

WESTERN TURBINEUsers

San Diego
March 2013

23rd Annual Conference and Exhibition

What's Inside:

- 3 President's Welcome
- 4 Technical Program
- 6 Social Functions
- 10 Convention Center Map
- 12 Conference Hotels
- 16 Honor Roll
- 18 Acronyms
- 20 Officers, Board of Directors
- 23 Breakout Session Chairs
- 24 Badge Rules
- 26 WTUI's Rich History
- 32 Gas Turbine Analytics
- 42 Exhibit Hall Floor Plan
- 42 Exhibitors (alphabetical)
- 46 Exhibitors (by booth number)
- 50 Sponsors

Mark your calendar

WESTERN TURBINE USERS

2014 Conference & Expo

Palm Springs, Calif
March 23-26

Renaissance Hotel
Palm Springs Convention Center

Conference Highlights

SUNDAY, March 10

5:30 pm to 8:30 Welcome Hospitality

Exhibit Hall, Sails Pavilion, San Diego Convention Center
Special raffles (users only) every 30 minutes beginning at 6 pm. Great prizes. Must be present to win; listen for announcements on the hour and half hour.

MONDAY, March 11

8:30 am to 10 Chairman Jon Kimble's Welcome

Ballroom 6, Sails Pavilion
WTUI's value proposition, program updates, treasurer's report, introductions, depot presentations. Sets the tone for the meeting; important to attend.

10:45 am to 12 Opening Session, LM2500 Breakout

Ballroom 9, Sails Pavilion
The LM2500 sessions will feature presentations/discussions on such important topics as DLE mapping, return from long-term storage, reducing startup times for cogen plants.

TUESDAY, March 12

8 am to 8:30 Worldwide Gas Turbine Business Report

Ballroom 6, Sails Pavilion
Mark Axford reflects on 2012 market statistics and gives his predictions for 2013. The Houston-based consultant's annual presentation is rated "two thumbs up" by most attendees.

3:30 pm to 4:30 Aero HRSG Users' O&M Discussion

Ballroom 8, Sails Pavilion
HRSGs critical to the success of cogen and combined cycles powered by LM engines get little respect at industry meetings outside Western Turbine. Here's an opportunity to share experiences on drum-type and once-through boilers and influence coverage of HRSGs at future meetings.

WEDNESDAY, March 13

1 pm to 4 NERC GADS Reporting Requirements

Ballroom 5A, Sails Pavilion
Stay longer, learn more. This first-time special post-conference session, sponsored by Strategic Power Systems Inc—the only non-ISO Designated Reporting Entity for NERC GADS filings now required for all thermal units rated 20 MW and above—will bring you up to date on the reporting process and requirements. A GADS expert from NERC will be on-hand to answer your questions. See Lynne Bellizzi at Booth 321 to reserve a seat.



LM6000 Controls Upgrade:

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WESTERN TURBINE Users

23rd Annual Conference and Exhibition

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WELCOME EVERYONE to the 23rd annual meeting of the Western Turbine Users Inc (WTUI). Our mission remains to advance the reliability and operability of the General Electric line of aeroderivative gas turbines.

Our purpose this week is a gathering of users, energy-industry product and service providers, General Electric Co, and the GE-authorized engine repair depots with the aim of sharing ideas, displaying products and techniques, and specifically acting to help our members meet their goals.

The dedication and innovative efforts of our members; the support of GE technical services in response to user experiences; and the collaboration of the users with GE and the repair depots have combined to make these engines some of the most reliable gas turbines in the field today.

The members of your all-volunteer Board of Directors, breakout-session chairmen, conference coordinators, GE-authorized repair depots, and our industry vendors and exhibitors have again prepared a great program. As always, our aim is to produce this technical conference in a pleasant venue at a low cost. The staffs of the Omni and Hilton hotels, and the San Diego Convention Center, have worked very hard to accommodate our group—and we appreciate their efforts. We hope you enjoy the attractions San Diego has to offer. A special thanks to all involved for making this conference something we look forward to every year. We hope you find your time spent with us valuable.

This is *your* conference. Your feedback and suggestions are welcome. Please let us know how we can better serve you by contacting one of the breakout-session chairmen, any member of the Board of Directors (look for the color-coded shirts), emailing us at info@wtui.com, or by simply completing and submitting the conference questionnaire provided.

Again, welcome to San Diego! Thanks for coming; enjoy yourselves.

Please accept our sincere wishes for continued success.

Jon Kimble, Wellhead Services Inc
President, WTUI

Mark your calendar

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USERS**

W.T.U.I.



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2014 Conference & Expo · March 23-26

Renaissance Hotel/Palm Springs Convention Center

The leading forum for aero users provides owner/operators of LM2500, LM5000, LM6000, and LMS100 gas turbines an opportunity to network with peers, and service providers, to identify opportunities for improving engine performance, availability, and reliability while holding emissions to the lowest practicable levels.

Program is under development. Prospective **delegates** and **exhibitors** are urged to contact WTUI conference staff today, by e-mail (info@wtui.com), and ask to be placed on the mailing list for meeting announcements as they are made available.



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TECHNICAL

Where to go (see floor plan, p 10)

Conference activities will be conducted in the San Diego Convention Center's Sails Pavilion

Registration: Sails Pavilion Lobby

Exhibition: Sails Pavilion Exhibit Hall

Breakfasts: Sails Pavilion

Luncheons: Sails Pavilion

LM2500 Breakout Meetings: Ballroom 9
Chair: John Baker, Riverside Public Utilities

LM5000 Breakout Meetings: Ballroom 10
Chair: Andrew Gundershaug, Calpine Corp

LM6000 Breakout Meetings: Ballroom 11
Chair: David Merritt, Kings River Conservation District

LMS100 Breakout Meetings: Ballroom 8
Chair: Don Haines, Wood Group Power Plant Solutions

Sunday, March 10

AFTERNOON

2:00 to 7:30 Registration
4:00 to 5:30 New User Orientation/SPS Introduction,
Ballroom 5A
Users only

EVENING

5:30 to 8:30 Welcome Hospitality, Exhibit Hall
All conference attendees and spouses/guests

Monday, March 11

MORNING

7:00 to 4:00 Registration
7:30 to 8:30 Breakfast
All conference attendees and registered meal-plan spouses
8:00 to 4:30 Exhibit Hall open
Must have name badge to enter
8:30 to 9:00 General Session, Ballroom 6
All conference attendees
9:00 to 10:00 Depot Presentations, Ballroom 6
All conference attendees
10:00 to 10:15 GE Services Presentation, Ballroom 6
All conference attendees
10:15 to 10:45 Break in Sails Pavilion Lobby
10:45 to noon Breakout Meetings: LM2500, LM5000, LM6000, LMS100 (all but the LM6000 session includes a presentation by SPS)
Users, Depots, and GE only

AFTERNOON

Noon to 2:30 Lunch/Exhibits
All conference attendees and registered meal-plan spouses
2:30 to 5:30 Breakout Meetings: LM2500, LM5000, LM6000, LMS100
Users, Depots, and GE only

EVENING

6:30 to 8:30 Monday Night Reception, Ballroom 6
All conference attendees and registered meal-plan spouses. Must have name badge and be 21 years or older for entry

PROGRAM

Tuesday, March 12

MORNING

- 7:00 to 8:00 Breakfast
All conference attendees and registered meal-plan spouses
- 7:30 to 4:00 Registration
- 8:00 to 4:30 Exhibit Hall open
Must have name badge to enter
- 8:00 to 8:30 Worldwide Gas-Turbine Business Update, *Ballroom 6*
Mark Axford, Axford Turbine Consultants LLC
All conference attendees
- 8:30 to 10:00 Breakout Meetings: LM2500, LM5000, LM6000, LMS100 (LM6000 session includes a presentation by SPS)
Users only
- 10:00 to 10:30 Break in Sails Pavilion Lobby
- 10:30 to noon Breakout Meetings: LM2500, LM5000, LM6000, LMS100
Users, Depots, and GE only

AFTERNOON

- Noon to 4:30 Lunch/Exhibits
All conference attendees and registered meal-plan spouses
- 3:30 to 4:30 Special Technical Presentations
All conference attendees
1. "Aero HRSG Users O&M Discussion," *Ballroom 8*
Ned Congdon, HRST Inc
 2. "NERC GADS Reporting," *Ballroom 9*
Tom Christiansen, SPS
 3. "Arctic Inlet Cooling," *Ballroom 10*
Chris Mieckowski, Kiewit Power
- 4:30 to 5:30 Special Technical Presentations
All conference attendees
1. "Costs of Cyclic Operations," *Ballroom 8*
Stephen Lefton, Intertek Aptech
 2. "SCR Performance Monitoring," *Ballroom 9*
Nathan White, Haldor Topsoe Inc
 3. "Engine Inlet Air Filtration Efficiency," *Ballroom 10*
Chris Clayton, AAF International

Wednesday, March 13

MORNING

- 7:00 to 8:00 Breakfast
- 8:00 to 10:30 Breakout Meetings: LM2500, LM5000, LM6000, LMS100
Users, Depots, and GE only
- 10:30 to 10:45 Break in Sails Pavilion Lobby
- 10:45 to 11:45 GE New Products Update, *Ballroom 6*
All conference attendees
- 11:45 to noon Wrap-up/Adjourn, *Ballroom 6*
All conference attendees

AFTERNOON

- 1:00 to 4:00 Special Post-Conference Session
All conference attendees invited. Please register at Booth 321
"NERC GADS Reporting Requirements," *Ballroom 5A*, Sponsored by SPS



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SOCIAL FUNCTIONS

Social events are critical to the success of every user group because they enable people to meet in a relaxed environment and expand their networks for problem-solving. The Western Turbine Users is hosting several "not-to-be-missed" functions in 2013 as part of the organization's 23rd annual conference; most would not have been possible without financial support from sponsors identified on signage in the Exhibit Hall. Please thank them when you have the opportunity.

The headline events are listed below. Note that buses will board passengers for the golf tournament, tennis tournament, and spouse tour right outside the Omni lobby; the golf bus also will stop at the Hilton. There are special fees for these activities.

Sunday events

Golf tournament will be held at the Riverwalk Golf Club, Sunday, March 10, from 7:30 am to 12:30. Buses depart from outside the Omni lobby at 6 am and at 6:15 from outside the Hilton lobby. Tournament Chair is WTUI VP Jim Bloomquist. He expects more than 100 golfers for the event.

Cutthroat competition is expected on this magnificent course (photo). Tough for plant personnel to keep their games in top form these days given the demands of operating with such lean staffs. Vendors, by contrast, are much more likely to get in practice time for this important annual tourney.

Riverwalk is steeped in a rich tradition of golf legends past, offering a classic golfing experience. Formerly known as the Stardust Country Club,



The citizens of San Diego take great pride in their Old Town park

the course has entertained myriad golf legends. It hosted the PGA tour during the 1950s and 1960s. Today's golfers are treated to the challenges and drama of the original course at the reborn Riverwalk.

What was once flat now features undulating fairways, waterfalls, and well-protected bentgrass greens. Water comes into play on 13 of the 27 holes with a spectacular waterfall surrounding the green of the signature hole. The San Diego River is a prominent feature of the layout, contributing to the beauty and challenge of the course.

As in past years, the WTUI tournament will be a four-person (sometimes three or two), 18-hole, shotgun scramble format. Prizes will be awarded for lowest team score, men's and women's long drives, and closest to the pin.

Tennis tournament, Balboa Tennis

Club, Sunday, March 10, from 10 am to 1 pm. Bus departs at 9:30 from outside the Omni lobby. Tournament Chair Jim Hinrichs expects about a dozen players.

For those who have not played at this club previously, here are some historical facts:

- It dates back to 1922 when six courts were constructed adjacent to the present War Memorial Building. The club moved to its present location in Balboa Park in 1966 and today has 25 hard courts.
- Balboa Tennis Club was rated "America's Best Public Tennis Facility" by the US Tennis Assn in 1989.
- The San Diego District Tennis Assn named Balboa "Club of the Year" in 2000.
- The US Tennis Assn presented the club its "Outstanding Tennis Facility" award for large facilities in 2003.



More spectators are assured when Jim Hinrichs and the WTUI tournament players are out on the courts



Water comes into play on 13 of the 27 holes, including this spectacular waterfall

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In July 2011, TCT opened a new, custom-built overhaul and repair facility in Airdrie, Alberta. Conveniently located 20 minutes north of Calgary, Alberta, the new facility houses production, project management and support staff for both TCT's General Electric Level 4 services and Rolls-Royce MROC services. This purpose-built facility is 220,000 square feet and is complete with state-of-the-art equipment and tooling. TCT is proud to offer all of its customers immediate induction for all engine types.

TCT has completed construction on a state-of-the-art LM6000 test cell, located in Calgary.

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Welcome Hospitality Reception, Sunday evening, will be held in the San Diego Convention Center's Sails Pavilion Exhibit Hall, from 5:30 to 8:30. This event, which includes the opening of the exhibition, is a very special function, says WTUI Treasurer Wayne Kawamoto. All conference attendees and spouses/guests are invited. Don't miss it! To locate the Exhibit Hall on the upper level of the Convention Center, see the facility layout on page 10.

Monday events

Spouse "tour" on Monday is to Old Town San Diego, known as the "Birthplace of California." Bus departs at 9 am outside the Omni lobby for a day of sightseeing, historic storytelling, entertainment, as well as shopping in 40 unique gift stores—including a few with working artisans. A highlight is the free museum that charts the history of the old city. There's time for lunch, of course. Bus returns to the Omni at 3 pm.

According to Wikipedia, Old Town is a 29-acre state park listed in the National Register of Historic Places. It is classified as a US Historic District, as well as a historic landmark by both the state of California and city of San Diego. The popular park, established in 1968, commemorates the early days of San Diego and has many buildings built between 1820 and 1870, including five adobes.

The San Diego area was the site of the first European settlement on the West Coast of the present-day US. It began life as the San Diego Presidio, a military outpost of Spanish California, in 1769. A mission was established in the same year. The presidio and mission were built on a bluff, now the site of the city's Presidio Park, which is immediately adjacent to Old Town State Historic Park.

Over time, as the threat of attack by hostiles decreased, settlers came down from the bluff and established the town of San Diego at its base. During the pueblo period following Mexican independence, the Old Town area was the commercial and governmental hub of the region, even though its population was never more than a few hundred. When California became a state in 1850, San Diego—still largely limited to the Old Town area—was made the county seat of San Diego County.

The Old Town area remained the heart of the city until the 1860s, when newcomers to the area established businesses closer to the coast to facilitate access to ocean shipping. In the early 1870s, government records were moved from Old Town to a new county courthouse in "New Town," which soon eclipsed the old settlement as the focal point of San Diego business.

The Monday Night Reception, sponsored by WTUI, will have a sports theme this year. The fun event, called "WTUI Sports Park," will be held from 6:30 to 8:30 in Ballroom 6 of the Convention Center's Sails Pavilion—a little more than a baseball's throw away from Petco Park. Imagine the largest sports bar you have ever seen, filled with your friends and colleagues. The evening will feature games, photos, and food—everything a sports bar and sports park would have.

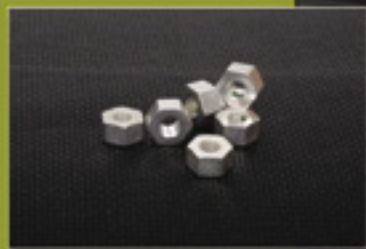
IMPORTANT: The Monday Night Reception is for all conference attendees and registered meal-plan spouses ONLY. You MUST have your conference badge with you to attend this event. NO EXCEPTIONS.

There's plenty to do after the reception ends. For example, the Gaslamp District, a historic neighborhood right down the street from the Convention Center, offers a wide variety of restaurants, bars, and shops.

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Visit www.agtsi.com/calendar.html to request our free 2013 calendar.



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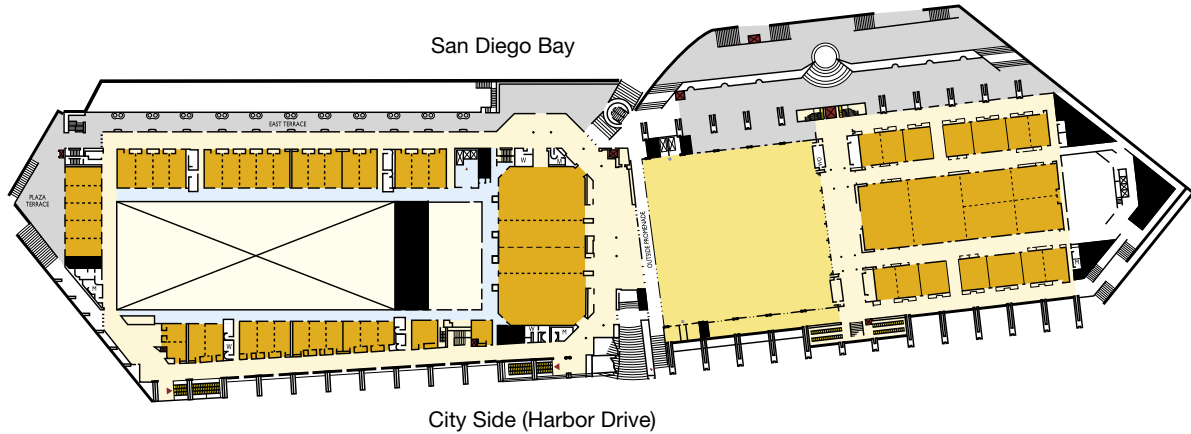
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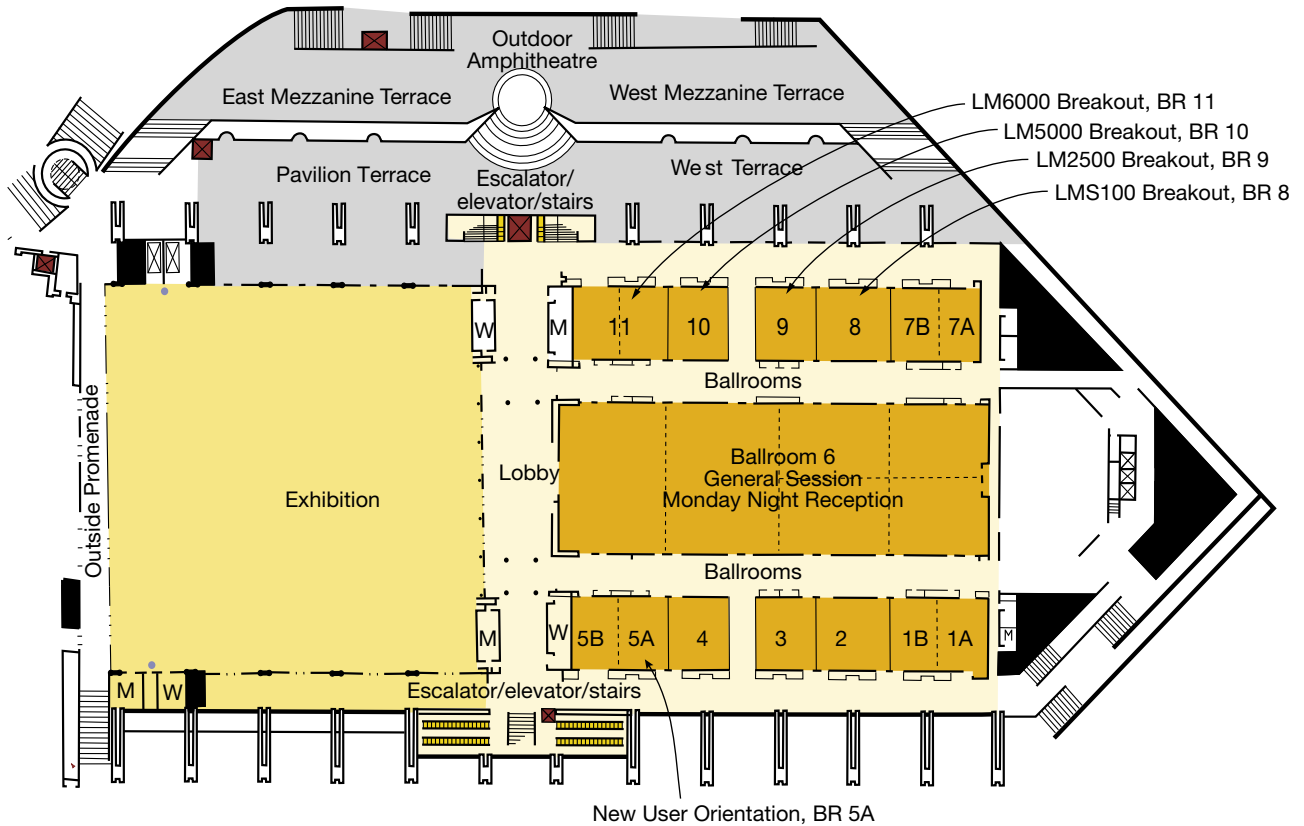
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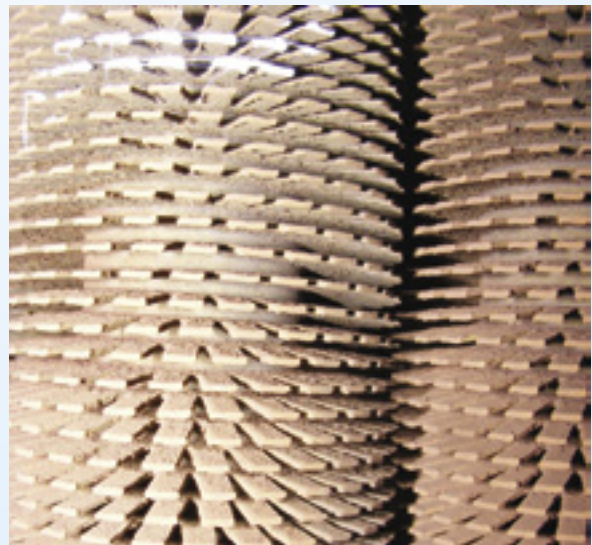
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“I commend them on their ability, attitude, and professional manner in which they conduct their business” – *Contact Energy*

“Your crew was very professional and knowledgeable about the cleaning process and the reason for cleaning HRSG tubes” – *Power South*

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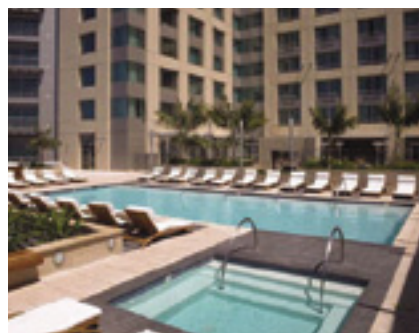
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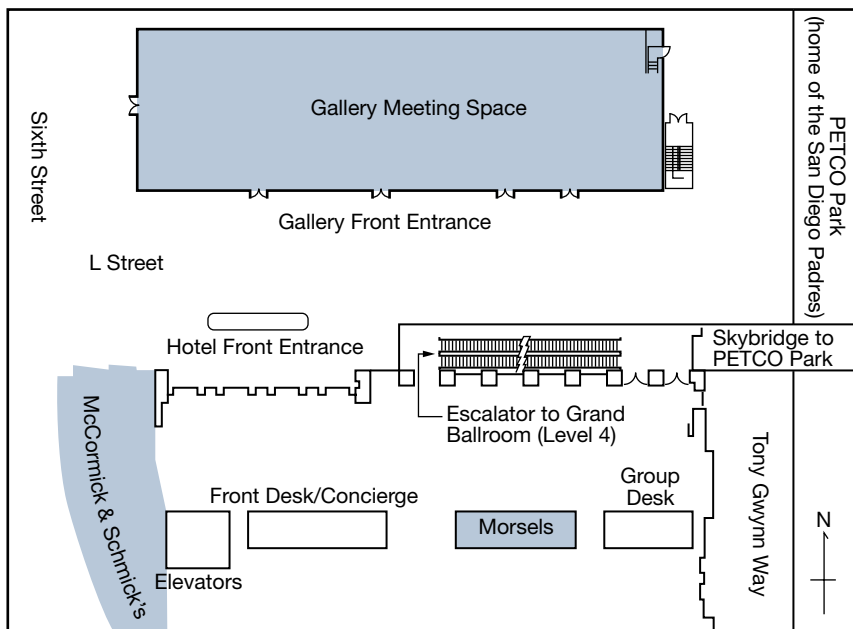
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Omni Locations

Lobby

- Gallery Meeting Rooms 1 – 3
- L Street Fine Art
- McCormick & Schmick's
- Morsel's

Fourth Level

- Business Center
- Gaslamp Meeting Rooms 1 - 5
- Grand Ballroom (Salons A – E)
- Hall of Fame
- Skybridge to PETCO Park

Fifth Level

- Balboa Meeting Rooms 1 – 4
- Executive Conference Room
- Sales and Catering Office

Sixth Level

- Boardrooms 1 and 2
- Fitness Center and Pool
- Palm and Sail Terraces
- Terrace Suites

19th Floor

- Skybox Executive Boardroom

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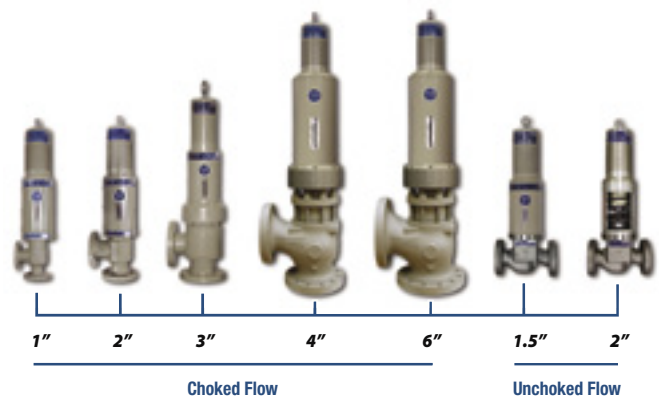
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Isolation Valve



Isolation Valve in Double Block & Bleed Format

9200 Series Isolation Valves ~ A single stage, solenoid operated, pilot controlled, drop-in replacement isolation valve. This high temperature shutoff valve closes in less than 100ms and has a Cv of 72. A double block and bleed configuration is also available.



8641 Series Natural Gas Fuel Valve Assembly ~

A balanced double-poppet, all electric valve for gas turbine fuel/flow control. Operated by a Y&F 1100 Series Digital Motor Controller, the 8641 is a retrofit replacement for the Y&F 7-5078 Hydraulic Actuator/ Butterfly Valve and OEM Loader fuel control system on Solar Gas Turbines. The 8641 is designed for use on small turbines (1-20MW).

IGV Actuation Technologies

Currently in development is the **8650 Series All-Electric Inlet Guide Vane Actuator**, which is the first and only all electric IGV actuator to be introduced to the market. Scheduled for release in late 2013, the 8650 eliminates the oil leaks and varnish issues associated with hydraulic actuators, is scalable with forces up to 40,000 lbf, and has a drop-in footprint for easy replacement of many earlier hydraulic units.



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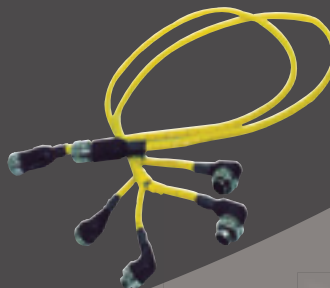
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ACRONYMS TO REMEMBER

AGB—Accessory gearbox (also called the transfer gearbox)	IRM—Industrial repair manual
AVR—Automatic voltage regulator	LM—Land and marine
CCM—Condition maintenance manual	LCF—Low-cycle fatigue
CCR—Customized customer repair	LO—Lube oil
CFF—Compressor front frame	LPC—Low-pressure compressor (not on LM2500; just LM5000 and LM6000)
COD—Commercial operating date	LPCR—Low-pressure compressor rotor
CPLM—Critical-parts life management	LPT—Low-pressure turbine
CRF—Compressor rear frame	LPTR—Low-pressure turbine rotor
CWC—Customer web center (GE)	LPTS—Low-pressure turbine stator
DEL—Deleted part	NGV—Nozzle guide vane
DLE—Dry, low emissions combustor	OEM—Original equipment manufacturer
DOD—Domestic object damage	PN—Part number
EM—Engine manual	PT—Power turbine (turns a generator, pump, compressor, propeller, etc)
FFA—Front frame assembly	PtAl—Platinum aluminide
FOD—Foreign object damage	RCA—Root cause analysis
FPI—Fluorescent penetrant inspection	RFQ—Request for quote
FSNL—Full speed, no load	RPL—Replaced part
GG—Gas generator (consists of the compressor and hot sections only)	SAC—Single annular combustor
GT—Gas turbine (consists of the gas generator pieces with the power turbine attached)	SB—Service bulletin
HCF—High-cycle fatigue	SL—Service letter
HGP—Hot gas path	SUP—Superseded part
HPC—High-pressure compressor	STIG—Steam-injected gas turbine
HPCR—High-pressure compressor rotor	TA—Technical advisor
HPCS—High-pressure compressor stator	TAT—Turnaround time
HPT—High-pressure turbine	TAN—Total acid number (lube oil)
HPTN—High-pressure turbine nozzle	TBC—Thermal barrier coating
HPTR—High-pressure turbine rotor	TGB—Transfer gearbox (also called the accessory gearbox)
IGB—Inlet gearbox	TMF—Turbine mid frame and thermal mechanical fatigue
IGV—Inlet guide vane	VBV—Variable bleed valve (not on LM2500; just LM5000 and LM6000)
IPT—Intermediate-pressure turbine (LMS100)	VIGV—Variable inlet guide vanes
	VSV—Variable stator vane

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Meet WTUI's officers, directors

Officers

Jon Kimble

President

This is Jon Kimble's 23rd year working in all phases of gas-turbine power-plant development, construction, commissioning, O&M, administration, shutdown, and decommissioning. He's been a WTUI member most of that time, serving on the Board of Directors from 2004 to 2007 and as President since 2008. Jon is employed by Well-head Services Inc.



Pa. Previously, he was Plant Manager of PPL Generation LLC's Lower Mount Bethel Energy LLC. Before that assignment, he was responsible for the company's simple-cycle peaking gas turbines located in Connecticut, Pennsylvania, and Illinois. Lewis served six years in the US Navy as a Gas Turbine Specialist, rising to the rank of Petty Officer First Class before taking a shore-side job.



Board Member and is now one of the organization's VPs. He has 36 years of service with Chevron and is a subject-matter expert specializing in major power systems, process facilities, and gas-turbine generation. In his current position, Jim leads the Electrical Engineering Team for Chevron's California San Joaquin Valley Business Unit (an upstream oil producing company).

Chuck Casey

Secretary

Chuck is Generation Manager for the Riverside (Calif) Public Utilities. Riverside is the third largest municipality in the state and supplies power to over 105,000 resi-



Bill Lewis

Vice President

Bill is Plant Manager of a 700-MW combined-cycle facility in Lebanon,

Jim Bloomquist

Vice President

Jim has served as a



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dents and businesses. Before joining Riverside in 2006, he worked as an operator, I&E technician, and plant manager for Stewart & Stevenson, General Electric Co, and PurEnergy. Chuck began his career as a nuclear electrician on US Navy fast attack submarines. He currently serves WTUI as Secretary, Co-Exhibit Hall Manager, and Assistant Webmaster; previously Chuck was LM6000 Break-out Session Chair and a member of the Board of Directors.

Wayne Kawamoto

Treasurer

Wayne is one of the founders of the Western Turbine Users and has served on the Board and as Treasurer since incorporation. He has a BS degree in Civil Engineering from the Univ of Hawaii and has held numerous positions in project management throughout his 38 years of professional employment. Wayne is the Plant Manager of Corona Energy Partners Ltd.



Board of Directors

David Merritt

Board Member

David joined Kings River Conservation District in 2010 as the Deputy General Manager of Power Operations. KRCD owns and operates two LM6000PCs at the Malaga Peaking Plant and the 3 x 55-MW Pine Flat (165 MW total) Hydroelectric Plant. Previously, he spent 19 years in the O&M groups of GWF Power Systems/GWF Energy LLC. There David managed three facilities, four LM6000 peakers, and a 23-MW solid-fuel-fired combustor with steam turbine. Prior to GWF, he served in the US Navy.



John Baker

Board Member

John is a Plant Manager for Riverside Public Utilities. Previously he was O&M Manager for Calpine Corp's Bethpage Energy Center in Hicksville, NY, where

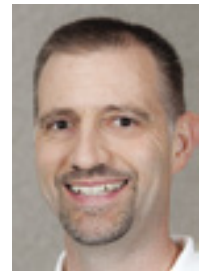
he was responsible for two LM2500s and two LM6000s. He started his gas turbine career with Calpine at Watsonville, later working at the company's Agnews and Los Esteros facilities before moving to the East Coast. Prior to Calpine, John was in boiler operations at Foster Wheeler Energy Corp.



Brad Hans

Board Member

Brad is the Plant Supervisor at Terry Bundy Generating Station for Lincoln Electric System, a Nebraska municipal utility. Bundy is a 3 x 1 LM6000-powered combined-cycle facility. Brad came to LES from the John Deere Engine Works. The professional engineer began his career with the Navy Civil Engineer Corps.



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Donald Stahl

Board Member

Donald is Plant Manager for the Pueblo Generation Facilities in Colorado. He manages two powerplants totaling 380 MW of utility and non-regulated generation owned by Black Hills Energy—Colorado Electric and Black Hills Colorado IPP, respectively. Stahl came to the company in 2010 to manage installation and commissioning of the two LMS100s and four LM6000s at Pueblo.



industry, specializing in plant O&M. Alvin spent nine years in the US Navy, mustering out as Machinist Mate First Class. He has served on the WTUI Board of Directors since 2008.

Ed Jackson

Board Member

Ed is Plant Manager of Missouri River Energy Services' Exira Generating Station in Brayton, Iowa. His gas-turbine experience includes Allison 501s, Solar Centaurs, LM2500s, and LM6000s. Previously he was a combined-cycle plant supervisor at Maui Electric Co and a field service and commissioning engineer for Stewart & Stevenson. Jackson spent eight years in the US Navy as a GT systems technician (electrical).



2, Yuba City Energy Center, and Feather River Energy Center. He has been with Calpine since entering the power industry in 1998 as an IC&E technician at the Watsonville Cogeneration Plant after graduating from UC Santa Cruz. Over the last 14 years, Andrew has specialized in control-system operation and maintenance for LM2500, LM5000, and LM6000 engines.



Alvin Boyd

Board Member

Alvin is the Manager of Operations and Maintenance at Kings River Conservation District's Malaga Peaking Plant. KRCD, a lead resource management agency, currently supplies power to the California Dept of Water Resources. He has over 25 years working in the power



Andrew Gundershaug

Board Member

Andrew is the operations manager for several of Calpine Corp's generation assets in the Yuba City area of Northern California: Greenleaf 1, Greenleaf

Supporting Members

Wayne Feragen

Webmaster

Wayne is Senior West Coast Plant Manager for Noreasco, currently responsible for powerplants in Colton, Calif, and San Diego. Wayne has over 21 years of powerplant experience, starting as a Gas Turbine Electronics Technician First Class in the US Navy. After leaving





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the service, he went to Newark Pacific Paperboard and ran an LM2500. After that, he worked at two Sunlaw plants running LM2500s. Wayne has served as WTUI's Webmaster for the last six years.

Charlene Raaker

Conference Coordinator

As WTUI's Conference Coordinator (and Mike Raaker's better half), Charlene has been supporting the organization for almost as long as it has been in existence. Charlene's is the "voice on the other end of the line" whenever anyone calls the group.



Mike Raaker

Technical Consultant

What do diapers, toilet paper, jet engines, and WTUI have in common? Mike Raaker. He



started his career at Procter & Gamble, assigned to install a cogeneration plant at the company's towel and tissue plant in Oxnard, Calif. The LM2500-powered facility would keep Mike busy for the next 30 years and would lead to his, and wife Charlene's, participation in WTUI.

Joella Hopkins

Conference Coordinator



Jennifer Minzey

Conference Coordinator



Mumtaz Marketing & Events has been assisting the WTUI Board in producing the conference for the past several years. Mumtaz has produced the past several Monday Night events, assisted with the registration process, coordinated the spouse tours, and has made the WTUI conference

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Breakout session chairs

LM2500

John Baker

Board Member

John is a Plant Manager for Riverside Public Utilities. Previously he was O&M Manager for Calpine Corp's Bethpage Energy Center in Hicksville, NY, where he was responsible for two LM2500s and two LM6000s. He started his gas turbine career with Calpine at Watsonville, later working at the company's Agnews and Los Esteros facilities before moving to the East Coast. Prior to Calpine, John was in boiler operations at Foster Wheeler Energy Corp.



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Special one-day pass.

These attendees include students, press, convention/hotel special guests, and city officials.

Requests submitted by special interest groups/individuals that have been approved in advance by the board of directors.

Gray

Board of directors, officers, and staff (including SPS note-takers).

Elected members of the board of directors, appointed officers, and conference staff.

LM5000

Andrew Gundershaug

Board Member

Andrew is the operations manager for several of Calpine Corp's generation assets in the Yuba City area of Northern California: Greenleaf 1, Greenleaf 2, Yuba City Energy Center, and Feather River Energy Center. He has been with Calpine since entering the power industry in 1998 as an IC&E technician at the Watsonville Cogeneration Plant after graduating from UC Santa Cruz. Over the last 14 years, Andrew has specialized in control-system operation and maintenance for LM2500, LM5000, and LM6000 engines.



LM6000

David Merritt

Board Member

David joined Kings River Conservation District in 2010 as the Deputy General Manager of Power Operations. KRCD owns and operates two LM6000PCs at the Malaga Peaking Plant and the 3 x 55-MW Pine Flat (165 MW total) Hydroelectric Plant. Previously, he spent 19 years in the O&M groups of GWF Power Systems/GWF Energy LLC. There David managed three facilities, four LM6000 peakers, and a 23-MW solid-fuel-fired combustor with steam turbine. Prior to GWF, he served in the US Navy.



LMS100

Don Haines

As Plant Manager for Wood Group Power Plant Solutions at the Panoche Energy Center, Don is in charge of four LMS100s. Before joining Wood Group, he worked at the City of Santa Clara for more than 18 years, serving the city's generation assets in technical and management capacities. Before moving to Santa Clara, Don served for six years on the USS Ingersoll.



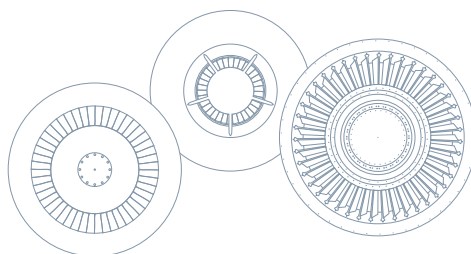


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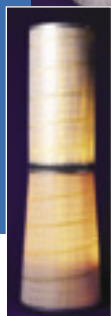
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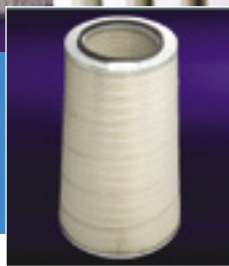
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WTUI's rich history

The Western Turbine Users Inc celebrates its 23rd anniversary this year. While there have been an incredible number of changes in the electric power industry since WTUI was founded, the organization's mission has never wavered. It remains: "To provide members a forum for the exchange of technical, operations, and maintenance information and experience to improve the reliability and economic viability of GE LM series power facilities."

If this is your first Western Turbine conference, it's difficult to imagine how much you have missed. Advice for first-timers: Attend the sessions and listen carefully, meet fellow users at social events, speak with vendors at the expo, and you'll leave San Diego with more knowledge than you ever thought you could absorb.



WTUI veterans know that the success of this conference did not just happen by accident. The word "serendipity" does not apply to WTUI. Its success has been built on the efforts of dedicated people with vision and a long-term commitment to their industry—and to each other. Now, after 23 years of hard work, a meeting that started out in a few plant break rooms has been transformed into a world-class conference that attracts a global audience.

The first meeting of the incorporated organization was in Sacramento, March 1991. There were 130 registered attendees—including users, vendors, spouses, and guests. The Board included John Tunks, Ernie Soczka, Bob Fields, Jim Hinrichs, Wayne Kawamoto, and Steve Johnson. You'll find their names inscribed on the group's "Honor Role," p 16.

At that meeting, Hinrichs became the WTUI president, a position he was to hold for 17 years. Other founding members of the organization who were present included Mike Raaker, Jack Dow, Jim Bloomquist, and Brian Hulse. You're sure to bump into several of these pioneers in the San Diego Convention Center. When you do, be sure to say "thank you."

Breakouts. From the beginning, the two and a half

1 > 2

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days of breakout sessions covering each LM product line have provided the foundation for sharing knowledge and solving problems. These invaluable sessions provide the opportunity for users to openly discuss installation and commissioning issues, O&M concerns, lessons learned, and the opportunities for plant improvements.

Technical discussion covers the engine, package, controls and all ancillary systems. The intent is to share and document, thereby creating a history through the notes of relevant and meaningful "real life" experiences to help the operating community improve as a group.

Over the years, discussion leaders for the breakout sessions have included Jimmie Wooten, Frank Oldread, Johnson, Grant McDaniel, Joel Lepoutre, Roy Burchfield, Norm Duperron, Mel Murphy, Bob Anderson, Charlie Hook, Kevin Koszalka, James Hardin, Bob Mason, Rich Frank, Chuck Casey, Bob Nelson (now deceased), Chris Kim-mich, Bill Lewis, John Baker, Bryan Atkisson, James Charles, Chuck Toulou, Don Haines, and Mark Breen.

The hard work and dedication of the discussion leaders is what makes the breakout sessions so successful and meaningful. Plus, the technical



sessions have been strongly supported by GE and the OEM's authorized repair depots, adding to their value. For the last several years the lineup of depots has been TransCanada Turbines, IHI, Avio, Air New Zealand (now ANZGT Field Services), and MTU Maintenance Berlin-Brandenburg.

The winds of change. WTUI conferences continue to grow annually, providing opportunities to renew old friendships and establish new ones. Equally important, the conference attracts a significant percentage of new users and attendees each year who bring fresh ideas and perspective vital to long-term health.

Continuing growth testifies to the Board's hard work and to the increasing value and need for face-to-face information exchange. Such success, however, brings change and occasionally presents very real challenges to the relatively small group of volunteers who make WTUI happen.

President Jim Hinrichs and the Board in place during the first few years of the new millennium faced significant challenges as the need for WTUI's services increased markedly while the duty cycle for the LM sector of the industry was migrating from base- to part-load generation and there was a question as to whether GE could continue to support WTUI with the same commitment as it had in the past.

The good news was growing conference attendance, which went from an average of 470 in the 1996-2000 period to 667 from 2001 to 2005. Since then attendance has averaged more than 800. With this success came the difficulties associated with venue selection; relatively few locations can accommodate groups of this size. Plus there were the additional workloads associated with registration, meeting attendee expectations, etc. More hands were needed; the volunteers could no longer do everything.



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Both the organization and its owner/operator members also were forced to adjust to market influences. The once dominant cogeneration market was contracting; units were operating fewer hours per start and they were beginning to cycle. This market shift was chronicled by Charlotte-based Strategic Power Systems Inc. A report presented at the 17th annual conference in Phoenix based on information retrieved from the company's ORAP® data collection and analysis system stated, "Two operating pro-

files are distinctly visible: A base-load duty between 1995 and 1999, and a cycling duty between 2002 and 2006. The years 2000 and 2001 appear to be a transition period where the shift in duty cycle began." Access the latest performance trends in SPS President Sal DellaVilla's article on p 32.

As the duty cycle was changing, the LM6000 and LM2500 engines solidified their positions as the product lines for growth, and component life, coatings, and emissions were the issues that had to be addressed.

Growth of depot support. It was during the market evolution that GE communicated to the Board that it would not be able to sustain WTUI support at the same level as in the past. The Board took that in stride, solidifying its relationships with the Depots and redoubling its efforts to assure that the annual meeting's technical content, and the currency and relevancy of issues covered, would continue to meet expectations. Larry Flood, Rich Recor, Mike Horn, Mike Pankratz, Joe Campanelli, John Cates, Robert Kofsky, and others put in extra hours to ensure that WTUI's mission would be sustained.

The formal event in San Diego begins—as it has for years at other venues—on Sunday afternoon with the New User Orientation, which is followed by the opening of the exhibit hall. Jack Gunsett conducted the orientation for years, eventually passing the baton to Oldread, who passed it to Bob Boozer a couple of years ago. The goal of the session is to introduce first-timers to LM engines, terminology, nomenclature, and other hands-on knowledge and experience to prepare them for the discussions that would take place during the breakout sessions beginning the next day.

Monday morning the conference starts. The months of preparation by the Board, the breakout-session chairs, and the Depots kick the meeting into high gear. WTUI officers Bill Lewis and Chuck Casey once again have filled the exhibit hall with product and service providers who can help you.

WTUI President Jon Kimble and the Board work diligently and effectively to keep "the shine on the apple." Speakers like Mark Axford, principal, Axford Turbine Consultants LLC, Houston, who probably sold or directed the sale of most LM units when he was with Stewart & Stevenson, and for a time at GE, provides a "Worldwide Gas Turbine Business Update" that is second to none. Other presentations from the Depots and GE provide product updates that are both informative and responsive to user needs and interests.

In the electric power industry, there are many conferences and user groups, all founded with a desire to add value. And they do. But WTUI is special. It is celebrating its 23rd anniversary not just because of the desire and need to share information and knowledge, but rather because it is genuinely focused on the user.



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Pedigree and performance: the 'Test of Champions'

By **Salvatore A DellaVilla Jr.**, CEO, Strategic Power Systems Inc



On June 9, 1973, history was made in Elmont, NY, the town just outside of New York City famous for hosting the Belmont Stakes. That day, a crowd of 67,605 racing enthusiasts, plus another 10.9 million watching on TV, waited to see if a three-year-old thoroughbred named *Secretariat*, chestnut brown with a strong pedigree, would take the Triple Crown—a coronation that had not occurred since 1948.



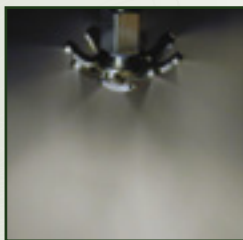
Secretariat, would not disappoint in the "Test of Champions."

The Belmont Stakes, the longest of the three Triple Crown races at 1½ miles, is a test of agility, speed, power, and endurance. The opportunity to challenge for the Triple Crown begins with wins at the Kentucky Derby (1¼ miles) and the Preakness Stakes (1⅜ miles). Within a two-week period, *Secretariat* had won both the Derby and Preakness by 2½ lengths over a formidable contender

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named *Sham*, which also came from a strong pedigree. He might have been a Triple Crown contender at a different moment in time.

Three weeks after the Preakness, only *Sham* and three other horses were in the Belmont starting gate with *Secretariat*, hoping to spoil his chance for a Triple Crown and continue the 25-yr drought.

It was not to be.

¹^{hd}, ¹^{hd}, ¹⁷, ¹²⁰, ¹²⁸, ¹³¹. After a fast start, *Secretariat* was leading *Sham* by a head at the first quarter pole. He maintained that lead through the half and then began pulling away. "Big Red" blew by the mile pole seven lengths ahead of *Sham* and the challenger faded. He would finish last.

Secretariat extended his lead to 20 lengths over the next quarter of a mile, increased it to 28 lengths down the stretch, and finished 31 lengths ahead of *Twice a Prince* in record time. The 2:24 *Secretariat* logged that day still stands as a world record for the mile and a half on a dirt track.

Many people who have seen that race still feel the excitement in the voice of Belmont Announcer Chick Anderson, "*Secretariat* is alone: He is moving like a tremendous machine!"

Table 1: General characteristics of frame gas turbines by class

Market segment	Base rating, MW	Efficiency, %	Firing temperature	Pressure ratio	State-of-the-art technology	Year introduced
Legacy engines	<100 (50 Hz) <70 (60 Hz)	SC: <34 CC: <55	<1093C <2000F	<12	None	<1985
"E" class	>100 (50 Hz) >70 (60 Hz)	SC: <34 CC: <55	>1093C >2000F	<15	Air-cooled turbine blades	<1995
"F" class	>200 (50 Hz) >150 (60 Hz)	SC: >34 CC: >55	>1260C >2300F	>15	Aeroderivative compressor design Dry low-emissions combustor DS or single-crystal turbine blades Sequential combustion	>1995
"G," "H" classes	>300 (50 Hz) >200 (60 Hz)	SC: >37 CC: >58	>1370C >2500F	>18	Advanced HGP cooling Active clearance control	>2005
"J" class	>450 (50 Hz) >300 (60 Hz)	SC: >39 CC: >60	>1600C >2900F	>25	Advanced combustor cooling Advanced thermal barrier coating	>2009

Source: Strategic Power Systems Inc and Electric Power Research Institute
Notes: (1) The criteria described in the table are determining factors in the classification of individual designs and are listed in priority order from left to right. (2) State-of-the-art technology refers only to the technology introduced in a design at the date of introduction; it does not refer to retrofits made to enhance existing technology. (3) Efficiency is stated for both simple-cycle (SC) and combined-cycle (CC) applications using the lower heating value of fuel. (4) Base rating represents the simple-cycle equipment only.

Another tremendous machine

The energy industry continues to advance, in large part, because of tremendous *machines*, gas turbines (GTs) in particular, whose pedigree and performance improve to meet the demands of an ever-changing and challenging market. Today's drivers influencing operations and maintenance, as well as new product design, include the following:

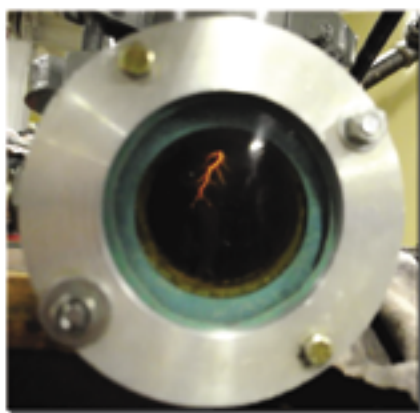
- Fast start-up times.
- Impact of cyclic duty on parts life and maintenance schedules.
- Load-following and -shedding to the lower and lower outputs

required to accommodate swings associated with intermittent renewables, all while continuing to meet rigorous emissions standards.

- The value of reserve or "sitting" capacity.

For owners and OEMs alike, success depends on the flexibility and responsiveness of their machines to start and reach rated power in less time than the competition, and to do so more efficiently and more reliably over time and within operating constraints imposed by regulations. In effect, to have the opportunity to be "in the money" at all times. This, too, is a "Test of Champions."

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The background of the advertisement is a collage of industrial and maritime images. At the top, there are large industrial pipes and structures. Below that, a large cargo ship is visible on the left. In the center, a ship's superstructure with multiple gun turrets is prominent. To the right, there's a large industrial facility with tall smokestacks and various buildings, all illuminated at night. The Kellstrom logo, featuring a stylized sunburst icon, is positioned to the left of the company name.

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Table 2: Gas-turbine models arranged by peer group and OEM

Legacy engines	Frame gas turbines				Aeroderivative gas turbines	
	"E" class	"F" class	"G," "H" classes	"J" class	<40 MW	>40 MW
Alstom GT8/8B GT9	Alstom GT8C GT11N/N1 GT11NM/11N1M GT11N2 GT13E/E1 GT13E2	Alstom GT24 GT26	GE MS9001H MS7001H	Mitsubishi M701J	GE LM1600 LM2500	GE LM5000 LM6000
GE MS5001 MS5002 MS6001B MS7001A-C MS9001B	GE MS7001E/EA MS9001E	GE MS6001F/FA MS7001F/FA MS9001F/FA MS7001FB MS9001FB	Siemens SGT6-6000G	Mitsubishi M501G M701G	Rolls Royce Avon RB211	Rolls Royce Trent
Siemens W251 W501A/B SGT-700 SGT-800 V64.3	Siemens W501D SGT5-2000E SGT6-2000E SGT6-3000E W701D	Siemens V84.3 SGT-1000F SGT5-4000F SGT6-4000F SGT6-5000F			Pratt & Whitney FT4 FT8	Siemens GTX100
	Mitsubishi M501D M701D	Mitsubishi M501F M701F				

Table 1 charts the evolution of the "heavy duty" (more commonly referred to today as "frame") GTs by class, or pedigree, from the legacy engines to "J" class. For these machines, product evolution is characterized by output, thermal efficiency, firing temperature, compressor ratio, and use of the latest technologies available—such as enhanced airfoil cooling, ultra-low-emissions combustion, and advanced metallurgy.

For aeroderivative product offerings, the pedigree has evolved from an aviation heritage, drivers of advancements in technology, addressing similar design issues and constraints as these products are placed in land-based applications.

OEM product offerings fit into the pedigree classes or "peer groups" shown in Table 2. Engines in each class compete based on installed cost, O&M

cost, and performance (both thermal and operational).

To compare operational performance by pedigree, data extracted from the Operational Reliability Analysis Program (ORAP®) are presented in Table 3. Reliability/availability/maintainability (RAM) data are shown for the aeroderivative, "E," and "F" classes of engines characterized in the first two tables.

The metrics presented were developed from data gathered across the globe from plants operating in various duty cycles that participated in the ORAP program in 2012, as well as during 2007-2011. The information is presented by peer group and by duty cycle. The latter is indicative of the mission profile that these units must meet and is represented by the following parameters:

- Annual service hours.
- Annual starts.
- Service hours per start.
- Service factor.
- Capacity factor.
- Availability.
- Reliability.

Here's an assessment by SPS engineers of the data included in Table 3:

Peaking units. Units that have historically operated in a peaking duty cycle offer some interesting comparisons

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when comparing 2012 performance to average annual data for the prior five-year period (2007-2011). They are:

- In 2012, peaking units across all classes (aeroderivative, "E," and "F") had significantly more annual service hours than they did in 2007-2011. Specifically, both aero and "E" peakers ran about 40% more service hours in 2012 than in the previous five-year period, "F" class units about 34% more.
- The mission profile for peakers across all peer groups in 2012 compared to 2007-2011 reflects more starts, more service hours per start, and higher capacity factors. Yet, as expected, these units were in reserve standby for most of last year: 7358 hours for aeros, 7840 hours for "E" class units, 7236 for "F"
- Availability and reliability factors are very consistent period over period. For both 2012 and 2007-2011, planned and unplanned maintenance were the primary drivers of unavailability for all classes. Last year they contributed 315 downtime hours for aeros, 307 for "E" class units, and 394 downtime hours for "F" class.

Cycling units also provide some

noteworthy comparisons for the two time periods:

- Both classes of frames ran more hours in 2012 than they did in the earlier period: "E" engines about 45% more service hours, "F" class about 21% more. Aeros operated consistently. Service hours in 2012 decreased by only about 1% compared to 2007-2011.
- "E" and "F" engines operated substantially more service hours per start in 2012—73% and 52%, respectively—over 2007-2011 levels. This reflects a significant increase in unit demand. Aeros also ran more service hours per start in 2012, but had the smallest increase of the peer groups (about 20%).
- All classes experienced fewer annual starts in 2012—about 17% less for aeros and about 20% less for "E" and "F" class units. Also important to note is that the demand profile for all classes of cycling units does not show 200 annual starts. Service factors and capacity factors for cycling units increased period over period, indicating a change in demand or mission profile.
- In 2012, only aeros improved in

both availability and reliability, compared to 2007-2011. They had about 61 fewer forced-outage hours and seven more days of availability in 2012 when compared with the previous period.

For "E" and "F" class cycling units, as for the peakers in those peer groups, planned and unplanned maintenance was the primary driver of unavailability. In 2012, maintenance accounted for 499 downtime hours among the "E" class machines and 596 downtime hours for "F" class units. The impact of cycling duty on maintenance is evident in these results. The aeros were only charged with 272 hours of downtime related to planned and unplanned maintenance in 2012.

Base-load units produced these results:

- In 2012, each peer group operated fewer service hours than it did in 2007-2011. Aero and "E" units ran 7% and 8% fewer hours, respectively; "F" engines were off 2%.
- Service hours per start for both aeros and "F" class units were relatively consistent period over period. By contrast, the service hours per start for "E" machines in 2012

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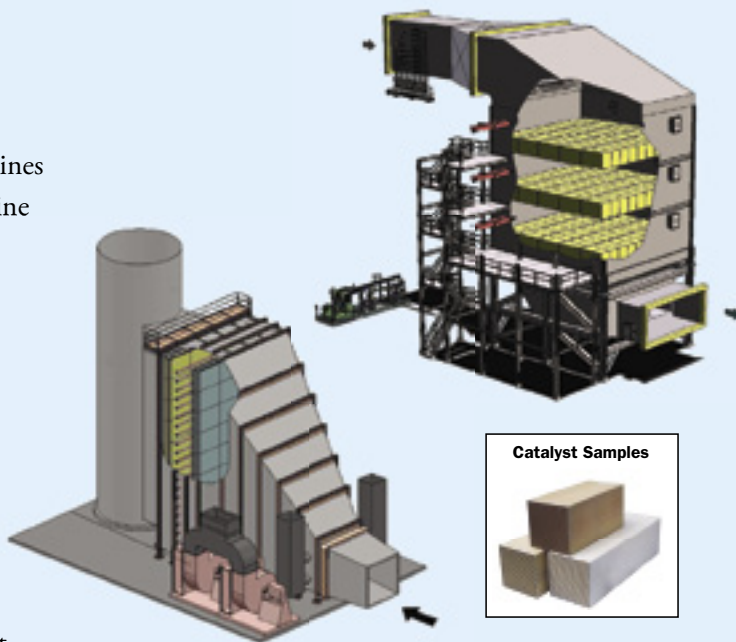
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Table 3: Key performance indicators developed from ORAP® RAM metrics



Parameter	2012			2007-2011		
	Aero	"E" class	"F" class	Aero	"E" class	"F" class
Peaking units:						
Annual service hours	851	527	990	608	375	737
Annual starts	119	71	92	111	62	78
Service hours/start	7.1	7.4	10.8	5.5	6.1	9.5
Service factor, %	9.7	6.0	11.3	6.9	4.3	8.4
Capacity factor, %	8.5	4.9	9.9	5.7	2.9	6.7
Availability, %	93.7	95.5	93.9	93.7	95.1	94.4
Reliability, %	97.3	99.0	98.4	97.4	99.0	99.1
Cycling units:						
Annual service hours	2253	3419	4685	2276	2355	3877
Annual starts	143	121	112	172	145	141
Service hours/start	15.8	28.2	42.0	13.2	16.3	27.6
Service factor, %	25.7	39.0	53.5	26.0	26.9	44.3
Capacity factor, %	20.6	30.4	46.3	19.7	21.4	37.1
Availability, %	94.0	93.3	90.9	92.1	93.8	91.1
Reliability, %	97.1	99.0	97.7	96.4	98.7	97.7
Base-load units:						
Annual service hours	5779	6284	5900	6233	6860	6027
Annual starts	79	40	59	89	32	62
Service hours/start	73.2	157.6	99.2	69.9	213.8	97.0
Service factor, %	66.0	71.7	67.3	71.2	78.3	68.8
Capacity factor, %	53.6	64.5	55.1	56.2	69.2	56.5
Availability, %	91.4	92.5	89.4	92.2	93.0	92.5
Reliability, %	95.9	98.2	97.9	97.0	98.1	98.0

decreased by a whopping 26% from 2007-2011.

In 2012, aeros had 10 fewer starts than they averaged in the previous period, while "E" engines had eight more starts and "F" engines had three fewer starts. Capacity and service factors were relatively high and consistent period over period.

- Availability decreased slightly for each unit class in 2012. For the frame engines, the decrease was caused by an increase in the amount of planned and unplanned maintenance, peri-

od over period—53 hours for "E" machines and 263 hours for "F" units. For aeros, availability dropped because of an increase in forced-outage time of about four days.

Regional impacts. To better understand how operating paradigms vary with region, SPS engineers compared capacity factor and reserve standby factor data for aero and "E" and "F" class gas turbines in the Northeast, South, Midwest, and West (Table 4).

- Aeros and "E" class frames in the West and Northeast had

higher capacity factors and lower reserve standby factors than like engines located in the Midwest and South. Capacity factors for aeros increased, and reserve standby factors decreased, from the 2007 to 2011 period to 2012 in the Midwest and Northeast. For "E" machines, capacity factors increased in all regions between 2007 to 2011 and 2012 except the West; the converse was true for the reserve standby factors.

- Capacity factors for "F" class units nationwide increased between the 2007-2011 period and 2012; by contrast, reserve standby factors decreased.

While past performance may not predict future performance, it does matter and should be understood because it sets market expectations and establishes the baseline for product improvement.

Past performance can be something to admire. By the end of *Secretariat's* short two-year career, he had run in 21 races, compiling 16 wins, three seconds, and one third-place finish. He was in the money 95% of the time, winning more than \$1.3 million and ringing up an additional \$6 million through syndication as a stallion—a world-record amount at that time.

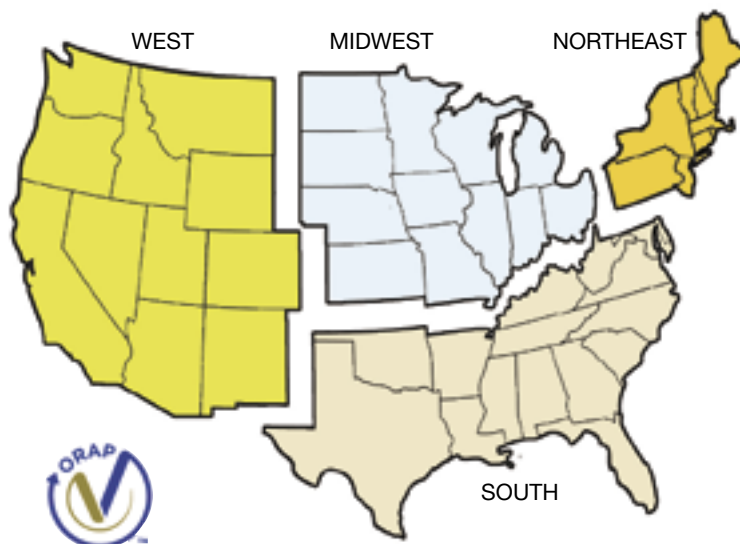
Pete Axthelm of Newsweek magazine wrote: "If there is urgency in every 26-ft stride that *Secretariat* takes, there is also a rich, meandering history behind him; it is a tale of hope and vision, painstaking work, and superb performance under pressure. . . ."

Sounds a lot like the gas-turbine industry.

Table 4: Comparing peer-group capacity (CF) and reserve standby (RSF) factors regionally

Parameter	2012			2007-2011		
	Aero	"E" class	"F" class	Aero	"E" class	"F" class
West						
CF, %	22.8	34.6	60.7	29.5	38.1	47.9
RSF, %	61.3	54.2	21.1	49.8	46.0	33.7
Midwest:						
CF, %	14.5	8.9	23.7	6.4	3.8	14.2
RSF, %	70.3	86.8	65.4	83.8	88.2	76.6
Northeast:						
CF, %	20.6	48.9	67.6	15.1	37.6	46.7
RSF, %	69.3	36.7	14.4	70.6	47.2	40.9
South:						
CF, %	13.0	14.3	44.5	15.5	12.3	32.8
RSF, %	77.1	78.2	43.3	72.5	81.2	54.2

Note: West includes Alaska and Hawaii





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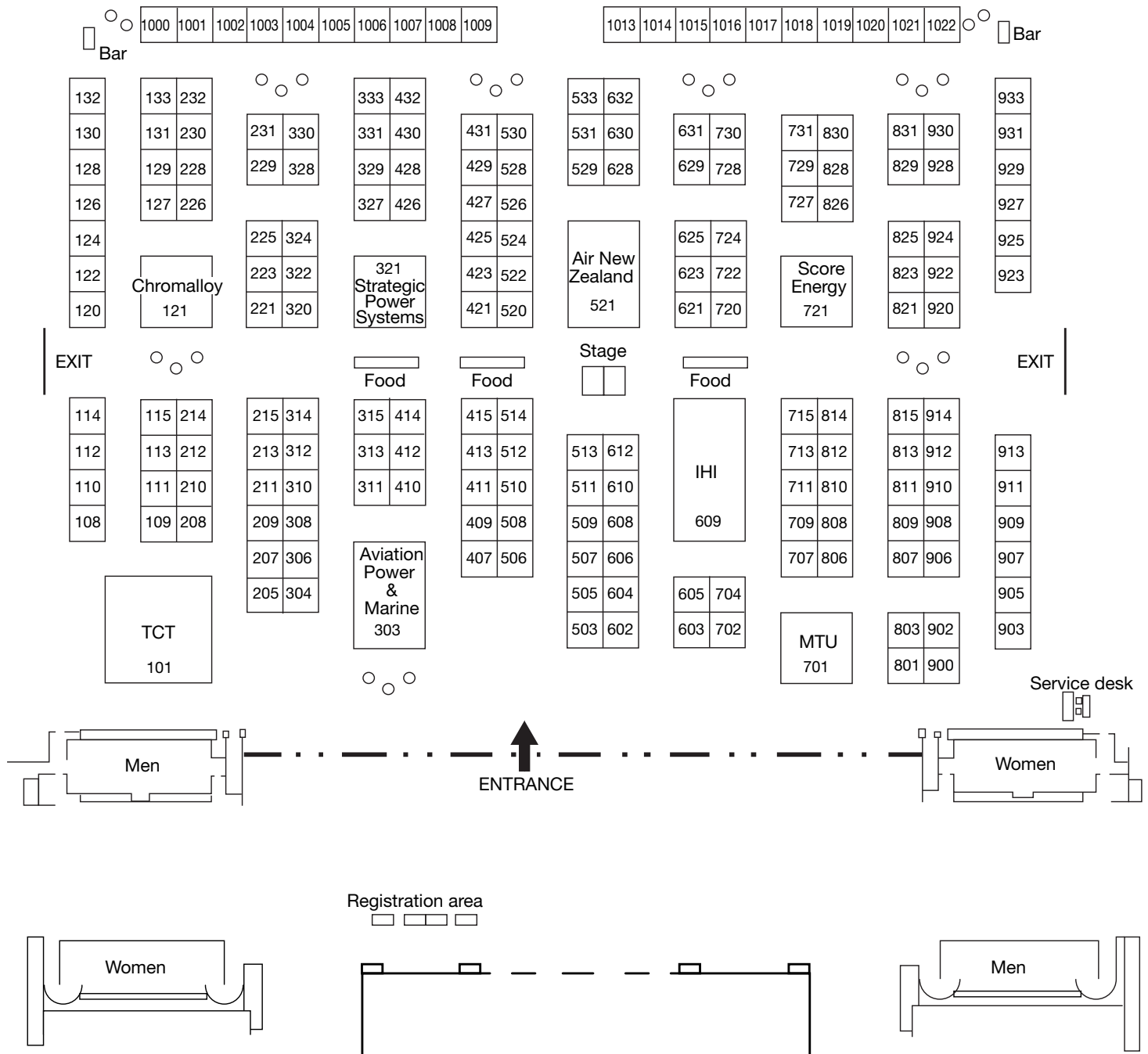


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Advanced Filtration Concepts.....	412
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Alstom Power.....	207
AMETEK Power Instruments.....	114
ANZGT.....	521
ap+m	303
ARB Inc.....	801
ATCO Environmental Systems.....	709

Company	Booth
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Braden Manufacturing LLC.....	808
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Diesel & Gas Turbine Worldwide.....	1008	IHI Corp.....	609
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Drake Controls LLC.....	112	Innovative Steam Technologies.....	133
DRB Industries LLC.....	120	Integral Cables Inc.....	209
Duct Balloon.....	423	Integrated Turbomachinery Inc.....	131
ECT Inc.....	225	Interlink Power Systems.....	925
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Emerson Process Management.....	427	JAD Chemical Co.....	415
Esterline Sensors Services/Weston.....	431	C C Jensen Oil Maintenance.....	129
Everest Sciences Corp.....	414	Jet Aviation Specialists Inc.....	803
Express Integrated Technologies LLC.....	409	Johnson Matthey.....	711
Fiorentini USA.....	231	Kellstrom Power Group.....	605
Gas Turbine Controls Corp.....	630	Kiewit.....	903
GasTOPS Ltd.....	513	Kobelco Compressors America Inc.....	223
GE Measurement and Control.....	1016	Macemore Inc.....	933
GE Power & Water.....	1014	Maximum Turbine Support Inc.....	507
GE Water and Process Technologies.....	1013	McGuffey Energy Services.....	629
Global Industrial Solutions.....	631	Meggitt.....	606
W L Gore & Associates.....	128	Meggitt Sensing Systems.....	610
Gradient Lens Corp.....	215	Metso Automation.....	910
Groome Industrial Service Group.....	211	MISTRAS Group Inc.....	329
Hach Co.....	110	Mitsubishi Power Systems Americas Inc.....	226
Haldor Topsoe Inc.....	506	Mobile Excitation Services LLC.....	1001
Harco Laboratories Inc.....	731	MTU Maintenance Berlin.....	701
Hamon Deltak.....	331	Munters Corp.....	906
Heat Transfer Solutions.....	313	NAES Corp.....	929
HEICO Corp.....	625	Nalco Co.....	815
The Hilliard Corporation.....	230	National Electric Coil.....	811
Horiba Instruments Inc.....	132	National Mechanical Services Inc.....	807



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Company	Booth
Nationwide Boiler Inc.....	126
Natole Turbine Enterprises Inc.....	722
OEM Parts Network Inc.....	312
Olympus.....	306
Pacific Industrial Systems Technology.....	623
Parker Hannifin Corp.....	311
PAS MRO.....	905
PAS Technologies Inc.....	927
Petrochem Insulation Inc.....	604
Petrotech Inc.....	729
PIC Group Inc.....	429
Pneumafil Corp.....	812
Power and Process Equipment Inc.....	124
Precision Iceblast Corp.....	821
ProEnergy Services.....	109
Puretec Industrial Water.....	113
Quality Industrial & Marine.....	823
Redline PdM.....	912
Rhinestahl Corp.....	130
Richard Wolf Industrial.....	908
Rochem Technical Services USA Ltd.....	212
Score Energy Ltd.....	721
SJ Turbine Inc.....	727
SKF USA Inc.....	813
SSS Clutch Co.....	831
StandardAero.....	809
Strategic Power Systems Inc.....	321
Sulzer Turbo Services Houston Inc.....	425
Swan Analytical USA.....	528
Switch Filtration.....	902
T2E3 Inc.....	1018
TAS Energy Inc.....	229
Tech Development Inc.....	911
Teledyne Monitor Labs Inc.....	828

Company	Booth
Thermo Fisher Scientific Inc.....	127
TransCanada Turbines Ltd.....	101
Turbine Blading & Parts LLC.....	909
Turbine Technics Inc.....	603
Turbine Technology Services Corp.....	413
TurboCare.....	928
TVS Filters.....	907
United Controls Group.....	913
Universal Acoustic & Emission Technologies Inc.....	511
US Petrolon Industrial Inc.....	924
UTC Aerospace Systems.....	810
VIM Technologies Inc.....	715
Wood Group GTS.....	428
Woodward Inc.....	533
Wunderlich-Malec.....	426
Young and Franklin.....	411
Zokman Products Inc.....	421

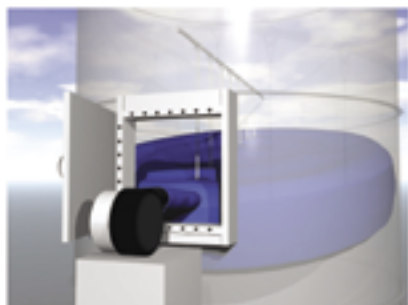
EXHIBIT HALL

Numerical order by booth number as of February 12

Booth	Company
101.....	TransCanada Turbines Ltd
108.....	Cust-O-Fab Speciality Services LLC
109.....	ProEnergy Services
110.....	Hach Co
111.....	Cornmetech Inc
112.....	Drake Controls LLC
113.....	Puretec Industrial Water
114.....	AMETEK Power Instruments
115.....	Coverflex Manufacturing Inc
120.....	DRB Industries LLC

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Handling circuit boards: Dos and don'ts to remember

A large number of repairs received by Gas Turbine Controls Corp are believed the result of a user's mishandling that causes static discharge to the board. This is particularly important because many circuit-board components are sensitive to static electricity. Best practices to assure long life of your boards can be grouped into these three categories:

Reduce environmental static. If possible, and to the extent practical, maintain a heightened level of humidity around the control panel and other areas where boards may be handled.

◆ Ground your panel. A properly grounded panel helps prevent the buildup of static charges and can dissipate built-up charge from the operator.

◆ Avoid wearing clothing that easily generates or stores static electricity. Cotton or cotton blends are recommended, synthetic or woolen materials are not.

◆ Plastic items have the potential for generating a static charge. Keep all plastic and Styrofoam™ items away from any area where circuit boards are handled.


Ground yourself

When handling a circuit board, the operator should be properly grounded by (1) wearing a wrist strap connected to a grounding device, or (2) wearing heel grounders while standing on a static dissipative floor surface or mat.

In the absence of either, always discharge any static charge your body might have built up before handling a circuit board. This can be done by touching a grounded metal object—such as a grounded electrical outlet—and holding it for at least two seconds. If your panel is grounded, that will work too. Wearing an antistatic laboratory coat also can reduce the risk of static discharge to the board from clothing.

Handle equipment correctly

◆ Do not touch components, circuit traces, or connectors on a circuit board. Handle circuit boards by



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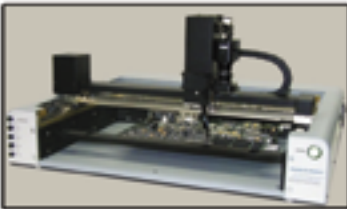
<p>GE Turbine Controls</p> <ul style="list-style-type: none"> • Mark VI • Mark V • Mark IV 	<p>GE Excitation Systems</p> <ul style="list-style-type: none"> • EX2100 • EX2000 • Brushless
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their edges. Never hold a card in the horizontal position by one edge; the resulting stress can damage the circuitry.

◆ After a circuit board or module is removed from a control panel, promptly store it in an antistatic protective bag or box.

◆ Do not store circuit boards in a stack or adjacent to each other because this also can damage the components.

Gas Turbine Controls Corp

maintains the world's largest stock of GE Speedtronic circuit boards and components for gas and steam turbines. The company stocks thousands of genuine GE- manufactured cards for the MKI, MKII, MKIII, MKIV, MKV, MKVI, and LCI controls systems, as well as for the EX2000. GTC can refurbish vintage cards in-house. It has complete energized panels for all GE control systems, allowing for full functional testing of circuit boards prior to shipment.

Booth	Company
121	Chromalloy
124	Power and Process Equipment Inc
126	Nationwide Boiler Inc
127	Thermo Fisher Scientific Inc
128	W L Gore & Associates
129	C C Jensen Oil Maintenance
130	Rhinestahl Corp
131	Integrated Turbomachinery Inc
132	Horiba Instruments Inc
133	Innovative Steam Technologies
205	Airgas Specialty Products
207	Alstom Power
209	Integral Cables Inc
210	Cogeneration & Onsite Power Production
211	Groome Industrial Service Group
212	Rochem Technical Services USA Ltd
213	Industrial Solution Services Inc
214	ChemTreat Inc
215	Gradient Lens Corp
221	Donaldson Company Inc
223	Kobelco Compressors America Inc
225	ECT Inc
226	Mitsubishi Power Systems Americas Inc
228	BASF Corp
229	TAS Energy Inc
230	The Hilliard Corporation
231	Fiorentini USA
232	Camfil Farr Power Systems
303	ap+m
306	Olympus
310	Connct Inc
311	Parker Hannifin Corp
312	OEM Parts Network Inc
313	Heat Transfer Solutions
315	Iris Power-Qualitrol
321	Strategic Power Systems Inc
322	Caldwell Energy
324	CR Energy Group
327	Advanced Turbine Support LLC
328	Electrical Maintenance Consultants
329	MISTRAS Group Inc
331	Hamon Deltak
333	AHM Associates Inc
407	CSE Engineering Inc
409	Express Integrated Technologies LLC
411	Young and Franklin
412	Advanced Filtration Concepts
413	Turbine Technology Services Corp
414	Everest Sciences Corp
415	JAD Chemical Co
421	Zokman Products Inc
423	Duct Balloon
425	Sulzer Turbo Services Houston Inc
426	Wunderlich-Malec
427	Emerson Process Management
428	Wood Group GTS
429	PIC Group Inc
431	Esterline Sensors Services/Weston
503	Avio Inc
506	Haldor Topsoe Inc
507	Maximum Turbine Support Inc
508	AGTSI
509	Clean Air Engineering Inc
511	Universal Acoustic & Emission Technologies Inc
513	GasTOPS Ltd
521	ANZGT
522	Delta Air Quality Services Inc
524	CEMTEK Environmental
526	Advanced Chemical Technology
528	Swan Analytical USA
529	A&I Accessory Ltd
531	Combined Cycle Journal
533	Woodward Inc

Booth	Company
603	Turbine Technics Inc
604	Petrochem Insulation Inc
605	Kellstrom Power Group
606	Meggitt
609	IHI Corp
610	Meggitt Sensing Systems
621	AAF International
623	Pacific Industrial Systems Technology
625	HEICO Corp
629	McGuffy Energy Services
630	Gas Turbine Controls Corp
631	Global Industrial Solutions
701	MTU Maintenance Berlin
707	HPI LLC
709	ATCO Environmental Systems
711	Johnson Matthey
713	Bremco Inc
715	VIM Technologies Inc
721	Score Energy Ltd
722	Natole Turbine Enterprises Inc
724	AGT Services
727	SJ Turbine Inc
729	Petrotech Inc
731	Harco Laboratories Inc
801	ARB Inc
803	Jet Aviation Specialists Inc
807	National Mechanical Services Inc
808	Braden Manufacturing LLC
809	StandardAero
810	UTC Aerospace Systems
811	National Electric Coil
812	Pneumafil Corp
813	SKF USA Inc
814	Babcock and Wilcox Co
815	Nalco Co
821	Precision Iceblast Corp
823	Quality Industrial & Marine
825	Hy-Pro Filtration
828	Teledyne Monitor Labs Inc
829	Hydratight Sweeney
831	SSS Clutch Co
902	Switch Filtration
903	Kiewit
905	PAS MRO
906	Munters Corp
907	TVS Filters
908	Richard Wolf Industrial
909	Turbine Blading & Parts LLC
910	Metso Automation
911	Tech Development Inc
912	Redline PdM
913	United Controls Group
914	HRST Inc
922	HydroAir Hughes/Dees Fluid Power
923	Intertek Asset Integrity Management
924	US Petrolon Industrial Inc
925	Interlink Power Systems
927	PAS Technologies Inc
928	TurboCare
929	NAES Corp
931	CPG Inc
933	Macemore Inc
1000	Detector Electronics Corp
1001	Mobile Excitation Services LLC
1002	Brush GMS
1007	Edison ESI
1008	Diesel & Gas Turbine Worldwide
1009	Custom Instrumentation Service Corp
1013	GE Water and Process Technologies
1014	GE Power & Water
1016	GE Measurement and Control
1018	T2E3 Inc
1019	Component Repair Technologies Inc

Welcome exhibitors

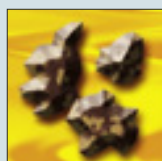
Chuck Casey and Bill Lewis, the two officers of the Western Turbine Users Inc responsible for organizing the exposition, welcome and thank the exhibitors for their participation. Casey said more than 170 companies would be on hand in the Convention Center to display and explain their products and services from 5:30 pm to 8:30 Sunday evening and from 8:00 am to 4:30 pm on both Monday and Tuesday. Casey added that there are more than 20 "new" exhibitors this year.

Six raffles highlight Sunday evening Welcome Reception

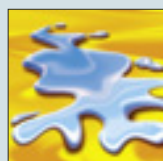
User members are urged to keep a sharp ear Sunday evening during the Welcome Reception from 5:30 to 8:30. A special raffle will be conducted at the top and bottom of every hour (users only!), beginning at 6 pm. Here's the lineup of prizes:

6:00 pm Music speaker system
6:30 1-TB Portable Hard Drive
7:00 TomTom Start GPS
7:30 1-TB Hard Drive
8:00 iPad mini (16 GB, WiFi)
8:30 iPad 2 (16 GB, WiFi)

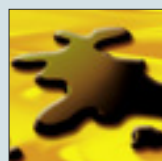
Four Problems...



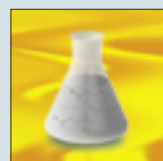
Particles



Water

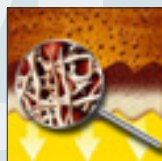


Varnish

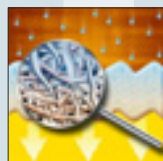


Acid

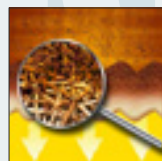
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Index to advertisers

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Advanced Turbine Support LLC.....	8	Hy-Pro Filtration.....	30
Aeroderivative Gas Turbine Support Inc.....	39	IHI Corp, Power Systems Div.....	33
AFC-Advanced Filtration Concepts Inc.....	38	IST, an Aecon company.....	19
Aviation, Power & Marine.....	2	Kellstrom Power Group.....	35
Braden Manufacturing LLC.....	26	Kobelco/Kobe Steel Ltd.....	27
Bremco Inc.....	21	Mitsubishi Power Systems Americas Inc.....	39
Brush Aftermarket.....	41	MTU Maintenance Berlin-Brandenburg.....	25
Caldwell Energy.....	32	NAES.....	31
Camfil Farr Power Systems.....	18	National Electric Coil.....	12
C C Jensen Inc.....	49	Natole Turbine Enterprises Inc.....	24
Cormetech Inc.....	44	Petrotech Inc.....	36
Donaldson Gas Turbine Systems.....	23	Precision Iceblast Corp.....	11
DRB Industries Inc.....	13	SSS Clutch Company Inc.....	46
Duct Balloon.....	46	Strategic Power Systems Inc.....	22
ECT Inc.....	45	Sulzer Turbo Services.....	51
Express Integrated Technologies LLC.....	4, 5	TransCanada Turbines Ltd.....	7
Gas Turbine Controls Corp.....	47	Turbine Technics Inc.....	17
G R Werth & Associates Inc.....	46	Western Turbine Users Inc.....	3
Groome Industrial Services Group.....	20	Wood Group GTS.....	37, 52
Haldor Topsoe.....	29	Young & Franklin Inc.....	14, 15
Harco Laboratories Inc.....	28		

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Alphabetical order by company as of February 12

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Clean Air Engineering Inc

CSE Engineering Inc
Delta Air Quality Services Inc
Express Integrated Technologies LLC
GasTOPS Ltd
Haldor Topsoe Inc
Jet Aviation Specialists Inc
Kellstrom Power Group
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