

August 2017, Jakarta

GEOHERMAL POWER PLANT OPERATION

Course: Operators of Geothermal Power Plant

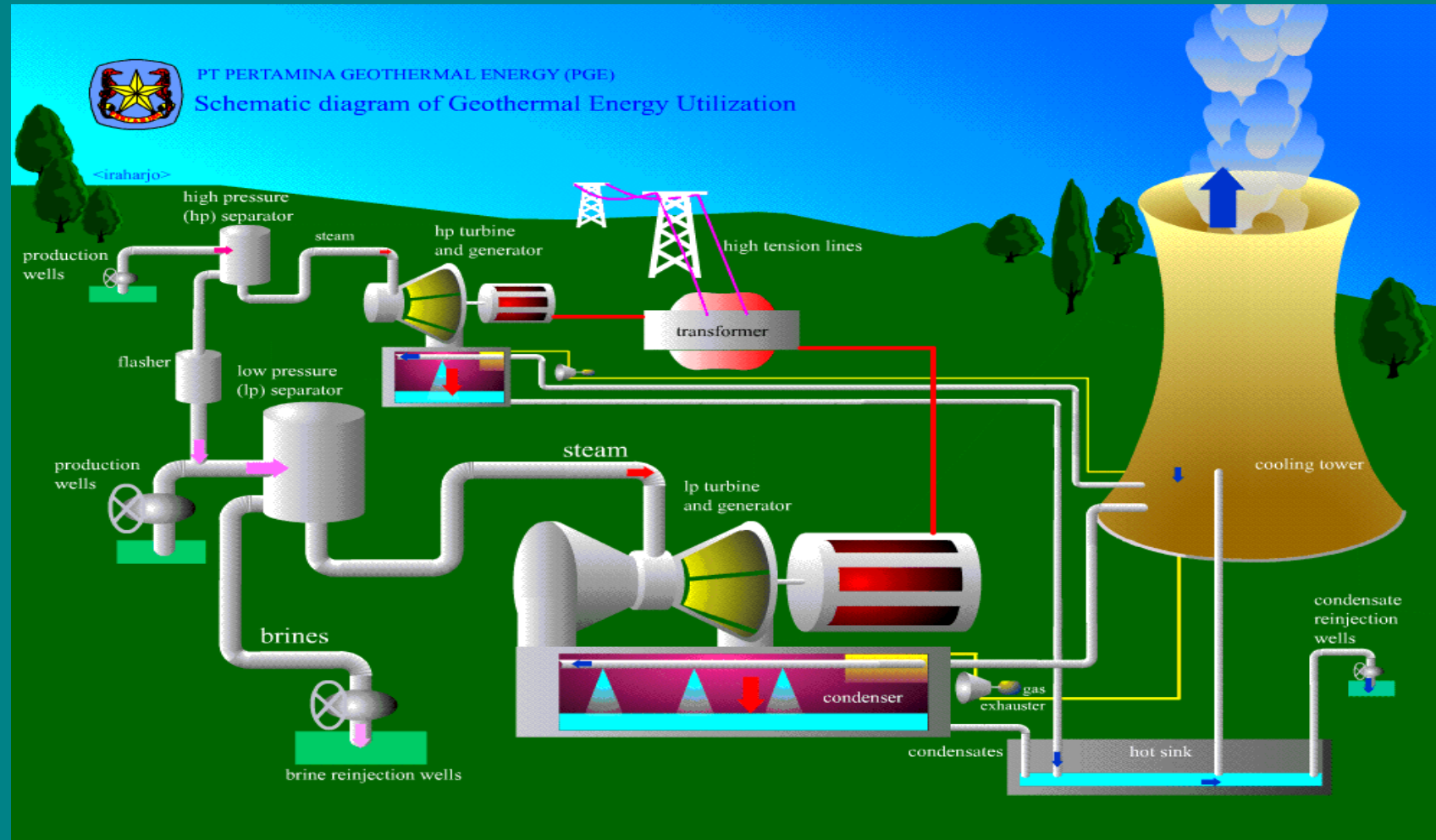
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NANANG KURNIAWAN

Overview

- Normal Operation
- Start Up/Shut Down Procedure
- Start Up/Shutdown Curve
- Performance Test
- Permit to Work
- Operation Driven Reliability

Normal Operation



Start Up/Shutdown Procedure

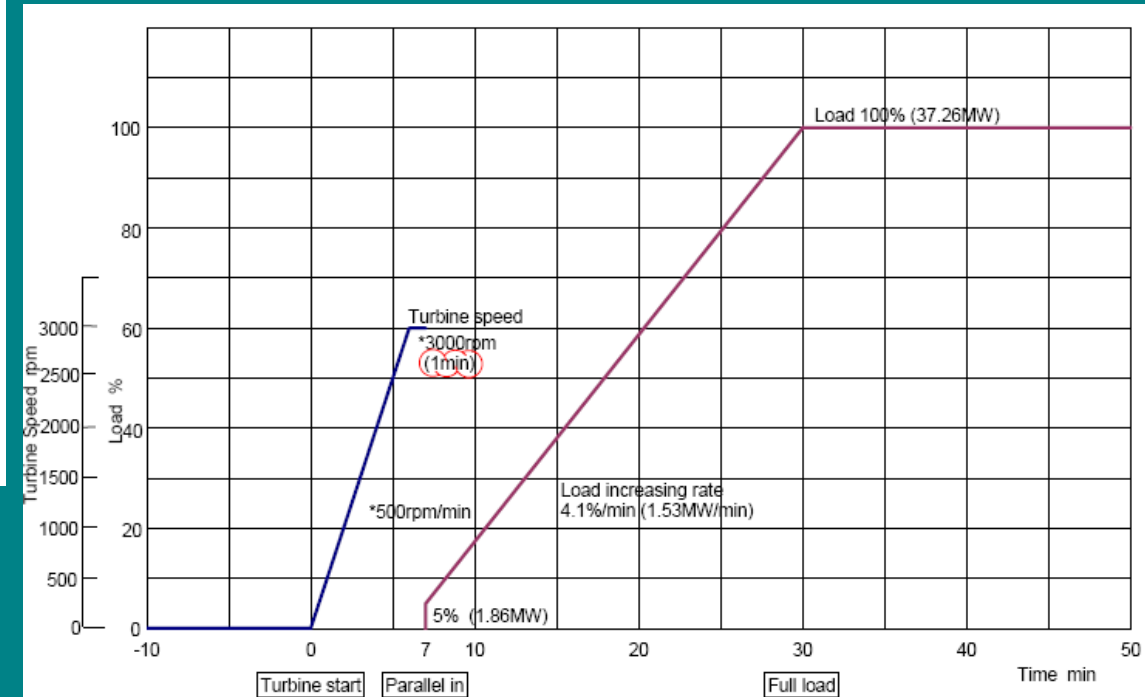
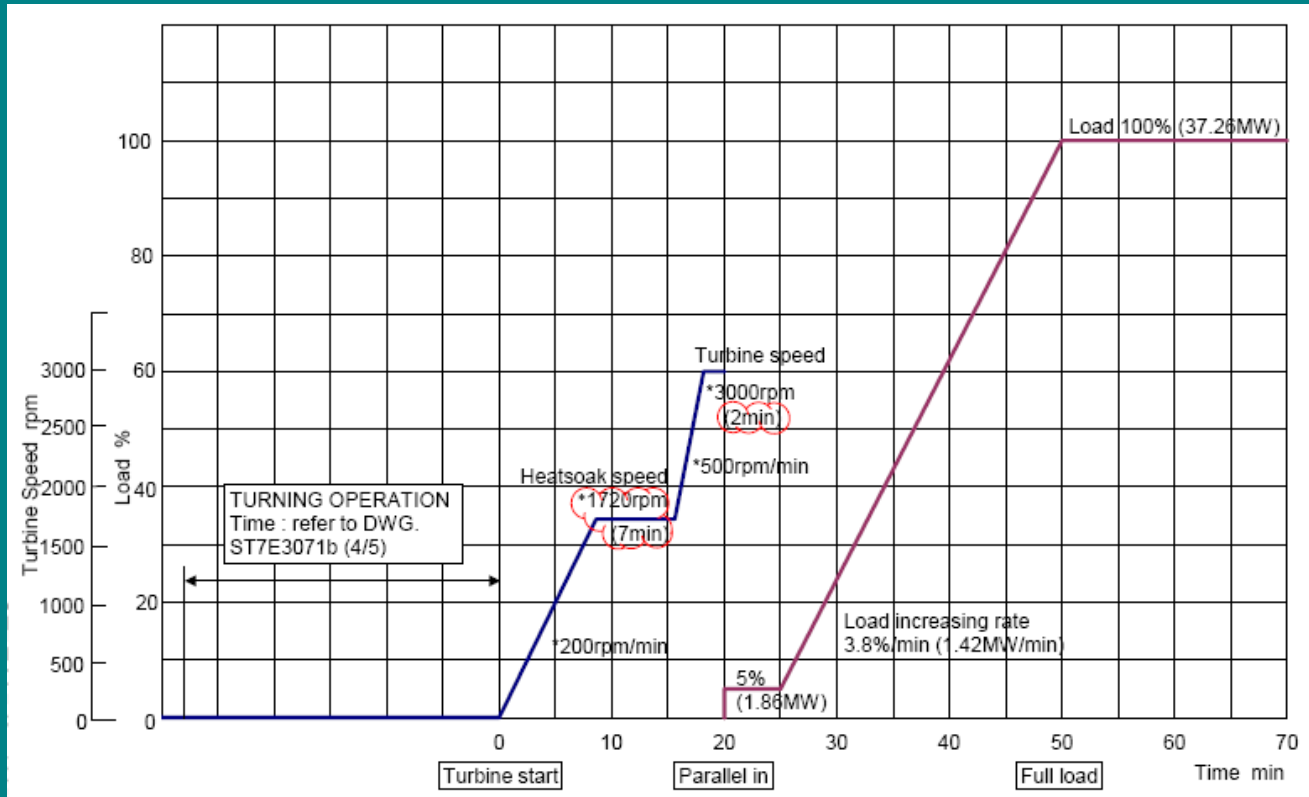
START UP

- 1. The plant drain system operation
- 2. Water filling
- 3. Component cooling water system operation
- 4. Auxiliary cooling water system operation
- 5. Steam drain trap bypass valve
- 6. Lube oil system operation
- 7. Control oil system operation
- 8. Turning operation
- 9. Steam warming
- 10. One hot well pump in service
- 11. Vacuum up operation
- 12. Main cooling water increase to 50% flow
- 13. Hot well pump(B) parallel operation
- 14. Starting the turbine
- 15. Synchronizing & Online
- 16. Increasing load

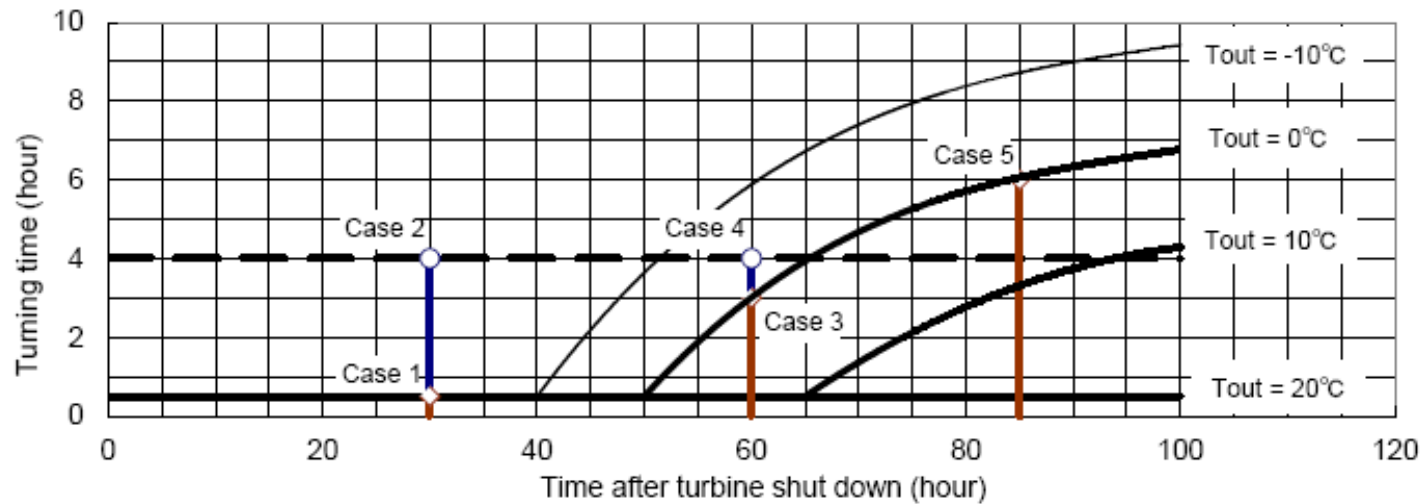
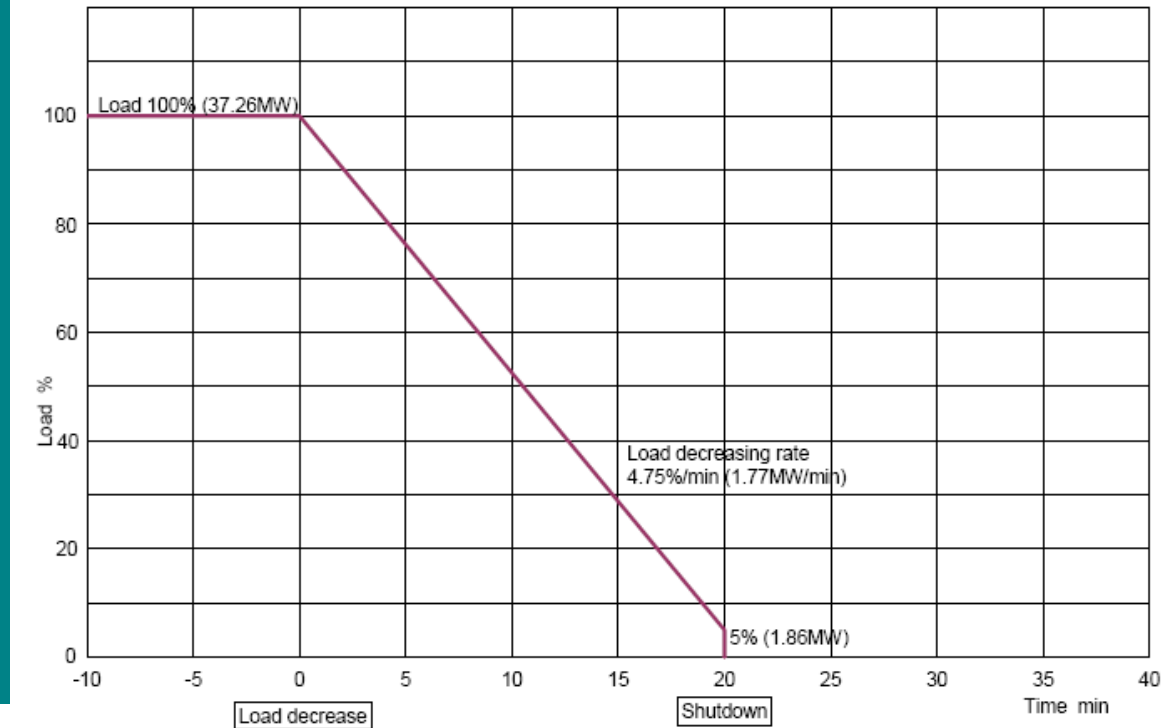
SHUT DOWN

- 17. Decreasing load
- 18. Shutdown unit
- 19. Stopping turbine
- 20. Turning operation
- 21. Stopping hot well pump(B)
- 22. Vacuum breaking
- 23. Stopping cooling tower fan
- 24. Stopping hot well pump(A)
- 25. Turning stop

Turbine Start Up Curve



Turbine Shutdown Curve & Turning Time



Plant Performance Test

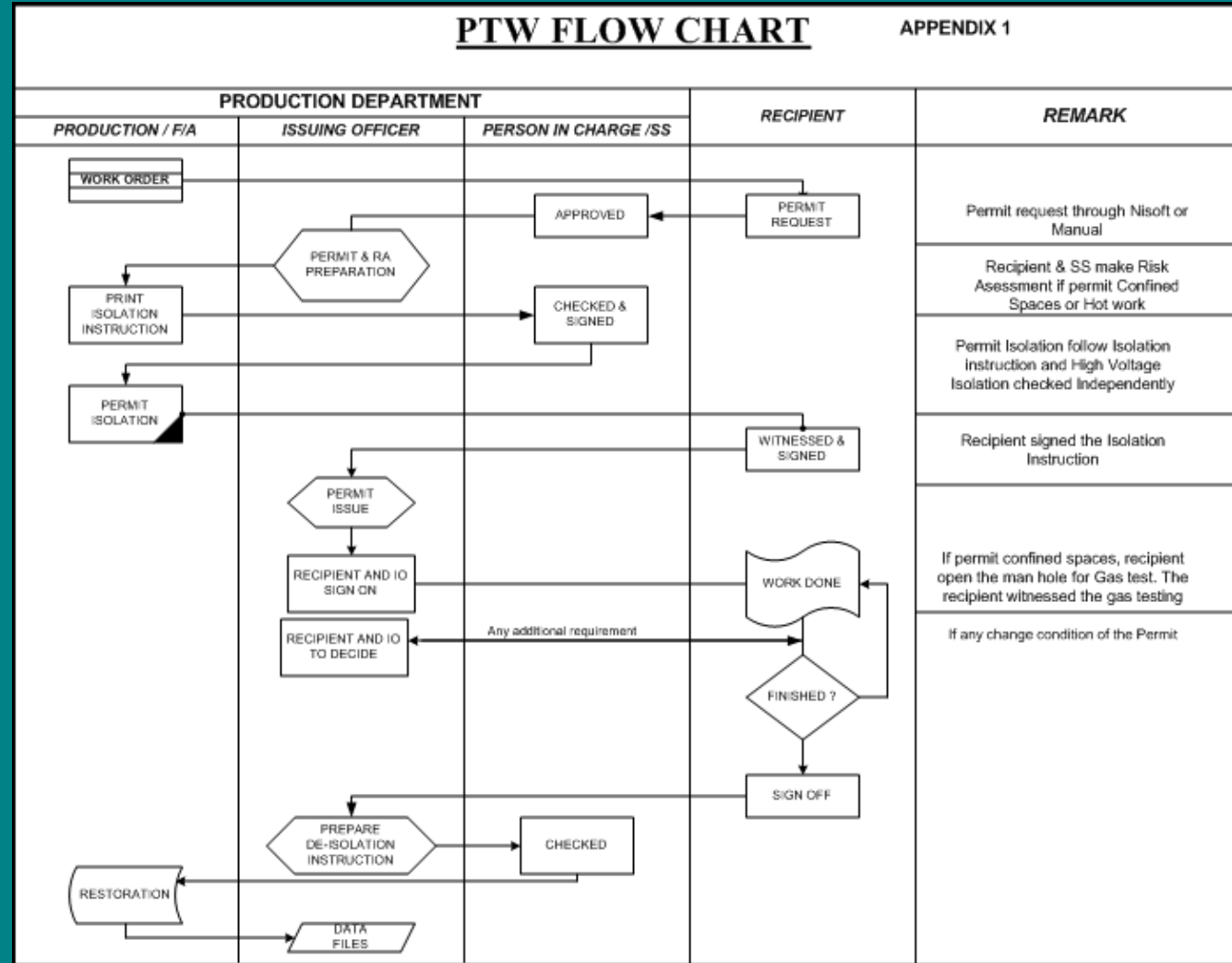
Plant system has been designed for a limited range of operating conditions which will give a limited range of outputs. The change in operating condition will not only affect the value of the out put but will also change the characteristic of the system which governs input/output relationship.

Purpose:

- -contractual agreement(guarantee).
- -assessing the change of plant system performance or change in its characteristic.

Tested at several load points(25%, 50%, 75%, 100%)

Permit to Work



Operator Driven Reliability (ODR)

- ODR is the process that involves specific tasks which are reassigned from maintenance to operations
- Also known as First Line Maintenance
- A basic equipment care which could reduce or eliminate the defect of equipment by expanding skills, knowledges, and sense of operators on the condition of equipment



THANK YOU