# Salient features

## General

| | |
|---|---|
| Name of the Project | Lower Modi Hydroelectric Project |
| Name of the River | Modi Khola |
| Type of Scheme | Run-of-the-river |
| Project Location | Modi Gaupalika and Kusma Municipality |
| District | Parbat |
| Zone | Dhaulagiri |
| State | Gandaki State |
| Nearest town | Kushma Bazar |
| Access | Pokhara-Baglung Highway |
| Latitude | $28^0$ 14’ 08” N to $28^0$ 16’ 18” N |
| Longitude | $83^0$ 42’ 30” E to $83^0$ 44’ 43” E |
| Gross Head | 87.79 m |
| Net Head @ full discharge | 83.43 m |
| Design Discharge | 27.47 $m^3/s$ |
| Installed Capacity | 20.00 MW |
| Net Annual Generation | 117.40 GWh on net saleable energy |

## Hydrology

| | |
|---|---|
| Catchment Area | 560 $km^2$ |
| Catchment Area below 3000m | 231.7 $km^2$ |
| Long term Average Flow | 54.62 $m^3/s$ |
| Minimum Monthly Flow | 8.43 $m^3/s$ |
| Design Discharge, Q40 | 27.47 $m^3/s$ |
| Design 100 yrs Flood Discharge | 800 $m^3/s$ |

## Weir

| | |
|---|---|
| Location | Modi Gaunpalika |
| Type | Ogee shape, overflow type |
| Crest Length | 40 m |
| River Bed Level at Weir Location | 859.00 m |
| Weir Crest Level | 862.97 m |

## Intake

| | |
|---|---|
| Type | Side Intake (Orifice) |

| | |
|---|---|
| Number of orifice | 6 |
| Size | 3.3 m X 1.65 m (W x D) |
| Invert Level | 860.50m |

**Undersluice**

| | |
|---|---|
| No of Units | 3 |
| Width | 4 m |

**Gravel Trap**

| | |
|---|---|
| Type | Surface |
| Particle Size to be settled | > 2 mm |
| Number of Basin | 2 |
| Gravel Trap Size | 15 m x 11.2 m x 5.49 m (L x W x D) |
| Spillway Length | 12.00 m |

**Approach Canal**

| | |
|---|---|
| Type | Surface/ Rectangular |
| Number | 2 |
| Size | 3.5 m x 2.95 m |
| Length | 166.70 m |

**Settling Basin cum Forebay**

| | |
|---|---|
| Type | Surface |
| Particle Size to be settled | ≥ 0.2 mm |
| Number of Units | 2 |
| Inlet Transition Length | 31 m |
| Settling Basins Size | 113 m x 16 m x 8.0 m (L x W x D) |
| Forebay Size | 33.55 m x 32.4 m x 10.60 m (L x W x D) |
| Spillway Length | 12 m |

**Headrace Tunnel**

| | |
|---|---|
| Shape | Inverted D shaped |
| Type of lining | Shotcrete, Concrete |
| Diameter | 4.05 m x (2.025 m + 2.025 m) (W x D) |
| Length | 3901.69 m |

**Power Culvert**

| | |
|---|---|
| Shape | Inverted D shaped |

| | |
|---|---|
| Type | Concrete |
| Diameter | 4.05 m x (2.025 m + 2.025 m) (W x D) |
| Length | 15.14 m |

**Surge Shaft**

| | |
|---|---|
| Type | Circular, concrete, vertical, non-spilling |
| Diameter | 10.4 m |
| Height | 50.94 m |
| Crown level of surge shaft | 883.36 masl |
| Invert level of surge shaft | 832.41 masl |

**Penstock**

| | |
|---|---|
| Type | Subsurface |
| Material | Mild Steel |
| Lengths | 475.0 m |
| Diameter | 3.5 m |
| No of Branches near Turbine | 2 |
| Diameter of each Branch | 2.5 m |
| Thicknesses | 14 mm - 16 mm |

**Powerhouse**

| | |
|---|---|
| Location | Kushma Municipality |
| Type | Semi-Surface |
| Dimension | 45.81 m x 20.82 m x 28.5 m |

**Turbine**

| | |
|---|---|
| Type | Horizontal Axis, Francis |
| Number of Units | 2 |
| Efficiency | 92% |
| Speed | 750 rpm |
| Rated output | 2 x 10,000 kW |

**Tailrace Canal**

| | |
|---|---|
| Type | Rectangular |
| Size | 4.20 m x 7.50/3.25 m (W x D) |
| Length | 58.23 m |

**Generator**

| | |
|---|---|
| No of generator | 2 |
| Power Factor | 0.8 |
| Speed | 500 rpm |
| Efficiency | 96% |
| Rating | 12.5MVA |
| Number of Poles | 8 |
| Frequency | 50 Hz |
| Rate Voltage | 6.3 kV |

## Transformer

| | |
|---|---|
| No of Units | 1 |
| Type | 3-Phase, ONAN Cooled |
| Efficiency | 99% |
| Rating | 25.0 MVA |
| Frequency | 50 Hz |

## Transmission Line

| | |
|---|---|
| Transmission Voltage | 132 kV |
| Length | 0.5 km |
| Connection Point | Pi connection with Lower Modi “A” Hydropower Project (United Modi Hydropower Ltd.) |

## Power and Energy

| | |
|---|---|
| Installed Capacity | 20.00 MW |
| Dry Season Energy | 20.36 GWh |
| Wet Season Energy | 97.04 GWh |
| Total Annual Energy | 117.40 GWh |
| Overall Efficiency | 87.43 % |