CASE STUDY

Navigating Africa's **surging demand for renewables**

Energy System Planning Ltd. services leverage advanced transmission planning and analysis software for sound-decision making.

The changing energy landscape

Renewables in the energy sector are revolutionizing how electricity is produced and delivered in both developed and developing markets. Solar and wind energy are among the renewables helping to fulfill the promise of electric power across Africa – from the most rural and remote consumers to the largest urban areas.

Considering the high ambitions to meet the increasing demand for electricity in underserved and unserved areas of Africa, there is a lot of excitement about how quickly wind and solar projects can be deployed. The challenge is determining how to plan and grow the energy supply in the most reliable and efficient way. To navigate the power system project development life cycle, from the front-end planning and viability studies to project due diligence and completion, advanced power transmission modeling, simulation, and analysis software is a must.

Energy System Planning (ESP), Ltd, (www.espcg.com), a leading provider of independent engineering consultancy services for utilities throughout Africa, relies on such software to help clients navigate the changing energy landscape since its founding in 2009. In the world's second-largest continent, most of their clients rely on the capabilities of PSS®E (www.siemens.com/pss-e), the primary transmission planning, and analysis software in the region, to support fact-based decision-making around grid development.

SIEMENS

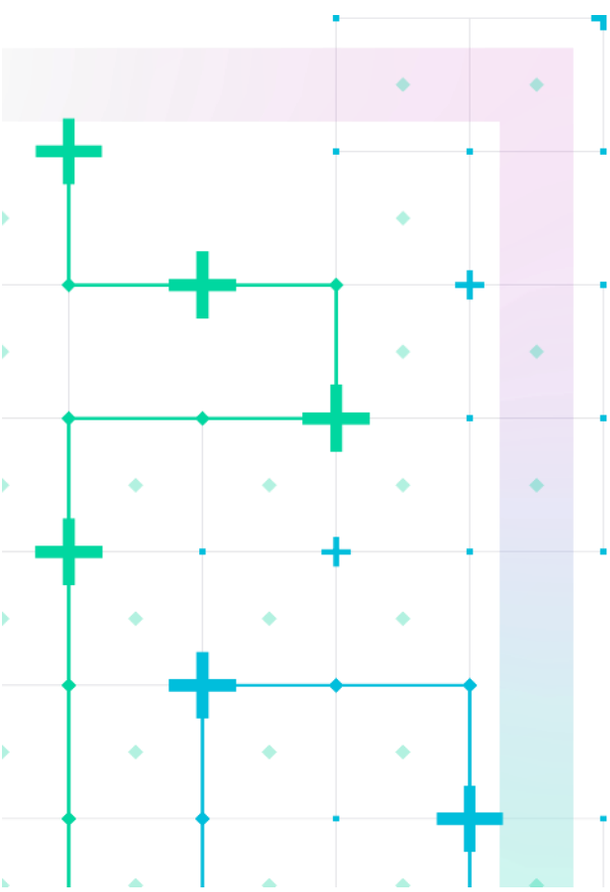
Solid decisions from sound analysis

Many transmission companies in Africa are faced with increasing pressure to maximize grid utilization, significantly expand their power network, and continue to provide reliable power despite renewable variability. This can be a challenge in an industry where change is continuous. That is why they rely on leading engineering consulting services to support with sound-decision making for strategic initiatives and growth projects.

To prepare transmission planning studies and run analyses on its clients' power grids, ESP has used PSS®E for over 10+ years. In fact, most of its principal engineers have hands-on experience with the solution dating back to the 1990s.

"[PSS®E] was then [in the 1990s] and still remains the most widely used planning software package in the region"

- Shaheen Ahmed, Managing Director at ESP



One significant strength of this tool as compared to others used by ESP is that Africa's power system models have historically been developed in PSS®E, so there is a very strong, established knowledge base in the region. It is easy to find fully trained power system engineers in Africa with a long history of successfully using the package.

"We also like the ability of PSS®E to interface easily with Python. That is a standout feature of the software, and we use it to a very large extent to enhance the power of the tool," observes Shaheen Ahmed.

The increase in renewable energy is certainly creating new demands for power system planners. Planning studies now need to consider emerging use cases that are critical to maintaining a reliable power supply. The latest PSS®E developments, including the introduction of the Time Series Power Flow and Harmonics add-on modules, will enable users to further address these challenges.

In addition, PSS®E has a suite of generic libraries of the different types of renewable plants and ESP uses those to a large extent. "The big networks have these models embedded in them and they're very useful. Siemens keeps updating these models from the IEEE library of models, which is quite helpful," Shaheen Ahmed adds.

Africa's energy future is electric

There is no doubt that the African power grid will continue to develop. The upscaling of renewables projects is expected to continue in Africa for the foreseeable future. Effective transmission planning will lead to much greater grid integration possibilities, satisfying the demand for energy that crosses regions or nationally.

ESP intends to continue meeting Africa's energy challenges by providing high-quality power generation, transmission, distribution, and system optimization services to its clients. While the PSS®E software will continuously evolve to ensure users, such as ESP, can confidently tackle day-to-day and future challenges. Together, these efforts will help to ensure a bright future in every corner of the continent.

SIEMENS

Siemens AG
Smart Infrastructure
Grid Software
Humboldtstrasse 59
90459 Nuremberg, Germany

For the U.S. published by
Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005
United States

SIEMENS