SMART GRID®

& ENERGY FORUM / 13th edition

SMART GRID FORUM LATIN AMERICA

November 29th and 30th, 2021

"Accelerating the energy services digitalization and modernizing the sector in Brazil and Latin America"

CENTRO DE CONVENÇÕES FREICANECA | R. Frei Caneca, 569 - 6º São Paulo - SP - Brazil

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Final Report
Smart Grid Forum/2021

On **November 29 and 30, 2021,** was held the **13th Edition of the Latin American Smart Grid Forum** in São Paulo, at the Frei Caneca Convention Center. This international conference held annually in Brazil has been part of the **world's reference event circuit on the subject for more than a decade.**

Having performed only activities in a virtual environment during the pandemic, in 2021 the face-to-face event was **resumed,**with all health security protocols, where it was possible to review and talk **with speakers, authorities and executives of the sector** after the presentations and **establish relationship networks** with great potential for business **development.**

This edition had the official **support of ANEEL, ANATEL and CEPEL Eletrobras.** There were **also outstanding international support from ADEERA –** Association of Electric Power Distributors of the Argentine Republic and **ARIAE** - Ibero-American Association of Energy Regulators. The event was supported by more than **30 sector entities**[1]**,** in addition to **13 sponsors.**[2]

Plenary

[1] ADEERA, IEC, ABRADEE, ABRAGEL, ABRATE, ABAQUE, ABCE, ABEEEÓLICA, ABIAPE, ABILUX, AINEE, ABNT, ABRACE, ABRACEEL, ABRAPCH, ABRAVA, ANACE, ATEESP, AURESIDE, HABITAR, COGEN, CONTAE, CRT-SP, FGV, FNE, SEESP, SINDIENERGIA, SINTEC-SP, EM, POTÊNCIA, ECOEE, RPM

[2] ENEL, GRIDSPERTISE, FORTINET, SCHNEIDER ELECTRIC, SONDA, ARIAE, LOCUSVIEW, SIEMENS, AÇÃO ENGENHARIA, LACTEC, LANDIS & GYR, NOVUS e S&C.

[3] SONDA, NOVUS, AÇÃO ENEGENHARIA, LOCUSVIEW LACTEC e S&C.

Activities and Agenda

The event had an **exhibition area, with 350 m²** stands for reception and attendance of the Lecturers and exhibition of products and services of the sponsoring companies.[3]

On the first day the Conference began with **the welcome through a message from The Honorable Minister Bento Albuquerque.**

On the same day, four panels were held in a row with a cocktail at the end of the day.

The **Opening Panel** was held with officials debating the theme: "**FROM PANDEMIC TO HIGH ENERGY SOCIETY."**

The presidents of ANEEL, CCEE and CEPEL, and directors of EPE and ABRADEE participated in this panel.

The second panel brought the theme **"ENERGY REGULATORS OF LATIN AMERICA: BUILDING A NEW ENERGY SOCIETY".** This panel was organized with the precious and prestigious support of ANEEL - National Electricity Agency and with the sponsorship of ARIAE- Association of Ibero-American Energy Regulators and had the participation of regulators from Chile and Colombia under the coordination of the international area of ANEEL.

After lunch, the third Panel with Senior Executives was held on the first day with the **theme: "THE ESG AGENDA AND THE ENERGY SECTOR BUSINESS "** with top executives from CPFL, EDP and ENEL.

The fourth and final panel of the first day **was also coordinated and moderated by ANEEL,** focusing on **REGULATORY AND TECHNOLOGICAL INNOVATIONS,** with the theme: **"ACCELERATING THE DIGITIZATION OF ENERGY AND THE MODERNIZATION OF THE SECTOR"**, with participation stakes of senior executives CEMIG, COPEL, ENEL and NEOENERGIA.

The second day began with a **PANEL OF SECTOR ASSOCIATIONS,** focusing on **"THE VARIOUS SEGMENTS BUILDING THE NEW ENERGY SOCIETY",** with the participation of ABRACEEL, COGEN and ABRACE.

Next, the "**SMART ERNERGY MEASUREMENT AND TARIFF PANEL"** was held, with top executives from companies in the sector and qualified technology suppliers such as ENEL, LANDIS & GYR, SIEMENS and SONDA.

After lunch, the **"PANEL OF ADVANCED TECHNOLOGIES AND SYSTEMS TRANSFORMING THE COMPANIES OF THE SECTOR"** was held**,** a true special session of "road show" of lectures of executives of qualified technology suppliers such as LACTEC, LOCUSVIEW, SCHNEIDER ELECTRIC, SIEMENS, S&C, FORTINET and GRIDEXPERTISE.

Executive Content Summary

The transformation of society is the main backdrop of the transformation under which the energy sector is under way worldwide. In addition to unprecedented technological developments, fundamental values of planet preservation, diversity and transparency are fundamental to put people at the center of this transformation.

In this sense, it was clear that the growth of the free market is what will address most of the growth in investments in expanding energy supply, because consumers and companies in general are promoting a more open capital market for these investments.

The new technologies broke an old premise and rule of the sector where the best and most optimized investments were made primarily than the least economically efficient. Technological developments and scalability have allowed the continuous reduction of costs of new investments compared to previous ones, as attested by energy auctions made in several countries.

With energy costs in a progressive downturn, more and more the focus of markets is shifting to power availability, more than just energy as in the past, making flexibility services increasingly needed and demanded. In this sense, the Transmission of energy has assumed worldwide role of increasing relevance for this flexibility, as well as the management of demand by consumers has grown of importance for operators of large electrical systems and power distributors.

The vertiginous progress of renewables and distributed generation is admirable: Brazil, for example, is reaching about 8 GW of installed capacity in distributed solar generation – if it is possible to capture and take advantage of a small surplus of only 5% of this capacity to market as a surplus, will result in a 400 MW plant, which is already considered a major enterprise. To do this it is necessary to prepare the current systems and define rules for this use.

ANEEL itself has no doubt that the commercialization of GD surpluses will be made feasible, making the generation of roofs enable a new market of aggregators. The biggest difficulty is the tax issue, because currently this generation enjoys exemption, while there is commercialization, it should be taxed in some way.

The Agency advocates stable rules and respect for investments, while understanding that companies need to redefine their relationship with the consumer, not only as a captive, but mainly as a customer who will have more and more choice, since market opening is a path of no return.

Also in 2021 should be published regulations for the implementation of hybrid plants in Brazil and IN ANEEL will publish the rules to enable the commercial exploitation of energy storage resources from processes of making subsidies that led in 2020 and 2021.

Chile and Colombia are working on regulations on smart meters and market opening, as well as efforts to prepare for the clean energy transition, according to their regulatory agencies, respectively CNE Chile and CREG.

Since Colombia, he has enacted an advanced measurement law and in 2020 has developed studies for the implementation of ami through an Independent Information Manager. Congress, however, has barred the transfer of costs to the population, and the AMI cloth is prepared, but momentarily stalled six months ago.

The Colombian Regulator's vision is to evolve into intra-day and *dayahead* markets for decision-making to manage demand through the short-term market. It is expected to have around 70% of AMI in urban areas by 2030. Of the 30 distributors there are companies that have already advanced in hourly rates and the possibility of making remote disconnections. Companies cover the necessary investments and customers pay for early obsolescence, i.e. implementation can largely be carried out at the client's initiative.

In Colombia, aggregators have existed since 1995 and are lowering the level of access to the free market and making regulation more flexible. Companies often try to create barriers to transition through regulation.

The companies, motivated by investors and the financial market, have increasingly embraced the objectives of the ESG agenda, seeking to meet environmental precepts and ecological zeal ("E" of environment), Diversity and attention to vulnerable groups ("S" of social) and Transparency ("G" of governance). The ESG journey therefore preaches sustainability and environmental, social and integrity respect. In the great technological transformation companies seek not to leave anyone behind, for example through inclusive education.

There is consensus that there is a process of increasing acceleration of transformation, and the vital and central element is the customer: the future of the sector is in his hands. In this new scenario of penetration of renewables and GD, companies have to invest a lot to ensure resilience in infrastructure and data processing, in addition to many investments also in transmission

Companies also need to comply with social responsibility actions. It was cited, for example, that ENEL is deactivating 3.5 GW, while requalifying labor to work in solar and preserve jobs in a thermal-generation plant in Spain.

The social agenda also worries regulators and governments: the energy transition is not simply replacing sources. For example, in Colombia there are thousands of families who depend on small coal production plants, and this replacement has to be done in order to allow these people to be replaced for other economic activities so that they can continue.

Similarly, in Brazil there is the ethanol industry where also several families and companies depend on and offer a renewable alternative to the electric car and, therefore, the transition has to consider these specificities and local conditions.

Enel also cited the creation of a subsidiary, Gridspertise, to help companies make the energy transition by supporting similar companies with their experience in *gridfuturability and"open innovability"*projects, alsotaking care of legacy infrastructure.

There is consensus that technological developments are very rapid and tends to move faster than regulation: but regulators themselves agree that regulation cannot be a barrier to technology.

For example, in Brazil ANEEL has accompanied a cooperative R&D of companies to modernize low voltage tariffs, to meet innovations that consumers are introducing, sometimes more expeditedly than the companies themselves. ANEEL has also recently defined in public consultation the minimum conditions for the implementation of "*tariff sandboxes*", in which the distributors themselves can establish their tariffs in specific regionsand controlled testing, for defined periods, to measure how consumers will respond to tariff signals.

There is consensus that the separation of distribution activities (wire) from the commercialization, for market opening, is being configured as an advance in order to transform the current distributors into local operators of network assets or DSOs *("Distribution System Operators").*

Some companies, aiming to provide subsidies for regulatory improvements to ANEEL, are implementing large intelligent measurement projects.

ENEL, in São Paulo, will include 300,000 consumers, of which 115,000 meters have already been installed and 65,000 are already connected. (ENEL).

CEMIG announced a large program of 22.5 billion reais of investments for the next 5years, of which 12.5 billion will be allocated to Distribution, for the construction of 150 new compact substations and 20,000 km of networks, in a program called "+ energy". The concept is to replace facilities with expired service life, eliminate service bottlenecks to increase demand or three-phase supply, and thus favor the economic growth of the state.

In this program will be implanted 1.25 million smart meters, of which 250,000 are already installed. The number of single-phase reclosers will also be increased from 9,000 to 15,000 and an additional 12,000 three-phase reclosers will be increased, in an effort to convert 25,000 km from single-phase networks to three-phase networks. All these technologies will be digitized through various systems and different telecommunications technologies.

Neoenergia, which currently serves 18% of the Brazilian market, has plans to invest an additional R$ 25 billion by 2025, having invested $ 52 billion since its arrival in Brazil in 1997.

Its concessions have significant growth, demanding to connect on average 500,000 new customers each year. The company has invested significantly in the digitization of customers through computer systems for automated service, for operation centers, for electronic measurement, for electrical automation, for telecommunications and *especially in "cyber security"*, to achieve a radical and rapid reduction of costs and improvement of performance indicators in its services provided.

To this end, for example, in its project "Energy of the Future" a private 4G *network "WiSun"* with 75,000 smart meters connected in Atibaia. Industrialized the process of network automation and self-reinstatement, so as to quickly expand its dissemination quickly and economically.

- COPEL, in turn, has led the announcement and introduction of many innovations in the distribution sector. Among the innovations stands out the pioneering hiring of distributed energy resources as an alternative to the conventional expansion of assets in a first process conducted as a *"sandbox"* with ANEEL.

It is also noteworthy the massive deployment of more than 1.5 million smart meters that will be conducted after a first pilot deployment carried out in the city of Ipiranga, where it was possible to establish the cost-benefit analysis that supported the decision of this *first "roll out".*

COPEL also highlights the implementation of new integrated systems and service operation centers with advanced and integrated software, with more than 3500 associated automation equipment.

The industry representative associations and technology providers also demonstrated a surprising alignment of perception about the need for immediate advancement of an agenda for the effective modernization of assets, and not only of the rules as the ongoing discussions for the opening of the country's energy market.

All agents, including regulators, agree that the insertion of these modern technologies cannot take place at any cost and should happen in such a way that the costs and benefits are shared in a balanced way between distributors, consumers and other parties involved.

Everyone also agrees that tariff modesty, used not to establish a multi-annual investment program for this modernization, has been set aside to address recurrent sectoral crises through "bailouts" for companies, cost deferreds, 'security burdens', and 'subsidies'.

The final panels of the Forum addressed several other innovative technologies already available to companies in the region:

- Digital construction platform to digitize the entire process of asset construction, from the birth of the project to the phase of immobilization and operation and maintenance;

-Center of technology and innovation to support technological and disruptive development, with laboratory support and highly qualified professionals;

- Innovative solutions for digitization of distributors, through integrated software covering a wide range of features and applications for companies and large energy consumers;

- Provider of integrated solutions with advanced advisory services and international experience of implementing technologies for the energy transition in energy distributors;

- Expertise in cyber security, increasingly necessary in the face of increasing digitization and process automation in companies;

- Advanced electrical system protection systems for high reliability networks and services.

The Conference Program can be accessed **here**

The presentations can be downloaded **here**

Photos of the event can be accessed **here**

Conclusions, Contributions and Recommendations

The following points stand out as a consensus of the discussions:

- Much emphasis is devoted in Brazil to the expansion of energy generation, but there is also a great potential for energy efficiency still proportionally little explored in our country, which could together with the expansion of generation and transmission bring great advances with investments of faster return.

- Within a perspective of stimulating the management of efficient energy use and demand for electricity it is necessary to have the consumer in the spotlight and offer options to customers, in a competitive market.

- For this it is necessary to enable new options of intelligent tariffs, with availability of intelligent measurement connected, supported by cloud systems.

- The economic part for a *massive electronic measurement roll out* is critical: specifically the annual consideration of investments made intra-tariff cycles is a crucial point, since investments are only recognized and incorporated into tariffs in each periodic tariff review, every 4 or 5 years. Thus, according to the current rules, the company that invests in electronic measurement in the first year will only have this investment recognized from the 4th year, when more than a third of the useful life currently considered for this asset has already expired and has not been remunerated. This rule of incorporation of assets only in periodic tariff reviews has long been identified and pointed out as harmful the modernization of the sector, but remains a major barrier to technological developments. This rule encourages companies to focus significant investments only in the year immediately prior to recognition and this prevents more significant and more continuous, progressive, fluid and significantly lower incremental implementations.

- In addition to this fundamental change in intra-tariff recognition, improvements in the consideration of the useful life of electronic equipment, today in 15 years to 7 years, appropriated its depreciation to economic reality and real useful life.

-Another important change would be the reduction of the capture of cost reductions by gains in scale and the new revenues from new services in the implementation of new technologies that provide these cost reductions in order to ensure and reduce the risk of initial investments in new technologies.

- Finally, as in any sector where innovation is sought, for more scale implementation it will be important to adopt reduced tax regimes in selected modernization projects.

- Another barrier in the current regulation is the consideration of only own systems and software as an investment, not recognizing IT costing expenses to incorporate the appropriate recognition of expenses as SAS – *"software as a service" in*regulatory balance sheets, since this is the current market reality in all industries that advance in scale digitization, and the only way to provide agility and modesty in modernization.

- The sector needs to reconsider the use of existing hydroelectric plants, prioritizing their use as a storage source, more than as generation, as well as the current form of energy pricing in the short term.

- Electronic measurement should not be a barrier to market opening, which should soon be progressively extended to all consumers, including residential ones, as there have been many projects in this direction in legislative houses. However, there is also consensus that without smart metering and tariffs, market opening will not provide the expected benefits to consumers and society.

- There is consensus that System Charges and other subsidies such as the CDE have remained excessively high even for free consumers or large consumers. They are amounts of billions, bringing charges of the same order of magnitude of the cost of energy and pressing the tariff in the long run. This has implied progressive depayments of costs in regulated tariffs, with impacts on future tariffs and the competitiveness of Brazilian companies.

- The successive "bailouts" to the sector would have been sufficient to implement several complete state-of-the-art technology programs in Brazil. The problem is that these "bailouts" have been recurrent and should continue to be necessary, without leaving any legacy to interrupt this cycle of tariff discharge. Qualified investments in advanced measurement technologies would allow in the medium and long term the implementation of a true competitive market in Brazil, where the client would really be the focus of the offers and would have options to meet their needs.

- There was consensus that the investments needed for modernisation are from the EU, while carried out by concessionaires under concession regime. Delaying the decision to invest means maintaining high recurring costs and delaying the infrastructure and competitiveness of countries. The Government and the Legislature should be encouraged to move forward in this direction in structured programmes as they should be multiannual. Not setting a program means there is no date and no priority for the transition to occur.

- Energy measurement technologies and their associated systems are already dominated by both suppliers and distribution companies and the decision to invest does not depend on new developments, but regulatory definitions that remove barriers and establish a multi-annual investment programme, as the costs of technologies are already very competitive in global terms, even in countries where energy costs are lower than in Brazil and Latin America. Several international experiences of massive deployments of intelligent measurement technologies with differentiated tariffs were mentioned, being offered optionally to customers, as well as enabling new uses such as storage, distributed generation, hybrid power plants and electric mobility.

- The international experience of intelligent measurement shows significant gains for companies but mainly for society as a whole, promoting a better allocation of sector costs by smart tariffs and consequent elimination of subsidies between classes, as well as the possibility of implementing new features of direct interest to customers such as prepayment solutions and social cutting. On the companies' side, significant reduction of operating costs and increased operational efficiency, reducing productive and mainly unproductive displacements.

About the Forum

The Latin American Smart Grid Forum was created and has been operating for 14 years with the objective of implementing and enabling new technologies and innovations in energy, in a **sustainable way, in Brazil and latinamerican countries.**

It is **a collaborative** initiative and a **NEUTRAL, INDEPENDENT and INCLUSIVE vehicle**to mobilize**the widest possible stakeholder matrix.**

It **focuses on articulation and**synthesis and **develops global collaboration with other** entities with the same focus of modernization of electricity and energy services. In this respect in 2018/2019 the Forum was designated by the Brazilian Government as an observer representative – at ISGAN - International Smart Grid Action Network meetings, a structuredinitiative delegated to CEM – Clean Energy Ministerial, IEA – International Energy Agency.

It operates in **a business-oriented** perspective **for the implementation of innovative technologies.**

It advocates **the sustainable transformation of current**systems, **considering technical, economic, environmental, political, legal and social aspects.**

Forum **Conferences always provide guidance and guidelines for action to governments, regulators, energy companies, technology suppliers and other stakeholders**on the next**steps needed** to modernize energy services in Brazil and Latin America.

More information and other downloads can be accessed on the official website of the Latin American Smart Grid Forum:

www.smartgrid.com.br