

Package A2: GIS and Surveying Technology for SASAN Ultra mega power Project transmission system.

Package B1: GIS and Surveying Technology for SASAN Ultra mega power Project transmission system.

Package B2: GIS and Surveying Technology for SASAN Ultra mega power Project transmission system.

The installed generating capacity in the Indian Power System is approx. 100,000 MW at present. In spite of having such capacity, there is 12% deficit in peak demand and 6% deficit in energy. In order to bridge these gaps in demand and supply, Government of India has evolved an ambitious power development programme. In this programme more attention is given to development and strengthening of transmission systems so as to supplement the shortcomings of the past. The programme envisages addition of about 100,000 MW generating capacity along with matching transmission network within the next decade. The transmission system, thus, to be planned and implemented in the next decade is of the order of 60,000 circuit kms in the EHV range and the investment in the sector is of the order of \$ 12 Billion. In order to execute such magnitude of transmission system, which is of much higher order than those totally implemented in the last 5 decades, precise planning, costing, scheduling etc. would be required. Optimum deployment of resources also would be of prime target in implementing these transmission systems.

CLIENT: Advanced Micronic Devices Limited for Power Grid Corporation of India Limited

LOCATION: SASAN-SATNA

END CLIENT DESCRIPTION

Sasan Power Limited was initially controlled by the Power Finance Corporation Limited. Sasan Power Limited became an integral part of Reliance Power on August 7, 2007. Sasan Power Limited is a Shell company which performs the basic functions of contacting the buyers of power and looking into payments regarding usage of power utility.

Some of the other responsibilities of the Sasan Power limited as a Shell company are mentioned below:

- Allotment of coal blocks in collective form
- Making a comprehensive project report
- Study of load flow, power evacuation system, system stability with new capacity addition or grid tolerance
- Supply of water by the State government
- Appointing consultants for the purpose of evaluation and making of documents of International Competitive

CHALLENGES

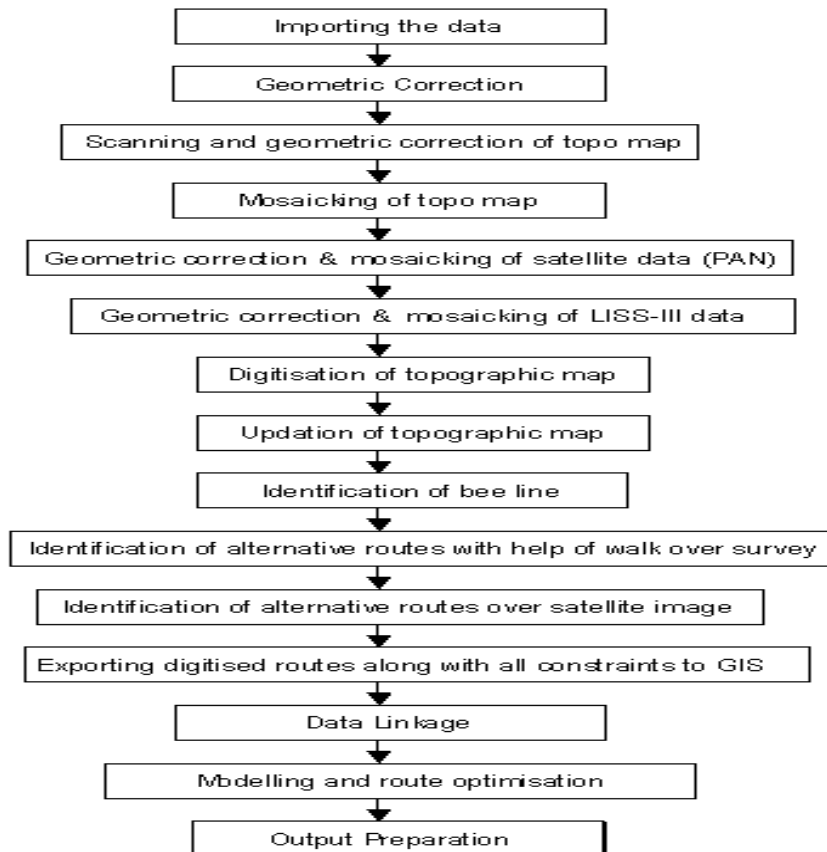
As transmission lines have to traverse the length and breadth of the country, for evacuation of power from generating stations to load centers and beneficiary states, the topographical & geographical nature of the terrains play significant influence in the project cost and implementation time. Hence, it is essential that at the planning stage itself various alternative routes and technical solutions for transmission lines be examined in detail. Conventional methods of survey like walk over survey, preliminary survey and detailed survey are carried out at various stages from conceptualization of the project to implementation, which are time consuming tasks. As manual conventional methods are used for these surveys, which are conducted in not so friendly terrains, there is possibility that the results do not reflect adequately the true picture the terrain in great details. However new means available to conduct route survey using remote sensing, aerial survey, GPS based survey etc. are available now.

SOLUTION OFFERED

- Route alignment
- Cadastral mapping
- DEM generation
- Detailed Landuse generated from satellite Imagery
- Administrative Boundaries (Settlement level)
- Land parcel mapping along the both side of the proposed routes from Cadastral Maps of Villages
- Sites for substation location based on site analysis
- Identification of 3 alternative Route alignment using satellite images
- Digital Terrain Modeling

- Walkover survey of route alignment
- Preparation of survey report
- Identification of alternative sites for substation

Methodology for GIS based analysis for Route Alignments and walkover Survey for Power Evacuation



TECHNOLOGY

- **GPS: eTrex® 10**
- **Satellite Image Analysis: ERDAS Imagine**
- **GIS Data Preparation: ArcGIS 9.2**

BENEFITS TO THE CLIENT

With the help of Modern Surveying Techniques implementation of Geographic Information System, SASAN Ultra mega power Project transmission system is able to optimize the cost of transmission line based on following findings of the Project

- Shortest route clearing various objects
- Minimum number of river crossing towers

- Accessibility i.e. from approachability for construction as well as from law and order point of view.
- Selection of optimum foundations based on following information
- Type of soil
- Type of terrain
- Loose hills especially in young Himalayan region, areas prone to landslides
- Area of submergence as well as prone to river meandering

The Project helped in ensuring the statutory clearances with respect to following:

- Power line crossings, Railway crossings, road crossings etc.
- Clearances from habitation
- Environmental clearances
- Minimum forests, minimum forests density
- Historically important areas and monuments
- National Parks and wild life sanctuaries