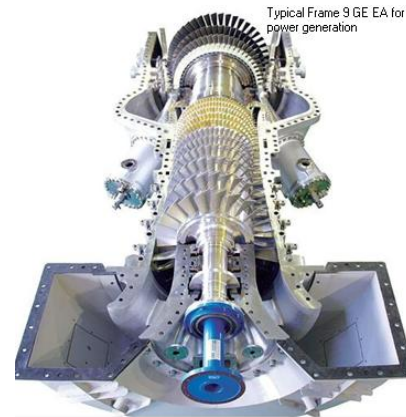


8/24/2011 8:35:35 AM

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## CGT CRITICAL PARTS LIVES TRACKING



The system is application or software that educates the end-user and informs all parties from engineering perspective. Saudi Aramco has enormous CGT in service. Tracking the life span of the parts is so essential for proper replacement, scheduling and alerting. Smart software program could be developed to monitor the life and predict the remaining running hours in each component. The system should provide 3 years operations plan and record parts history. This system assists scheduling, tracking of turbines as well as spare parts to have successful inspections at the planned dates. In addition to that, the system shall support in the periodic reporting, analytics and advance dashboard capability for the management. The system shall assist in the tracking, workflows, analytics as well as reporting on work orders in the concerned unit. Proper planning of Gas Turbines inspection always lead to cost saving.

Exit Update Running hrs Save Print About

Last Inspection:  Month:  Year:

Total fired hours:   
 Fired hours since last overhaul:

	Current	Limits SA Practice	
Fired hours on HP buckets (thick wall design)	27000	60000	
Fired hours on HP nozzle (2 vane design)	1500	60000	
Fired hours on floating seal transitions	1500	25000	
Fired hours on combustion baskets	1500	25000	
Fired hours on LP turbine rotor	217000	250000	
Fired hours on HP rotor assembly	27000	175000	
Fired hours on LP buckets <input type="button" value="LP rotor Veiw"/>	1500	150000	
Fired hours on 2nd stage nozzle	1500	150000	
1st stage shrouds	1500	150000	
2nd stage shrouds	1500	150000	
Inner Shroud	1500	150000	
Outer Shroud	217000	150000	
Fired hours since self cleaning filters installed	11000	21000	

Remaining Lives in Green

Recommended next turbine overhaul

Simplex reading on 8/24/2011 8:20:32 AM

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- 
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Parts Due for Replacment

- LP rotor
- Shroud Outer

Print Exit About

**Last Inspection**

Month   
Year

**MI-Major Inspection** ▼

**Next Inspection**

Month  At Simplex  
Year  reading of

**CI-Combustion Inspection**



CI Every 25,000 hrs

MI every 60,000 hrs



**Typical values for Turbines internal parts running hrs for GE Frame 5 Model 5002, Saudi Aramco**

**Practice.**

This list was provided by Khalifah, Khalifah S. SWID, Saudi Aramco

- Clean air
- Sweet/dry fuel gas
- Low cyclic
- Base rate

Heavy-Duty Gas Turbine Operating and Maintenance Considerations

Part	SA practice (hrs)
LP rotor <input type="button" value="Take a look"/>	250,000 with non magnetic wheel but 200,000 with magnetic wheel
HP rotor <input type="button" value="Take a look"/>	250,000 with non magnetic wheel but 200,000 with magnetic wheel. Rotor unstaking , compressor through bolt change out and compressor reblading may take place between 150,000 & 200,000 fired hours
HP buckets (In 738 or GTD111)	Removed at 60,000 fired hours, rejuvenated and used for another cycle (i.e. max accumulated life of 110,000 or 120,000 fired hours) GE proposes a maximum of 72,000 fired hours with rejuvenation.
LP buckets (U-500 or In738 material)	150,000 to 180,000 hours but should be removed and inspected every major overhaul
HP Nozzles (1 <sup>st</sup> stage) (2-vane segment) <input type="button" value="Take a look"/>	Removed at 60,000 fired hours, rejuvenated and used for another cycle (i.e. max accumulated life of 110,000 or 120,000 fired hours). It may be repaired and used as a half life component after this cycle as possible.
LP (Variable) Nozzles (2 <sup>nd</sup> ) <input type="button" value="Take a look"/>	150,000 to 180,000 hours but should be inspected (removal as necessary) every major overhaul

**MS5001PA / MS5002C,D Parts**

	Repair Interval	Replace Interval (Hours)	Replace Interval (Starts)
Combustion Liners	CI	4 (CI)	3 (CI) / 4 (CI) <sup>(1)</sup>
Transition Pieces	CI, HGPI	4 (CI) <sup>(2)</sup>	2 (HGPI)
Stage 1 Nozzles	HGPI, MI	2 (MI)	2 (HGPI)
Stage 2 Nozzles	HGPI, MI	2 (MI)	2 (HGPI) / 2 (MI) <sup>(3)</sup>
Stage 1 Shrouds	MI	2 (MI)	2 (MI)
Stage 2 Shrouds	-	2 (MI)	2 (MI)
Stage 1 Bucket	-	1 (MI) <sup>(4)</sup>	3 (HGPI)
Stage 2 Bucket	-	1 (MI)	3 (HGPI)

**Note:** Repair/replace cycles reflect current production hardware, unless otherwise noted, and operation in accordance with manufacturer specifications.

CI = Combustion Inspection Interval

HGPI = Hot Gas Path Inspection Interval

MI = Major Inspection Interval

(1) 3 (CI) for non-DLN units, 4 (CI) for DLN units

(2) Repair interval is every 2 (CI)

(3) 2 (HGPI) for MS5001PA, 2 (MI) for MS5002C, D

(4) GE approved repair at 24,000 hours will extend life to 72,000 hours



2nd stage Nozzle or  
variable, Abu, Ali F31

Nozzle casing Removal