

MADUEÑO ESPINOZA Alonso (ENGIE ENERGÍA CHILE)

From: TIEMANN Franz (ENGIE ENERGÍA CHILE)
Sent: martes, 26 de septiembre de 2023 17:54
To: MADUEÑO ESPINOZA Alonso (ENGIE ENERGÍA CHILE)
Cc: POZO Adolfo (ENGIE ENERGÍA CHILE)
Subject: RV: Reporte LABORELEC restricción de operación U16 hasta Mantenimiento HE Upgrade

Alonso adjunto comentarios de GE.

Saludos,

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Por favor considera el medioambiente antes de imprimir este documento.

De: Benitez, Mauricio (GE Vernova) <Mauricio.Benitez@ge.com>
Enviado el: martes, 26 de septiembre de 2023 17:52
Para: Bortoluzzi, Cicero (GE Vernova) <cicero.bortoluzzi@ge.com>; OLMOS ALFARO Manuel (ENGIE ENERGÍA CHILE) <manuel.olmosalfaro@engie.com>; TIEMANN Franz (ENGIE ENERGÍA CHILE) <franz.tiemann@engie.com>; Blazkow, Jose L (GE Vernova) <jose.blazkow@ge.com>; Reyes, Fernando (GE Vernova) <fernando.reyes@ge.com>
Asunto: 🚫 [DMARC FAILURE] Re: Reporte LABORELEC restricción de operación U16 hasta Mantenimiento HE Upgrade

⚠ Este mensaje proviene de un remitente externo

Este mensaje vino de fuera de su organización. Extreme las precauciones con los enlaces y archivos adjuntos.

Manuel,

Buenas tardes, te envío nuestros comentarios a las recomendaciones indicadas en reporte de Laborelec. Quedamos atentos a cualquier duda que tengan.

Recommendations:

Reduce the number of starts: Tocopilla U16 must reduce the number of cycles events to respect the OEM limit of 1200 WCE. The operation must switch from a daily cycling to one start every 72 hours.

Ans: GE always reinforce to Customers to follow the starts intervals recommended for the GT26 Fleet, which in this case is 1200 WCE. Any operation above this limits represent a risk that could differ from one unit to another based on different factors like: operational profile, parts condition, etc. The recommendation is to restrict the unit operation at some level that allows the unit to reach the next C07 inspection with no more than 1200 WCE.

Next A-Inspection (32KEOH):

Monitor in detail the evolution of the observed cracks in the LPT blades row 1 suction side, and re-quantify the risk of blade liberation.

Ans: According GE fleet experience, this cracks have been noted in other units with similar EOH and the chances of a liberated blade due to this type of cracks is low. Anyhow, if Customer wants to avoid any risk, it is recommended to monitor this during additional scheduled inspections.

Monitor HPT vanes TBC spallation and cracks evolution. If possible, look for cooling holes clogging.

Ans: During the last borescope inspections its been observed that some cooling holes are starting to get blocked. This could be a symptom of the same issue observed in previous HPT vane set.

Since HPT vanes were replaced on Dec 2021, it is not expected to reach a critical condition before the C07 Inspection.

Besides the standard A-inspection it is recommended to follow up and monitor the condition the medium risk items (p.a. HPT blade, LPT blade 1, LPT SHSA)

If Customer wants to perform additional inspections beside the ones defined per guidelines its fine, but are not mandatory.

Measure and correct rotor position.

This should be considered only in A Inspections. Historic rotor position values are not critical to recommend additional inspections.

Rotating stall:

Discuss with the OEM the severity of the rotating stall experienced by the unit, the real risk it represents, and the maximum vibrations values the unit can support without being exposed to unwanted risk.

The last time VIGV & BOV schedule was modified in this unit was back in May 2021, specifically for a rotating stall issue present on the unit during hot starts. This time, only the gas schedule was modified. After this change the unit exhibited a considerable reduction in vibrations. See below analysis from Eng:

“Typical behavior for this machine type would have vibration amplitudes < ~18mm/s or <~360micron pk-pk.

During the runs observed, the peak shaft relative amplitude transiently reached ~8.711 mils pk-pk (220 micron pk-pk), but are otherwise lower (<6mils pk-pk). Peak transient seismic vibration amplitudes observed to be <0.4in/s (~10mm/s).

Additionally at full speed after stabilization, vibration amplitudes on the GT are <0.3in/s and <3mils pk-pk.

Considering the startups that customer had the issue, it shows the machine exhibited shaft relative vibration amplitudes reaching 314 micron pk-pk on MBD11CY00. Current values are less than 220micon (direct), the transient vibration amplitudes are reduced and below the transient trip limits.”

During Oct 2022 (Insp A), a new VIGV & BOV schedule for distillate was applied. However, as Service report states, this schedule was reverted to original since it was noticed the acceleration curve changed after SSD Control upgrade performed by Engie/ABB (steeper with the old SSD control system). In fact, the acceleration curve change also impacted the gas startup, so the MF_FG_BASE had to be reduced in order to prevent TAT1_AV>100°C trip.

GE recommendation given to Engie was to investigate with ABB on the SSD Control parameters to find out why the acceleration curved changed. This should be clarified before attempting to install again the IGV/BOV schedule defined on GE FMI.

VIGV's position and regulations needs to be checked at the next opportunity. Functional test is also recommended to discard hardware issues.

It has been advised to Engie that VIGV actuators have a mismatch with the control feedback, so this components should be inspected. This has been causing some trips lately. A change in logic was proposed to Engie to mitigate this actuator feedback issue.

Investigate why since December 2021, higher rotating stall vibrations are observed during deceleration and during some accelerations.

Covered on previous bullets.

Saludos,

Mauricio Benitez

Contractual Service Leader

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GE VERNOVA

From: manuel.olmosalfaro@engie.com <manuel.olmosalfaro@engie.com>

Sent: Wednesday, September 6, 2023 3:28 PM

To: Benitez, Mauricio (GE Vernova) <Mauricio.Benitez@ge.com>; Reyes, Fernando (GE Vernova) <fernando.reyes@ge.com>

Cc: adolfo.pozo@engie.com; franz.tiemann@engie.com; alonso.madueno@engie.com; manuel.parvu@engie.com; cristian.vermeersch@engie.com

Subject: EXT: RE: Reporte LABORELEC restricción de operación U16 hasta Mantenimiento HE Upgrade

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Estimados, buenas tardes,

Se envía actualización del reporte donde se modificó orden y algunas palabras. Se agrego una versión corta del reporte también donde se indican solo las recomendaciones.

Quedo atento a comentario,

Saludos,

Manuel Olmos A.

From: OLMOS ALFARO Manuel (ENGIE ENERGÍA CHILE)

Sent: lunes, 4 de septiembre de 2023 11:33

To: Benitez, Mauricio (GE Gas Power) <mauricio.benitez@ge.com>; Reyes, Fernando (GE Gas Power) <fernando.reyes@ge.com>

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Subject: Reporte LABORELEC restricción de operación U16 hasta Mantenimiento HE Upgrade

Importance: High

Estimados, buen día,

De acuerdo a lo conversado, agradeceremos vuestra revisión y validación/comentarios/recomendación de lo indicado por LABORELEC para contar con una restricción operativa que nos permita llegar a Junio 2024 bajo los parámetros límites de inicio de mantenimiento. Vuestra respuesta nos será muy importante y útil para que el coordinador eléctrico nacional pueda evaluar nuestro requerimiento.

Quedo atento a comentarios,

Saludos,

Manuel Olmos A.

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