the solution you need to meet schedule requirements at a competitive price. But thorough due diligence on shop capabilities and performance is critical. You might want to think about doing this while in the outage planning phase, in case you need such services.

The Baloughs suggested you ask candidate vendors to provide their QA/QC manuals with ISO9001 certification. Plus provide a list of shop equipment available to perform the repairs you might need.

Critical capabilities for third-party shops, they continued, include the following:

- Reverse engineer trim to OEM specifications both in the shop and at the plant site.
- Provide both hard parts and soft goods.
- Perform all tests (alloy analysis, hardness, etc) and inspections required.
- Field service—including open and inspect valves, repair in place (including machining if required), close, stroke, and calibrate AOVs and MOVs. CCJ

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