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### OUR INTRODUCTION

We are pleased to introduce ourselves as Design Engineers & Consultants for Basic engineering, Pre-bid estimation engineering and Detail engineering services for High Voltage Substations Electrical, Controls, Protection, Substation Automation System and associated Civil/Structural and Mechanical works of following type of projects:

- Gas Insulated/Conventional indoor/outdoor substations from 11kV up to 500kV.
- Electrical portion of Thermal power plants (Oil/coal/gas fired), Electrical B.O.P packages.
- Overhead Transmission lines up to 500kV.
- Rural Electrification projects - 30kV, 20kV, 15kV, 11kV, 400V.
- Electrical, Controls, Automation, HVAC & Firefighting systems of:
- Steel, Minerals, Coal, Materials Handling, Mining, Building works and misc. industrial project
- Substation Automation, SCADA and telecommunication systems for large substations.

Akam Hewad was established in the year 2018. At present it is providing Design & Engineering services in various projects in Afghanistan. In many of these projects, Akam Hewad is providing services as Contractor's Consultant which requires high level of engineering skill in order to optimize equipment and materials. Akam Hewad follows well established Engineering Design norms laid down in International and national standards for day-to-day engineering services.

We can provide Project management, monitoring, progress review and supervision of erection, testing and commissioning by deputing senior engineers at site. We also provide Contour survey, preparation of topographical contour survey drawings using DGPS / TOTAL STATION for substation plots and overhead line routes, Soil resistivity measurements using four Wenner method, Geotechnical investigation at site for Afghanistan Projects.



### WHY CHOOSE US?

We thank you for reading Akam Hewad profile and taking interest in it. You may like to choose Akam Hewad as your Consultant for Extra High Voltage Substation, Transmission Line and Industrial Power Generation & Distribution projects due to the following reasons:

Akam Hewad was established on 1st January 2018. It has completed 5 years of successful journey. Over the years Akam Hewad got opportunity to participate in many prestigious projects in Afghanistan. In the process we have gathered invaluable experiences. The valued experiences help us to present an optimum solution for our clients.

Over the years we have standardized our operations for design & engineering. We can deliver the design calculations, drawings, technical specifications and reports within short delivery time. We don't compromise with QUALITY. This is one of our key strengths and helps us to survive.

We don't participate or encourage in corrupt practices. We don't bribe. Clients who have personal interest of financial gains should refrain from contacting us.

Domain expertise is another key strength of ours. Very senior engineers having more than 7 years of experience supervise the design activities.

Due to lower overhead, we deliver quality designs and drawings at reasonable price. Flexibility in pricing gives us an edge.

We have experienced that Projects executed as per our drawings and designs get executed in short time span because our designs are compliant to National/International standards, statutory regulations and Client's technical specification.

We have our own facility for Testing and Commissioning of Extra High Voltage substations, Transmission lines, Industrial power generation and distribution projects.

Thank you for devoting your invaluable time in reading through the above.

## Akam Hewad LTD.

**Vision:**  
To be a leading provider of innovative and sustainable energy solutions driving the transition towards a clean and efficient future, while positively impacting communities and empowering individuals.

**Mission:**  
At Akam Hewad, our mission is to design and deliver state-of-the-art sub stations and solar panel installations solutions to our clients. We are committed to:

**Innovation:**  
Continuously pushing the boundaries of design and technology to deliver cutting-edge solutions that optimize energy generation, distribution, and consumption.

**Sustainability:**  
Promoting the adoption of renewable energy sources and minimizing the environmental impact of energy production by designing and implementing solar panel systems with the highest efficiency and longevity.

**Quality:**  
Ensuring the highest standards of quality in every aspect of our work, from meticulous design and engineering to installation and ongoing maintenance, to deliver reliable and durable energy infrastructure.





## OUR SERVICES

### 01 Design and Consultancy:

**Design:**  
Our design team is one of the best design teams in Afghanistan, which has a great experience in designing electrical projects. We use the latest electrical software (Etap, Cyme and PLS-CADD) in designing our projects.

Our scope of work in the field of design includes the following:

- Insulated/Conventional indoor/outdoor substations from 11kV up to 500kV.
- Overhead/Transmission lines up to 500kV.
- Rural Electrification projects - 30kV, 20kV, 15kV, 11kV, 400V.
- Electrical, Controls, Automation, HVAC & Firefighting systems of: Steel, Minerals, Coal, Materials Handling, Mining, Building works and misc. industrial projects.
- Substation Automation, SCADA and telecommunication systems for large substations.

**Consultancy:**  
We provide service in terms of purchase tendering documents, BOQ, RFP, and technical specification provision to the organizations who offer purchase tendering, equipment engineering.

### 02 EPC:

AKAM HEWAD Company has capabilities to design, manufacture, test, supply, and erect transmission lines on a turnkey basis up to 500kV. The Company also executes turnkey EPC projects that involve High Voltage Electrical Switching and Distribution Substations.

### 03 Renewable Energy:

In line with the Government's increased focus on the Renewable Energy sector, AKAM HEWAD has made a move to carve out its presence in the sector by providing Solar EPC services to large solar PV projects developed by private sectors and roof-top PV solutions for industrial and Commercial consumers. Further, we are impeded with the Ministry of Energy and DABS under their Solar On-grid program contributing to the National roof-top mission.

Design & Engineering, Project Implementation, Project Management, Bid Management, Project Feasibility Analysis across large-scale Solar Photovoltaic Power Plants for both land-mounted as well as roof-top Solar PV projects.

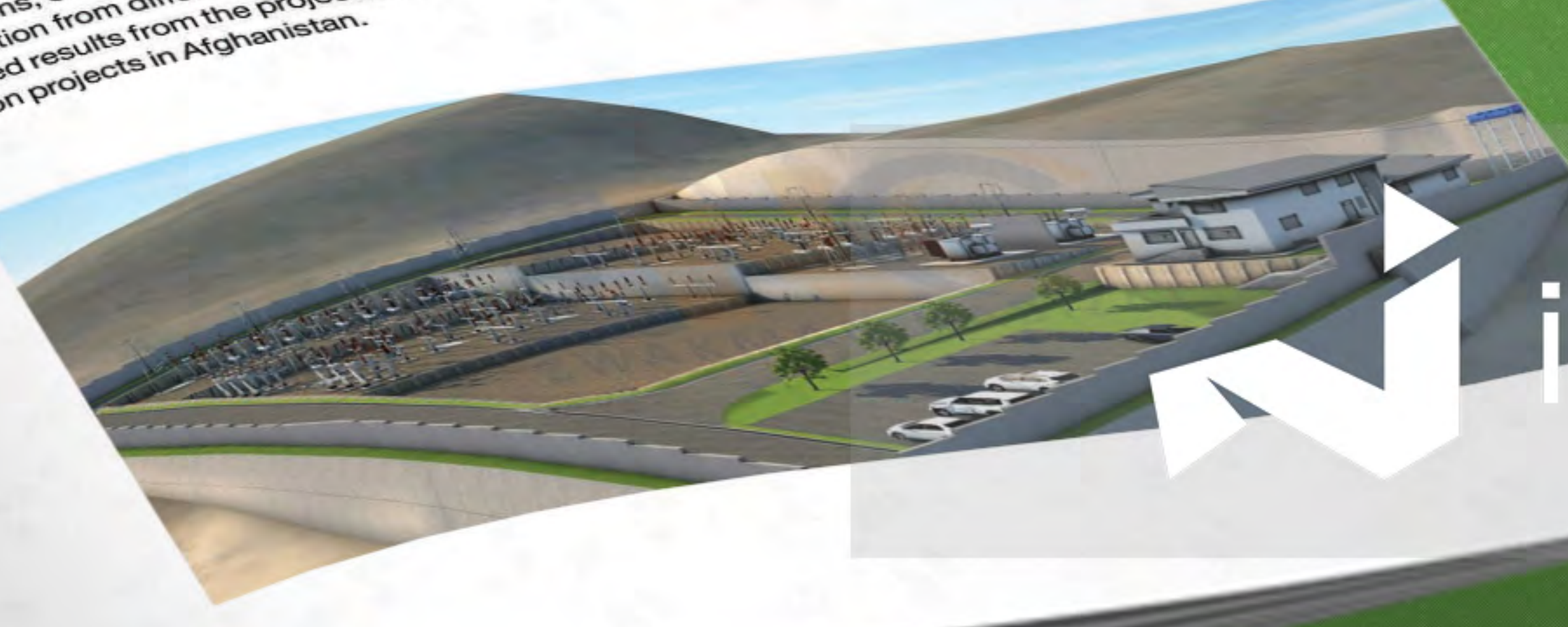
## OUR SERVICES

Akam Hewad is a Kabul based Engineering Consultant for Substation, Transmission Line Design, Distribution line and power plant. We provide Extra High Voltage Engineering Consultancy Services comprising of Prebid Engineering services and BOQ estimation, Detail Engineering Drawings, Design Calculations and BOM, Preparation of Feasibility & Detail Project Reports, Electrical System Studies by software, Topographical Contour Survey and Preparation of survey drawing, Geotechnical Investigation including Soil Resistivity measurement, Project Management Services, Supervision of erection, Testing and Commissioning at site for the following type of projects. Testing & Commissioning of EHV Substations and Transmission Lines can also be taken up along with our associated Electrical Consulting firms.

■ We provide the following Design Engineering and Consultancy services for Electrical, Civil, Structural, Mechanical and Automation system works of EHV Substations, Transmission Lines, HV/MV Industrial Power Distribution systems of Large Industries:

### 04 3D Layout Drawings for EHV Substation projects

We have the resources (software and experienced manpower) to prepare 3D layout drawings of EHV switchyards, EHV GIS substations, Control room buildings, 3D drawings helps decision makers to visualize the intended installation from different angles and adopt suitable decisions to add/delete equipment facilities for obtaining desired results from the project. We have long experience of delivering such 3D drawings for various EHV substation projects in Afghanistan.







**OUR SERVICES**

**08 Prebid Engineering and BOQ Estimation services for EHV Substn. and Transm. Lines, Indust. Power Dist. Systems**

We provide Prebid engineering services to help EPC contractors to prepare their techno-commercial offers for Power generation, substation and industrial projects. Our services comprise of estimation works for the following equipment and systems:

- High voltage switchyard equipment like CB, CT, CVT, PT, LA, Isolator, Insulators, ACSR/AAC/AAAC conductors, earth wires, clamps, connectors and hardware.
- Power MV switchboards - 6.6/11/33kV and MV MCCs.
- LV Switchgear, DBs, Lighting DBs, UPS.
- LV battery charger & protection panels.
- Battery, metering & protection cables.
- Control, metering & protection system.
- HV & LV power cables, control and signal cables.
- Substation automation system.
- Earthing protection system.
- Lightning and Indoor illumination & racks.
- Outdoor and Indoor communication (PLCC) system.
- Cabling system including trays & racks.
- Power line carrier communication system.
- PLC and industrial plant automation system.
- GIS structures for construction materials for equipment foundations, gantry tower foundations, transformer oil pit, cable trenches, buildings, road, drain, sewerage system, boundary wall, culverts etc.
- Complete civil construction systems.
- Air conditioning and ventilation systems.
- Fire protection system, Hydrant and High velocity water spray system.
- Nitrogen injection fire protection system for Transformers.

**OUR SERVICES**

**09 Design Calculations for Electrical, Civil, Structural and Mechanical works engineering.**

Following design calculations can be submitted for various projects:

- Load flow study, fault level calculations, transformer sizing, breaker sizing, motor starting study.
- Design short circuit lightning protection (DGLP) calculation.
- CT, CVT & PT sizing calculation.
- Voltage drop calculation and setting charts by ETAP / manually by excel.
- Short circuit force calculation and setting charts by ETAP / manually by excel.
- Relay setting and outdoor lighting calculation.
- Indoor and outdoor lighting calculation.
- LV AC & DC breaker calculation (by ETAP / manually by excel).
- Transformer and Aluminium tube bus sizing calculation.
- ACSR conductor & Aluminium tube bus setting calculation.
- ACSR template and stringing chart for transmission lines.
- Sag template and stringing chart for various buildings and towers.
- Civil design calculations for lattice towers.
- Structural design calculations for lattice towers.
- Air conditioning and ventilation system design.
- Design calculations for fire fighting system.

**OUR SERVICES**

**10 Design & Engineering for Transmission Lines up to 500kV**

Following services can be offered:

- Site & Terrain survey and preparation of topographical contour layout drawing.
- Geotechnical investigation, Tower setting using PLS CADD software.
- Preparation of Tower Schedule.
- Structural GA drawings with BOM and weight for different types of transmission line towers (normal and with extension).
- Design calculation for lattice type steel tower structures by STAAD Pro software.
- Overhead transmission line route layout drawing showing plan and elevation view, location of towers, details of various crossings, clearances with existing lines and utilities.
- Sag & Tension stringing chart using PLS CADD software.
- Technical specification and bill of quantity (BOQ) for transmission line towers and all electrical materials.
- Review and approval of vendor drawings.

**11 Civil, Structural and Architectural Engg. Services for EHV/HV/MV Substn, Transm. lines, Indust. Power Dist. Systems.**

Following design and drawings can be provided:

- Structural G.A drawings (with BOM and weight) and design calculations for steel Lattice/box/pipe type, gantry towers, beams, equipment support structures, cable trusses, transmission line towers etc.
- Civil construction (RCC) drawings, design calculations and bar bending schedule of foundations for gantry towers, equipment support structures, control buildings / DG building / fire fighting pump house / Store shed / Staff quarters buildings, indoor substations, MCC rooms, fire water reservoirs, transformer foundation, Oil water separator pits, cable trenches, roads & drainage, boundary wall, culverts, switchyard fence & gate and cable trench.
- Civil/structural design calculations are made using STAAD computer programs.
- Architectural drawings of industrial buildings like control buildings, indoor substations, GIS substation building, store sheds, security room, Staff quarters, ramp houses etc.

**OUR SERVICES**

**12 Preparation of Tender Document / Technical specifications for High / Medium / Low voltage Electrical equip. & systems, Mechanical specifications for High / Medium / Low voltage Electrical equip. & systems, Mechanical specifications for High / Medium / Low voltage Electrical equip. & systems.**

We have standard specifications for the following equipment and systems. These can be converted to project specific specifications in a short span to assist the Customer to proceed for procurement.

- 01. High voltage switchyard equipment like CB, CT, CVT, PT, LA, Isolator, Insulators, ACSR/AAC/AAAC conductors, earth wires, clamps, connectors and hardware.
- 02. Power transformer, Distribution transformer, Earthing transformers, Lighting transformers.
- 03. Indoor MV switchboards - 6.6/11/33kV and MV MCCs.
- 04. LV Switchgear, DBs, Lighting DBs, MCCs.
- 05. Control, metering & protection panels.
- 06. HV & LV power cables, control and signal cables.
- 07. Substation automation system.
- 08. HV & LV motors.
- 09. PLC, MMI.
- 10. Earthing system.
- 11. Lightning protection system.
- 12. Outdoor and Indoor illumination system.
- 13. Cabling system including trays & racks.
- 14. Fire protection systems, Hydrant and High velocity water spray systems.
- 15. Air conditioning and ventilation systems.

**13 Tender evaluations, recommendations to client and providing assistance to client for placement of orders.**

Sourcing of equipment from reputed sources, issuing technical specifications, tender evaluation, recommendation report and suggestion for procurement of following equipment and systems:

- 01. High voltage switchyard equipment like CB, CT, CVT, PT, LA, Isolator, Insulators, ACSR/AAC/AAAC conductors, earth wires, clamps, connectors and hardware.
- 02. Power transformer, Distribution transformer, Earthing transformers, Lighting transformers.
- 03. Indoor MV switchboards - 6.6/11/33kV and MV MCCs.
- 04. LV Switchgear, DBs, Lighting DBs, MCCs.
- 05. Control, metering & protection panels.
- 06. HV & LV power cables, control and signal cables.
- 07. Substation automation system.
- 08. HV & LV motors.
- 09. Earthing system.
- 10. Lightning protection system.
- 11. Outdoor and Indoor illumination system.
- 12. Cabling system including trays & racks.
- 13. Steel structures (Lattice / Pipe type).
- 14. Air conditioning and ventilation systems.
- 15. Fire protection systems, Hydrant and High velocity water spray system.
- 16. Nitrogen injection fire protection system.



## OUR SERVICES

### 14 Vendor drawing review and approvals/coordination with vendors for equipment finalizations.

- Vendor drawing review, comments / clarifications and approval of following equipment and systems.
- 01. High voltage switchyard equipment like CB, CT, CVT, PT, LA, Isolator, Insulators, ACSR/AAC/AAAC conductors, earth wires, clamps, connectors and hardware.
  - 02. Power transformer, Distribution transformer, Earthing transformers, Lighting transformers.
  - 03. Indoor MV switchboards - 6.6/11/33kV and MV MCCs.
  - 04. LV Switchgear, DBs, Lighting DBs, MCCs.
  - 05. Control, metering & protection panels.
  - 06. HV & LV power cables, control and signal cables.
  - 07. Substation automation system (SCADA, HMI, Servers, Ethernet switches).
  - 08. HV & LV motors.
  - 09. Earthing system.
  - 10. Lightning protection system.
  - 11. Outdoor and indoor illumination system.
  - 12. Cabling system including trays & racks.
  - 13. Power line carrier communication (PLCC) system.
  - 14. PLC and industrial plant automation (PLCC) system.
  - 15. G.S structures for switchyard.
  - 16. Air conditioning and ventilation system.
  - 17. Fire protection system, Hydrant system, High velocity water spray (HVWS) system.

### 15 Inspection services, Witnessing of Factory Acceptance tests at manufacturers works of Electrical High voltage equipment.

- Inspection and witnessing of routine and acceptance tests at manufacturer's works for following equipment and systems:
- 01. High voltage switchyard equipment like CB, CT, CVT, PT, LA, Isolator, Insulators, ACSR/AAC/AAAC conductors, earth wires, clamps, connectors and hardware.
  - 02. Power transformer, Distribution transformer, Earthing transformers, Lighting transformers.
  - 03. Indoor MV switchboards - 6.6/11/33kV and MV MCCs.
  - 04. LV Switchgear, DBs, Lighting DBs, MCCs.
  - 05. Control, metering & protection panels.
  - 06. HV & LV power cables, control and signal cables.
  - 07. Substation automation system.
  - 08. HV & LV motors.
  - 09. Earthing system.
  - 10. Lightning protection system.
  - 11. Outdoor and indoor illumination system.
  - 12. Cabling system including trays & racks.
  - 13. Power line carrier communication (PLCC) system.
  - 14. PLC and industrial plant automation (PLCC) system.
  - 15. G.S structures for switchyard.

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## OUR SERVICES

### 16 Topographical Contour Survey, Geotechnical Investigation of Substation plots and OHL Routes, Tower Spotting

- We provide the following services:
- 01. Topographical contour survey of substation plots and transmission line routes.
  - 02. Preliminary survey, Check survey and detail survey of Overhead Line routes upto 400kV.
  - 03. Preparation of topographical contour survey plan and elevation drawings of Substation plots and OHL routes.
  - 04. Tower spotting and selection of various type of towers by PLS CADD software.
  - 05. Sag & Tension calculations by PLS CADD software.
  - 06. Sag template drawing for overhead lines.
  - 07. Overhead line structure design by Staad pro software.
  - 08. Design and drawings of Tower foundations.
  - 09. Geotechnical investigation of Tower foundations.
  - 10. Soil resistivity test for substation plots and along overhead line routes (2 points per km or as per Client's advice).

### 17 As built drawings for EHV Substn., Transm. lines, EBOP of Power gen. plants, Indust. Power Dist. Projects.

- All drawings prepared during detail engineering stage may undergo certain changes during project installation and commissioning. We can depute our representative at site to mark these changes in respective drawings. Based on these changes and site discussions, drawings can be revised and submitted as 'As Built' drawings.

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## OUR SERVICES

### 18 Feasibility Study Reports, Detail Project Reports, Project Costing for EHV Substation and Transmission Line Projects

Feasibility Study Report:

At the initiation of every large-scale project, it is customary to conduct a feasibility study to provide legal and technical evidence of the project's viability, sustainability and cost-effectiveness. The reporting process allows the senior management to get the necessary information required for making key decisions on budgeting and investment planning. A well-written feasibility study report lets develop solutions for:

- Project Analysis because it helps with contingency planning and risk treatment strategy development.
- Risk Mitigation because the report can be used by senior management to identify staffing needs as well as acquire and train necessary specialists.
- Staff Training because the report can be used by senior management to identify staffing needs as well as acquire and train necessary specialists.

The process of reporting is the trigger to run the project investing process through underpinning the business case document, stating the reasons for undertaking the project, and analyzing project costs and benefits.

Detail Project Report:

Detailed Project Reports (DPRs) are the outputs of planning and design phase of a project. DPR is a very detailed and elaborate plan for a project indicating overall programmed, different roles and responsibilities, activities and resources required for the project.

To be more precise, A DPR is a final, detailed appraisal report on the project and a blue print for its execution and eventual operation. It provides details of the basic programmed the roles and responsibilities, all the activities to be carried out and the resources required and possible risk with recommended measure to counter them.

- The success of project is measured on the basis of:
- Whether the project was completed on time.
  - Whether the project cost was within reasonable limits of escalation.
  - Whether actual cost of project was able to deliver the products of desired quality and in adequate quantity.
  - Whether after completion of the project it was able to deliver the products of desired quality and in adequate quantity.
  - Whether the project gestation period was within planned duration.
  - Whether the project gestation period was within planned duration.

The design stage is a blue print which on paper gives a great length and detail what has to be done to convert the corporate investment in a feasible project idea and ultimately a profit-making enterprise. The top management policy guidelines, its impact on the project life, appraisal in terms of financial viability is dealt in great detail. The DPR is the basic of specification, contract drawings, detailed technical feasibility, financial feasibility, execution of project from practical point of view. The DPR should also highlight the nature of inherent risks in the project & potential external risks that will influence the outcome of the project. Also, the DPR should give the measures for risk management and risk mitigation.



## OUR SERVICES

influence the outcome of the project. Also, the DPR should give the measures for risk management and risk mitigation.

- The main sub-division in a DPR is:
- General Information of the project.
  - Background and the experience of the project promoters.
  - Background and working result of industrial concerns already owned and promoted by the project promoters.
  - Details and working result of industrial concerns already owned and promoted by the project promoters.
  - Details of the proposed project:
    - Plant capacity.
    - Manufacturing procedure adopted.
    - Technical knowhow/ tie-ups.
    - Management teams for the project.
    - Details of land, buildings and plant and machinery.
    - Details of infrastructural facilities (power, water supply, transport facilities etc.)
    - Details of infrastructural facilities (power, water supply, transport facilities etc.)
    - Raw material requirement/ availability.
    - Effluents produced by the project & treatment procedures adopted.
    - Effluents produced by the project & treatment procedures adopted.
    - Labor requirement and availability.
    - Labor requirement and availability.
    - Schedule of implement of the project.
  - Project cost.
  - Means of financial projects.
  - Working capital requirement/arrangements made.
  - Marketing and selling arrangement made.
  - Marketing and selling arrangement made.
  - Profitability and cash flow estimates.
  - Mode of repayment of loans.
  - Government approvals. Local body consents and statutory permissions.
  - Government approvals. Local body consents and statutory permissions.
  - Details of collaterals security that can offered to the financial institutions.
  - Details of collaterals security that can offered to the financial institutions.



## OUR SERVICES

### 19. Consultancy Services for Control & Supervision of Construction of Substation & Transmission Line Projects including Project Management Services.

Following services are provided by us:

- 01. Review of Contractor's design, drawings, manuals, technical literatures.
- 02. Suggesting means of improving Contractor's design methods and standards in order to expedite completion of the engineering phase of the project.
- 03. Quality control of the engineering design and drawings as per the requirements of the technical specifications and contract agreement.
- 04. Suggesting the Contractor on proper documentation of design and drawings (both in hard copy and in soft copy).
- 05. Management of archive of drawings and documents in Project Management software.
- 06. Progress reporting on monthly or fortnightly basis.
- 07. Erection, Testing and Commissioning Phase: Construction Management system integrate co-ordination and dovetailing of inputs & resources, towards the prime objectives of completing the project on schedule, controlling cost and quality.
- 08. Services covered under Construction Management, Erection & Commissioning include the following:
  - 01. Resources identification and acquisition.
  - 02. Formulating responsive project Organization structure.
  - 03. Supervision during Civil Construction and Equipment Erection.
  - 04. Supervision overall construction and commissioning procedures and support.
  - 05. Conducting overall construction and commissioning procedures and witnessing.
  - 06. Monitoring overall construction and commissioning procedures and witnessing.
  - 07. Identifying overall construction and commissioning procedures and witnessing.
  - 08. Pre-commissioning and commissioning procedures and witnessing.
  - 09. Review of O&M manuals.
  - 10. Review of PG test procedures and drawings.
  - 11. Guiding the Contractor on how to manage the site markup drawings.
  - 12. Certification of Contractor's As-Built drawings.
  - 13. Review and approval of As-Built drawings.
  - 14. Progress reporting with site photos and Gantt charts on monthly or fortnightly basis.
- 14. Progress reporting with site photos and Gantt charts on monthly or fortnightly basis.

MS projects software is used for project scheduling activity. Other software may be used based on Client's requirement.

## WE'RE ON Strong Projects of Akam Hewad

Akam Hewad is providing design & Engineering services in various projects in Afghanistan. In many of these projects, Akam Hewad is providing services as Contractor's Consultant which requires high level of engineering skill in order to optimize equipment and materials. Akam Hewad follows well established Engineering Design norms laid down in International and national standards for day-to-day engineering services.

### NO Projects Name

- 01 Installation of solar system in provinces of Jowzjan, Sar-e-pole, Faryab, Takhar, Baglan, Kunduz & Balkh
- 02 Design supply, Construction, Erection, Testing and Commissioning of 110/20kV Substation
- 03 Design Build Afghanistan Electrical Interconnect Kabul Military Training Center.
- 04 Design Build Afghanistan Electrical Interconnect Afghan National Army Headquarter
- 05 Design Build Afghanistan Electrical Interconnect Ministry of Defense (Kerker substation)
- 06 Design Build of Extension transformer bay in Hamishe Bahar Substation
- 07 Construction of South East Power System
- 08 Design Build of Gulbahar to Panjshir, Transmission line and Substation.
- 09
- 10
- 11



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