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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 |