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| Title | **Plan and design MHP plant** | | |
| Level | **4** | **Credits** | **20** |

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| Purpose | This competency standard is intended for those who are involved in the initial planning and design of MHP plants. People holding credit for this competency standard are able to: Conduct site assessment; estimate power demand and hydropower potential; conduct initial planning of civil construction work; and determine physical requirements of MHP plant. |

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| Classification ISCED | 0713 Electricity and energy |

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| Available grade | Competent / Not yet competent |

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| Modification history | N/A |

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| **Competency Unit** | **Performance Criteria** | **Knowledge and Understanding** |
| **E1:**  **Conduct site assessment** | Trainee will be able to:  **P1-** Perform basic head measurements  **P2-** Perform basic flow measurements  **P3-** Collect other data relevant for planning MHP plant | **K1-** Basic head measurement  **K2-** Basic flow measurement  **K3-** Relevant site data |
| **E2:**  **Estimate power demand and hydropower potential** | Trainee will be able to:  **P1-** Perform basic power calculations  **P2-** Apply knowledge in power demand estimation and daily load curves  **P3-** Apply knowledge of productive ‘end-use’ of electricity  **P4-** Apply knowledge of tariff related issues  **P5-** Match power demand and hydropower potential | **K1-** Power calculations  **K2**- Prepare demand estimates for community  **K3**- Productive use of electricity in rural communities  **K4**- Basic tariff calculations |
| **E3:**  **Conduct initial planning of civil construction works** | Trainee will be able to:  **P1-** Dimension main civil construction structure of MHP plant  **P2-** Prepare initial cost estimate | **K1-** Basic MHP analysis and design  **K2**- Civil construction structure  **K3**- Cost estimation |
| **E4:**  **Determine physical requirements of MHP plant** | Trainee will be able to:  **P1-** Identify procurement requirements for mechanical and electrical equipment of MHP plant  **P2-** Prepare powerhouse floor plan to arrange for electro-mechanical equipment  **P3-** Carry out initial planning of distribution network layout | **K1-** Specifications and application range of MHP equipment  **-** Generator; Turbine; Control system; distribution network  **K2-** Design of LV community grid |