



الطاقة للجميع في عالم متغير
ENERGY FOR ALL IN A CHANGING WORLD

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S.L. van der Goot

VBR Middle East turbine maintenance LLC

Life extension & upgrading of existing older gas turbines



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Agenda

1. Introduction to VBR Middle East
2. Older gas turbines in the Middle East
3. Maintenance support for older gas turbines
4. OEM versus independent maintenance support
 - options to purchase new spare parts for older gas turbines
 - maintenance perspectives & approaches for older gas turbines
5. Conclusion
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Introduction to VBR Middle East

VBR Middle East turbine maintenance LLC is an independent maintenance service provider for GE and RR aero-derivative gas turbines and their auxiliary systems, control systems and packages.

Our core expertise: cost effective spare parts, inspection, repair, overhaul, performance improvement, life extension, emission reduction and power plant relocation of GE and RR aero-derivative gas turbines.

More information: www.vbr.ae





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Older gas turbines in the Middle East

- In the Middle East many older gas turbines are used in the exploration and production of oil & gas.
- Most of these turbines perform well and operators like to continue with their operation.
- Many gas turbine OEM's however limit the support for older gas turbines by limiting the availability of critical spare parts and dedicated field service engineers.
- This attitude puts operators of older gas turbines in an increasingly difficult position because they are no longer able to obtain the level of maintenance support that they require from the OEM's.



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Maintenance support for older gas turbines - 1

- Many gas turbine operators have a policy (or a habit) to turn to the gas turbine OEM's with their requests for maintenance support (spare parts and specialized maintenance engineers).
- This works well for new gas turbines because the focus of OEM's is to sell, install, commission and support new gas turbines so they are very well equipped to do so.
- When existing gas turbines become older many operators experience that OEM maintenance support becomes restricted.
- Critical spare parts and auxiliary systems are declared obsolete and experienced service engineers with dedicated expertise on their older gas turbines become less and less available.



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Maintenance support for older gas turbines - 2

- In the USA and in Europe this situation has led to a flourishing market for independent third party maintenance providers who specialize in the maintenance of older gas turbines.
- These companies employ maintenance service engineers with dedicated expertise on older gas turbines.
- These companies also have built up a global network for sourcing or re-manufacturing older gas turbine spare parts that have been declared obsolete by the OEM's.
- Some of these independent maintenance companies are currently establishing sister companies in the Middle East to support the maintenance of older gas turbines in this region.



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OEM versus independent maintenance support - 1

- Both OEM's and independent maintenance service suppliers are very well capable to deliver good quality maintenance services.
- There are similarities and differences between OEM and independent (non OEM) maintenance support solutions for industrial gas turbines.
- We will take a closer look at the following maintenance issues:
 - Options to purchase new spare parts for older gas turbines
 - Maintenance perspectives & approaches for older gas turbines

OEM versus independent maintenance support - 2

Options to purchase new spare parts for older gas turbines:

1. OEM spare part, OEM branded
2. OEM spare part, manufacturer branded (not OEM branded)
3. Non-OEM spare part (alternative, remanufactured, PMA)

OEM versus independent maintenance support - 3

Which spare part option is best suited for which gas turbine operator?

- 1. OEM spare part, OEM branded**
Very suited for operators of newer gas turbines with OEM warranty.
- 2. OEM spare part, manufacturer branded (not OEM branded)**
Very suited for operators of older gas turbines who prefer to use OEM spare parts and who like better prices and better lead times.
- 3. Non-OEM spare part (alternative, remanufactured, PMA)**
Very suited for operators of older gas turbines who require spare parts that have been declared obsolete by the gas turbine OEM's.

(Or for operators who find out during the purchasing process that the OEM spare parts that they require are only available at unworkable long lead times or at unacceptable high prices ...)



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OEM versus independent maintenance support - 4

Maintenance perspectives & approaches for older gas turbines:

1. OEM maintenance perspective & approaches
2. Independent maintenance perspective & approaches

Both OEM's and independent service providers are very capable of delivering good quality gas turbine maintenance services.

The main difference lies in their maintenance perspective for older gas turbines. This difference in maintenance perspective leads to differences in their maintenance approaches for older gas turbines.

OEM versus independent maintenance support - 5

The OEM maintenance perspective for older gas turbines:

- Was developed 30-40 years ago and has hardly changed over time
- Is enforced on all gas turbine operators (rather rigid, limited flexibility)
- Results in time-based maintenance approaches (4000 hrs., 8000 hrs. etc.)
- Results in re-active and corrective maintenance approaches
- Is hardly adaptive to new developments in materials technology, engine diagnostics and information technology



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OEM versus independent maintenance support - 6

The independent maintenance perspective for older gas turbines:

- Has evolved over time based on maintenance experience & developments
- Can be fine-tuned together with the gas turbine operator (very flexible)
- Results in condition based maintenance approaches (monitoring)
- Results in pro-active and preventive maintenance approaches
- Incorporates new developments in materials technology, engine diagnostics and information technology



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Conclusion

The maintenance perspective and the maintenance approaches of independent gas turbine service providers combined with their capability to supply manufacturer branded OEM spare parts as well as alternative spare parts will provide gas turbine operators in the Middle East with new options to:

- extend the life of their older gas turbines
- improve the availability, reliability, performance, emissions and maintainability of these older turbines.



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