



Australian Government

UEPOPS432 Start up a heat recovery steam generator unit

Release: 1

UEPOPS432 Start up a heat recovery steam generator unit

Modification History

Release 1. This is the first release of this unit of competency in the UEP Generation Training Package.

Application

This unit involves the skills and knowledge required to start up a Heat Recovery Steam Generator (HRSG) for service.

HRSGs are recovery heat exchangers that retrieve the heat from hot gas streams which are then supplied to steam turbines to generate additional electric power. Placing an HRSG in-service will require the entry of a heating medium and the control of water within the steam and/or water drum. It includes monitoring the flow and quality of feedwater, steam pressure and temperature increases and metal temperatures within HRSG design limits so that the HRSG is supplying a constant flow of steam at the required temperature and pressure.

Competency in this unit requires the ability to plan and prepare start up, operate HRSG plant during start up, test and analyse HRSG system faults and complete documentation. Individuals will, in general, work under supervision, in a power generation facility as an operator.

Power generation plant operators are typically trained and authorised to isolate, prepare plant and issue permits to work.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Note: Workplace practice

The application of the skills and knowledge described in this unit may require a licence or training permit to practice in the workplace where work is carried out on gas and electrical installations. Additional conditions may apply under state and territory legislative and regulatory licensing requirements.

Pre-requisite Unit

UEPOPS333 Operate and monitor HRSG hot gas control system

Competency Field

Operations

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan and prepare HRSG start up work

- 1.1 Safety issues are identified in accordance with Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations and workplace procedures
- 1.2 Work requirements are identified from relevant personnel and documentation, in accordance with workplace procedures
- 1.3 Preoperational checks are carried out on plant, in accordance with manufacturers' recommendations and workplace procedures and site requirements

2 Conduct HRSG start up

- 2.1 Preoperation conditions of the Heat Recovery Steam Generator (HRSG) and gas turbine are established, in accordance with workplace procedures
- 2.2 Minimum operation of gas turbine is established and supported, in accordance with workplace procedures and manufacturers' specifications
- 2.3 Monitoring of HRSG drum level, feedwater flow, steam and metal temperature rates of rise, steam pressure rate of rise and control of steam flow and drainage is carried out, in accordance with manufacturers' specifications and workplace procedures
- 2.4 Exhaust temperature, flow to HRSG and gas turbine power output are adjusted, in accordance workplace procedures, to achieve required steam conditions and demand
- 2.5 HRSG plant is operated within limits of its' design, in accordance with workplace procedures.
- 2.6 HRSG plant is monitored, in accordance with workplace procedures, to detect deviations from required operating conditions
- 2.7 Corrective action is taken to rectify HRSG abnormalities, in accordance with manufacturers' recommendations and workplace procedures

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| 3 Test HRSG plant operation | 3.1 Tests are performed, in accordance with workplace procedures |
| | 3.2 HRSG plant is observed, in accordance with workplace procedures, for correct operational response |
| | 3.3 Corrective action is taken, in accordance with workplace procedures, when response does not meet documentation, plant integrity or personnel safety requirements |
| | 3.4 HRSG plant is returned to required operational status upon completion of testing, in accordance with workplace procedures |
| 4 Analyse HRSG faults | 4.1 Causes of abnormal HRSG plant operating conditions are identified, in accordance with workplace procedures, by analysing technical and operational information |
| | 4.2 Corrective action is taken, in accordance with workplace procedures |
| | 4.3 HRSG plant integrity and personnel safety is maintained, in accordance with workplace procedures, and through consultation with appropriate personnel and technical and operational documentation |
| | 4.4 Appropriate personnel are notified, in accordance with workplace procedures, when defects are detected |
| 5 Complete documentation | 5.1 HRSG plant problems, movements and status are reported, in accordance with workplace procedures |
| | 5.2 Documentation is updated, in accordance with workplace procedures |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPOPS432B Start up a heat recovery steam generator unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

Assessment Requirements for UEPOPS432 Start up a heat recovery steam generator unit

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) legislated requirements including:
 - emergency procedures
 - risk control measures
 - safe working practices
- communicating with personnel
- identifying HRSG plant status
- monitoring and operating HRSG plant and equipment
- organise resources
- planning and preparing HRSG plant and equipment for start and run up operations
- recognising and responding to abnormal HRSG plant operating conditions
- starting, running up and operating HRSG and associated plant and equipment
- testing HRSG plant operation using diagnostic and data analysis techniques and tools to determine faults
- using recording procedures to complete documentation
- utilising temperature and pressure raising techniques
- working with permit to work system

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions and includes knowledge of:

- control of heat transfer and rate of temperature rise during HRSG start up
- HRSG plant and equipment, its location and operating parameters
- manufacturers specifications and manuals
- operational testing of HRSG plant
- permit to work system

- techniques HRSG plant and equipment operation
- temperature and pressure raising requirements
- typical arrangements of power production plant
- WHS/OHS legislation requirements including:
 - emergency procedures
 - risk control measures
 - safe working practices and principles
- workplace policies and procedures
- workplace documentation

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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