



Angelique International is a global EPC company with expertise in diverse areas like power, water and industry. In the power transmission segment, Angelique International has proved its competence by successfully constructing complex transmission systems in diverse global geographies. We have **Rattan Lal Labroo** discussing at length Angelique's power transmission business. Getting into the EHV segment, including 400kV, 500kV and 765kV, both in India and abroad, is high on the company's agenda, notes Labroo. An interaction by **Venugopal Pillai**.

We are now eyeing the 400kV and 765kV segment

— **Rattan Lal Labroo**, Joint President – Power Group,
Angelique International Ltd

We observe that most of your power T&D projects are overseas. Tell us about the rationale of this preference.

Angelique International Ltd was founded in 1996. Promoters and the professionals, who joined the company had vast experience in international projects. The basic aim and vision was to establish a company to deliver quality international EPC projects over the years in developing countries. The main focus has been on all parts of Africa, SAARC and ASEAN regions. Developing countries are deficient in infrastructure and availability of power is a big problem in Africa. This was one of the main reasons for us to go in for T&D projects in Africa.

Our first major T&D job was in Sudan, the 220kV 342-km Singa-Hawatta-Gedaref-Galabat double circuit transmission line with three substations consisting of 2x100 MVA transformers each. On the successful execution of this project,

we were awarded the Mali-Ivory Coast interconnection project.

It is not just power T&D, Angelique focuses on the entire value chain including generation, rural electrification and household connections. Incidentally, Angelique is the only Indian company having undertaken complete EPC hydropower projects in Africa. We completed our first hydropower project along with its associated transmission line and substations in Rwanda last year. We also completed the Salma Dam hydropower project in Afghanistan that was inaugurated by Hon'ble Prime Minister of India, Shri Narendra Modi last year.

It was in 2005 that Angelique diversified into domestic market.

Which countries or regions do regard as high-potential ones when it comes to your overseas power T&D business?

Developing countries in sub Saharan Africa suffer from deficiency in



225/30/15kV Sikasso substation, Mali



225/16.5kV Djibi substation, Ivory Coast

power infrastructure. This is a major region having potential for T&D projects. In addition, South East Asian and SAARC countries offer a lot of potential.

What are the typical challenges that power T&D contractors face during project execution? In general terms, what difference do you perceive whilst executing projects in India and overseas?

There are many challenges in executing projects overseas. For instance, on the technical side, each country and region has its own practices of construction of T&D systems. It sometimes becomes difficult to convince the authorities on the advancement or improvisation in the system as they are not ready to deviate from the techniques that they have been using for years.

There also exists significant difference in executing projects in India and abroad. In overseas projects, the specifications of the equipments do not necessarily cover all technicalities required by contractor to design the system. This is mainly due to blending of the practices prevailing in the country and the specifications prevailing in the country of origin of consultant. Thus it becomes difficult to sort out the contradictions, considering the local conditions

Many a times the contractor has to improvise and frame the requirements by carrying out system study, as grid data is not available.



220kV Gadaref-Gallabat transmission line, Sudan

The routing to destination is to be planned carefully taking into account the time taken and cost analysis for transportation to ultimate destination. One has to be clear about port clearances, local laws, taxation, customs formalities etc. Unloading machinery like cranes of sufficient capacities are not available in many places. There are instances where we had to transport cranes from neighboring countries.

Also, replenishing the shortage of materials is a costly affair and a difficult task, as the lead time for sending the materials from India or elsewhere is long. Even airlifting has to be done sometimes. Basic

hardware items of standard sizes are not available in some places and hence need to be airlifted from India.

In 90 per cent of cases, skilled manpower is sent from India adding to the cost and time, as the visa formalities and police clearances elongate the time line.

Even the basic tools and tackles are to be carried from India. In some cases, it is difficult to airlift some of the testing equipment because of its size.

Language of communication poses a big problem in many countries. Most of the West African nations are Francophone.

Warlike situation or political disturbance is a big challenge in some countries like Yemen, Afghanistan, Burundi, Mali, Tchad where we are working or have worked. We had to evacuate our staff for safety reasons.

Obtaining shutdowns is particularly difficult for interconnection jobs where multiple agencies in different countries are involved. It is difficult to arrive at an agreement as the utilities have different priorities.

What comes to your mind as the most challenging power transmission project executed in India or overseas?

It is difficult to pick up one project. However, the Mali-Ivory Coast interconnection project was a challenging one.

The scope was a 100-km 225kV line

in Mali and a 137-km 225kV line in Ivory Coast forming interconnection between two countries. It also involved construction of complete 225kV substations at Ferkessedougou in Ivory Coast and at Sikasso, Koutiala and Segou in Mali.

It also involved synchronizing power systems of Ivory Coast and Mali and making it operational, and providing and commissioning a 1,200-km PLCC/OPGW communication link from Abidjan in Ivory Coast to Segou in Mali.

The challenges encountered were very significant:

The project jurisdiction fell in two countries Mali and Ivory Coast, but Mali was the client. The material shipment was through Abidjan, Ivory Coast but had to be stored in Sikasso, Mali, due to rebels' control in the area of the project in Ivory Coast; authorities were not inclined to keep storage in Ivory Coast. Managing time and cost was a big challenge to operate the stores from Mali, first towards Mali and then from Mali to Ivory Coast.

The Mali Ivory Coast border was controlled by rebels—gun-totting persons in military uniform with no state authority—but full illegal authority. They would harass at will for passing the border. Our staff was directed not to travel in evening and return to base before dark as there was threat. In the 137-km road length in Ivory Coast territory, there were about ten more similar check posts.

We had instances where our site staff was fired upon by AK47. Luckily the occupants were safe, and the bullets pierced the car mud guards. Shooting, looting intimidation were daily rituals in that section.

Live line stringing of one circuit (10-km 225kV line) was to be done while the other circuit feeding the third country Burkina Faso was already energized. Only for final tensioning brief shutdowns were taken. For this the coordination had to be done with multiple authorities in three countries—Mali, Ivory



115kV multi-circuit line, Laos

Coast and Burkina Faso.

While the project work was in final stage, there was a military coup in Mali. We had made an evacuation plan for the safety of the personnel. Some people were shifted, but we established a perfect liaison with the local authorities and our embassy and carried out the work taking the risk factor in account. Had we evacuated the personnel at that time, it would have taken a minimum one more year for completion and that too at an exorbitant additional cost.

At that time, the total installed power generation capacity of Mali was around 250 mw. With the commissioning of this project, the country got an additional 100 mw of reliable power. The power supply was a boon for society in general and particularly helped flourishing of the cottage industry.

India has envisioned huge capital expenditure in the power T&D sector right from setting up of EHV power transmission infrastructure right down to village electrification. How do you see business opportunities in India?

India has been the frontrunner in energy sector investment. This has brought in the pace in the power



220/110/33kV Singa substation, Sudan

T&D sector towards network growth and reliable grid power. Yes, with the current plans of development in T&D sector right up to village electrification we see major opportunities. State utilities with help of Power Grid Corporation of India are putting up more and more capital towards strengthening of the system and expansion thereof. We are actively participating in various upcoming packages.

Our international exposure and workability with success in hostile and difficult terrains will serve us good in the domestic market.

Currently, what is the share of power T&D in your overall business portfolio?

Angelique International Ltd has its roots in core electrical sector comprising energy and power T&D sector. It is backed up by strong-willed professionals having rich experience. The share of T&D business including generation in our overall business portfolio is roughly about 60 to 65 per cent, at present.

Do you envisage this share rising in the coming years?

With active involvement in rising opportunities in India we envisage this share rising by another 10 per cent in coming years.

What are the key milestones that you would like to see Angelique International crossing in the next 5-7 years, when it comes to your power T&D business?

We are already executing a 285-km 400kV transmission line in Nepal. We are also executing a 400kV substation project in Zimbabwe.

We have already proved our competence in the 220kV segment and are furthering our steps into the 400 kV segment.

In the next few years we see ourselves doing 400kV and 765kV power T&D projects in India and abroad, in full swing. We are also seeking opportunities in the 500kV segment outside India. ■