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Test Project

Module A

Industrial Mechanics

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Introduction

You have been sent to the Oriental Pearl TV Tower, in Shanghai, to inspect one of their main ventilation fans.

- The fan and motor assembly is exhibiting abnormally high vibration levels, and the motor's axially secured bearing is operating at an elevated temperature. Preliminary information suggests an issue with the motor base and foundation. No corrections will be made at this point, only verification. Verify the condition and identify the corrective actions required. You will safely collect all the required data.
- Your OL2R bracket is delayed.
- The tools provided will enable you to perform all required alignment, balancing, and vibration checks on the motor and fan assembly. Upon receiving your OL2R, you must verify that the compensation applied for thermal growth was accurate
- The weight of your fan blade is 10 kg
- The alignment must be done for a 3600-rpm piece of equipment
- You must produce a complete digital report on all inspections, corrections and final alignment results
- There is also belt driven equipment that will need to be inspected and repaired.

Instructions to the Competitor

READ THE ENTIRE DOCUMENT BEFORE PROCEDING.

ALL PROPER SAFETY PROCEDURES MUST BE DEMONSTRATED AS YOU WOULD ON THE JOB SITE. YOU ARE BEING OBSERVED AT ALL TIMES.

IF YOU HAVE TO BE ADVISED OF SAFETY INFRACTIONS DURING THIS MODULE, 0.5 MARKS WILL BE DEDUCTED FOR EACH INFRACTION.

Experts will not intervene unless there is a safety concern.
On the 3rd infraction, the Competitor will be stopped, evaluation will be based on the work already completed.

REMEMBER:

Experts MUST sign off at designated module points in the documentation. If a sign off point is missed all marks for that section of the project will be deducted from the overall project total.

Diagnostic and corrective actions will be performed with the following equipment:

- AT-400 Ultimate
- Wireless Balancer WBT-400
- Machine Defender
- Run-Out Probe
- Stroboscope
- OL2R
- PAT

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Task # 1: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

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Task # 2: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

Task # 3: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

Calculation:

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Task # 4: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

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Task # 5: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

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Task # 6: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

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Task # 7: Description_____

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Task # 8: Description_____

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Task # 9: Description_____

	Value Before If applicable	Value After

Expert sign off:_____

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Thermal Growth Calculation:

Equipment Operating Temperature:	40 degrees Celsius
Room Temperature:	24 degrees Celsius
Coefficient (α) ($\times 10^{-6}$ /°C):	Carbon Steel 11-13

$\Delta L = \alpha \times L0 \times \Delta T$

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