



Salient Features

Luhri HEP (Stage-I) 210 MW (2X80 + 2X25)

1.0 Location	
State	Himachal Pradesh
District	Shimla & Kullu
River	Satluj
Nearest Village (Dam Site)	Nirath
Rail Head	Kalka (Haryana) 210km
Latitude of Dam Site	31°21'40"N.
Longitude of Dam site	77°32'4"E
2.0 Hydrology	
Catchment Area at Diversion Site	51600 km ²
Snowfed Catchment (out of Total)	38827 km ²
90% dependable year	2001-2002
Total annual inflow in 90% dependable year	9063 X 10 ⁶ m ³
Flood discharge for river diversion	750.00 m ³ /sec
Probable Maximum Flood (PMF)	13462.00 m ³ /sec
3.0 Reservoir	
Full Reservoir Level (FRL)	EL 857.00 m
Maximum Reservoir Level(corresponding to PMF)	EL 859.00 m
Minimum Draw Down Level (MDDL)	EL 853.00 m
Gross Storage at FRL	25.2 X 10 ⁶ m ³
Dead Storage	18.9 X 10 ⁶ m ³
Live Storage	6.3 X 10 ⁶ m ³
Length of Reservoir	6.00 km(approx.)
Desilting Basin	Reservoir will act as Desilting basin
4.0 Dam	
Type of Dam	Concrete Gravity
Top of the Dam	EL 860.00 m
Average River Bed Level at Dam Site	EL 811.00 m
Dam Height above River bed	49.00m
Anticipated Deepest Foundation Level	EL 780.00 m
Maximum Height of Dam	80.00 m



Length of Dam at Top	224.50 m
Top Width of Dam	8.00 m
Length of Overflow Blocks	87.00 m
Length of Non-Overflow Blocks	137.50 m
5.0 Spillway	
Design Flood (PMF)	13462.00 m ³ /sec
Type of Spillway	Combination of Upper Level Spillway(ULS) and Low Level Spillway(LLS) (sluice spillway)
Energy Dissipation System	Trajectory Bucket
Low Level Spillway(LLS)(Under sluice Spillway)	
Type	Sluice type
No. of Bays	Six(06) (Block No 4 to 9)
Size of opening	8.5 m (W) X 15.0m (H)
Type & No. of gate	Radial, Six (06)
Width of each block	14.5 m
Total width of LLS	87.00m
Crest Level	EL 820.00 m
Radius of Trajectory Bucket	31.10 m
Invert Level of Trajectory Bucket	EL 810.00 m
Lip Level of Bucket	EL 815.60 m
Upper Level Spillway(ULS) (Overflow Spillway)	
Type	Ogee with open crest overflow
No. of Bays	One(01) (Block No. 7)
Size	8.5m (W) X 3.0m (H)
Type and No. of gates	Flap Gate, One(01)
Width of each block	14.5 m
Total width of ULS	14.5 m
Crest of ULS	EL 854.00 m
Radius of Trajectory Bucket	24.00 m
Invert Level of Trajectory Bucket	EL 841.10 m
Lip Level of Bucket	EL 842.14 m
6.0 River Diversion	
River Diversion Discharge (1 in 25 years)	750.00 m ³ /sec
Diversion Scheme	Through Diversion Tunnel(DT) and coffer dams
Location of Diversion Tunnel	Right Bank
No. of Tunnel	One(01)
Diameter and shape of DT	10 m, Horse Shoe Shape



Length of Tunnel	567 m
Invert Level of DT inlet	EL 812.00 m
Invert Level of DT outlet	EL 808.00 m
Top of Upstream coffer dam	EL 830.00 m
Height of Upstream coffer dam	18.00 m
Top of Downstream coffer dam	EL 814.00 m
Height of Downstream coffer dam	6.00 m
Diversion Tunnel Gate (Stoplog Type)	10 m (W) X 10 m (H)
Deck Level of DT Gate	EL 831.00 m.

7.0 Power Intake

For Main Unit

Type	Semi-Circular shaped with Inclined Trash Racks
Number of Intake for main plant	Two(02)
Design Discharge for each main Intake	245.4 m ³ /sec
Centre Line elevation of main Intake	EL 838.00
Type of Intake gate for main Intake	Fixed Wheel Type
Size of Intake gate for main Intake	5.3m(W)X7.0m(H)

For Auxiliary Unit

Type	Straight Intake with Vertical Trash Rack
Number	Two(02)
Design Discharge for each auxiliary intake	76.69 m ³ /sec
Centre Line elevation of main Intake	EL 843.00 m
Type of Intake gate for auxiliary Intake	Fixed Wheel Type
Size of Intake gate for auxiliary Intake	3.0m(W)X4.4m(H)

8.0 Penstock

For Main Unit

Number of Penstock	Two (02)
Design Discharge for each penstock	245.41 m ³ /sec
Diameter of Penstock	6.80 m
Length of Penstock	84.14 m and 80.48m
Liner Thickness	20 mm

For Auxiliary Unit

Number of Penstock	Two (02)
Design Discharge for each penstock	76.69 m ³ /sec
Diameter of Penstock	4.0 m
Length of Penstock	95.86 m & 99.82m
Liner Thickness	12mm



9.0 Power House	
Power House for main units	
Type	Dam Toe Surface
Location	Right Bank
Size of Power House including transformer, control room and auxiliary units	122m (L) X 50.50 m(W) X 65.50m (H)
Maximum Tail Water Level	EL 817.00 m
Minimum Tail Water Level	EL 813.30m
Gross Head	38.67 m
Rated Head	36.67 m
Turbine Type	Kaplan
No of Unit	Two(02)
Design Discharge per unit	245.41 m ³ /sec
Installed Capacity per unit	80 MW
Distributor Centre line Level	EL 803.00 m
Turbine Floor Level	EL 807.50 m
Generator Floor Level	EL 811.50 m
Service Bay Floor Level	EL 830.00 m
Nominal Speed of Turbine	125 rpm
Generator Type	3 phase
Number of Generators	Two(02)
Rated Output	94.2 MVA
Voltage/Frequency	11 kv/50Hz
Power Factor	0.85 cosΦ
Power House for Auxiliary Units	
Type	Dam Toe Surface
Location	Right Bank
Maximum Tail Water Level	EL 817.00 m
Minimum Tail Water Level	EL 813.30m
Gross Head	38.67 m
Rated Head	36.67 m
Turbine Type	Kaplan
No of Unit	Two(02)
Design Discharge per unit	76.69 m ³ /sec
Installed Capacity per unit	25 MW
Distributor Centre line Level	EL. 803.00 m
Turbine Floor Level	EL. 807.50 m
Generator Floor Level	EL. 811.50 m
Service Bay Floor Level	EL. 830.00 m
Nominal Speed of Turbine	214.30 rpm
Generator Type	3 phase



Number of Generator	Two(02)	
Rated Output	29.5 MVA	
Voltage/Frequency	11 kv/50Hz	
Power Factor	0.85 cosΦ	
10.0 Tail Race Channel		
Type	Open Channel	
Number	One (01)	
Size	65m (W) X 120 m (L)	
11.0 Power Generation		
Main Plant(2X80 MW)		
Annual Energy (in 90% dependable year)	547.73 GWh	
Design Energy	535.82 GWh	
Annual Load Factor	39.10%	
Auxiliary Plant(2X25 MW)		
Annual Energy (in 90% dependable year)	229.70 GWh	
Design Energy	222.38 GWh	
Annual Load Factor	52.40 %	
12.0 Estimated Cost		
Civil works	₹ 1389.53 crore	
E&M works	₹ 401.36 crore	
Total Basic Cost	₹ 1790.89 crore	
IDC and Financing Charges	₹ 417.45 crore	
Total Project Cost	₹ 2208.34 crore	
13.0 Financial Aspects		
Cost of generation (1 st year tariff) at Power House bus bars (including IDC) during 90% dependable year as per CERC guidelines	With Free Power	Without Free Power
	₹ 6.95 /kWh	₹ 6.11 /kWh
Cost of generation (Levelised tariff) at Power House bus bars (including IDC) during 90% dependable year as per CERC guidelines	With Free Power	Without Free Power
	₹ 6.44 /kWh	₹ 5.66 /kWh
14.0 Construction Period		
Total construction period	5 years	

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