BRICS international Technical STANDARDS

A Strategy to Reduce Dependency and Overcome Commercial and Technical Barriers for Non-G7 Countries"

(with examples) COP_30 2025 is coming

By Sergio Feitoza Costa English http://www.cognitor.com.br/BRICSstandards.pdf ** Português http://www.cognitor.com.br/BRICSsstandardsPOR.pdf

BACKGROUND: In a world where, by 2024, an estimated 8.2% of the world's population, around 673 million people, face hunger, the recent unexpected actions of the United States of America government have revealed important lessons to be learned by the World:

- ✓ Creating an alternative system of technical standards for the BRICS and neighbouring countries is a way to reduce dependence on G7 countries. Current IEC international technical standards, which are copied by non-G7 countries, are managed only by major global manufacturers such as SCNHEIDER Electric, ABB, Hitachi Energy, SIEMENS, and EATON. They focus on the much better conditions of Zurich, Paris, Frankfurt, Milan, Washington, and Amsterdam, and do not consider more modest conditions such as those of Rio de Janeiro, Bogotá, New Delhi, and Johannesburg.
- ✓ Credibility is over. We have reached the "Save yourself if you can" phase. BRICS should not rely on countries where individuals are able to get and maintain power, even while, e.g., committing public commercial blackmail to interfere with the justice system of another democratic country. This is possible only when the majority of the population is either indifferent or thinks the same.
- ✓ Today, there is no longer global institutions with the authority or influence to effectively address major crises. Organizations such as the UN and WTO have seen their power diminish each day. A clear example of this was the United States' withdrawal from the Paris Agreement on climate change.
- ✓ Those who profit trillions of dollars and euros from selling weapons and perpetuating conflicts have little concern for the planet's future. Their focus is limited to short-term political gains, often looking no further than the next election cycle.
- ✓ Using trade and technical barriers to dominate other countries is no different from the times of invasions, colonization, and plundering of weaker countries. No major economy in G7 did different from this.

THE IMPORTANCE and POWER OF INTERNATIONAL TECHNICAL STANDARDS in TRADE: they are the primary instruments that fundamentally regulate international trade and exchange. Those of the IEC (International Electrotechnical Commission), an institution based in Switzerland, are the most widely used and recognized worldwide. The IEC has 88 participating countries in its standardization activities.

Although IEC standards are created in a seemingly democratic manner, with the free participation of member countries, their planning and implementation are far from this. Those familiar with the IEC and CIGRÉ, like myself, know that the major manufacturers in the international electrical industry dictate the rules on what should be standardized or studied. Users, buyers, and society as a whole barely participate or are represented in the working groups. The regulations say they can, but in practice they don't participate in working groups because it's costly. There's no formal "users association" in the meetings and decisions

Large manufacturers are historically the creators of the global electrical industry and operate worldwide. They have many merits and achievements. In the industry's early stages, they invested heavily in building large testing laboratories, which were the main instrument for the global electrical industry's consolidation. Almost all of them originated in the G7 countries. Although they have the capacity to significantly improve products efficiency and reduce the use of materials such as copper and aluminium, they do not create impacting innovations. Changing the paint colour and exterior appearance is not to innovate.

All of these big companies have settled into the comfort zone of selling licenses to the world to produce, in countries with cheaper labour, items created 50+ years ago that could be much better and cheaper today. These companies know that when and if they develop innovations, they will have to work hard to explain, test, and demonstrate them to the world to sell well. They have a lot of technology, but they are very lazy.

They act much like the companies and countries that sell and buy weapons and earn money that could end world hunger. None of these major companies will want to explain to their shareholders that it would be good to end the wars from which they make so much money.

> This direct relationship between international technical standards and big business is the most effective way for BRICS countries to intervene and move toward becoming less dependent on G7 markets and gaining power. An action like this is much stronger and more effective than, for example, trying to create an alternative currency that wouldn't even work in smaller regions like Mercosur.

THE SEVERITY OF SPECIFICATIONS AND TESTS: Current IEC standards base their logic solely on specifying products that must undergo severe testing, even more so than necessary. They ignore environmental issues by failing to include in the standards any mentions encouraging the use of fewer materials, saving the planet, and achieving greater efficiency and practices. This will not change spontaneously, especially because large international manufacturers do not have the financial burden of paying for expensive development testing. They either tested decades ago or have easy access to testing laboratories.

The BRICS, based on their big, combined populations, markets, and social needs, should create an alternative system of technical standards that, to begin with, considers that the requirements to attend the richer are much higher than for BRICS countries. This can increase a lot the trade within the block.

ABOUT THE FORMAT AND CONTENTS: BRICS standards would be in the same format and have many similarities to IEC standards but would remove from the texts the barriers that impede the advancement of lower-cost innovations [Reference 1] and the emergence of medium- and small-scale manufacturers, as in the examples.

MAKING TESTING AND DEVELOPMENT EASIER: the main differences between BRICS and IEC standards would be the focus in lowering costs maintaining quality at the proper level. There would be an alternative to simplify products qualification. This would be achieved by introducing different severity and qualification requirements to meet local conditions. The most visible differences in BRICS technical standards would be:

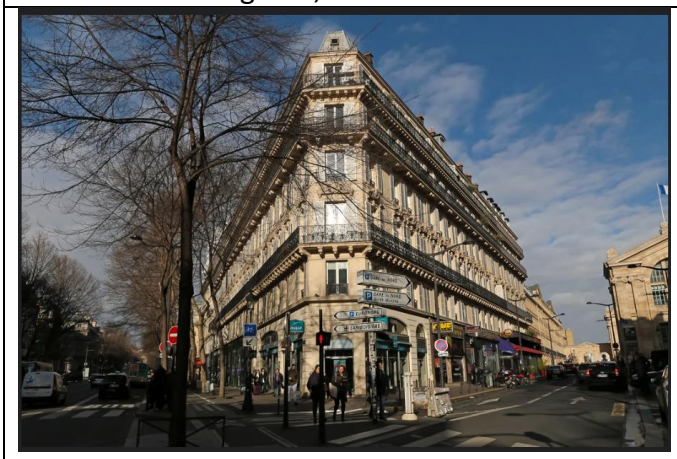
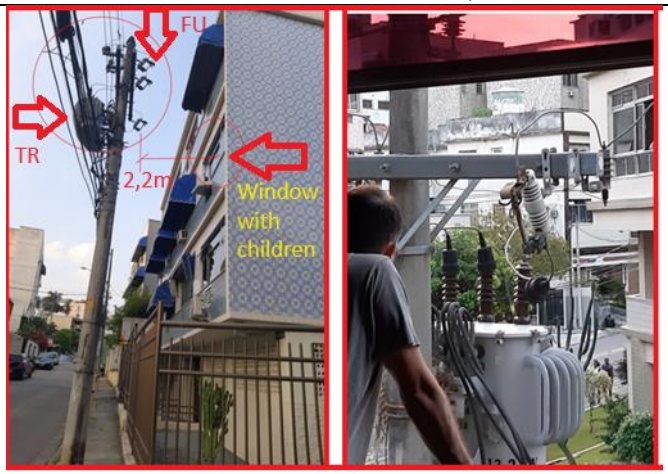
- ♣ Two levels of specification severities for high-power testing (one level like current IEC standards and another less severe, focused on the needs of BRIC countries).
- ♣ Laboratory testing vs. simulations: formally allowing product qualification also using validated test simulations instead of (only) real and expensive laboratory tests. Create a technical standard to regulate this objective
- ♣ Formal declarations encouraging efficiency+, reduced use of copper and materials, lower impacts on climate change, innovations, and fewer trade barriers. [Reference 2]

SOME EXAMPLES TO UNDERSTAND IN WHICH BRICS STANDARDS WOULD GO BEYOND IEC STANDARDS

• EXAMPLE 1: URBAN OVERHEAD DISTRIBUTION LINES USING BARE CONDUCTORS (LIKE IN THE BRAZILIAN STANDARD ABNT NBR 15688)

First, let's compare a typical street in Paris with a typical street in Rio de Janeiro. I know both regions very well. On Boulevard de Magenta, near Gare de Nord, we notice that the distribution systems are underground, and even the streetlights are a reasonable distance from the buildings.

The right-side photo is of a typical street in Rio de Janeiro, Brazil's second more important city. It's a high-property tax area, far from the slums (favelas). The slums occupy about 25% of Rio de Janeiro's area, home to approximately 1.5 million people. Rio de Janeiro is the city with the highest concentration of slums residents in Brazil. Politicians in Brazil have long since stopped talking about reducing the area of favelas (Reference 3]. This do not bring votes in the next elections.

Boulevard de Magenta, Paris	Rua Cambaúba . Jardim Guanabara, Rio de Janeiro
	

RISKS TO LIFE DUE TO THE PROXIMITY ARE IGNORED: For example, in Rio de Janeiro, it is estimated that only about 10% of the distribution systems are underground. All of them are in the wealthiest areas. In the rest, as in this photo, the distribution systems are overhead. Underground network protection fuses, when circuit breakers are not used, are silent and non-explosive using e.g. current limiting fuses (IEC62282-1). Fuses that protect distribution transformers in overhead networks are very dangerous, for those nearby, and are expulsion-type fuses (IEC62282-2).

When a transformer fail and explodes, it throws boiling oil more than 5 meters away. However, the Brazilian technical standard, not based on any IEC standard, allows cables to be 1.5 meters apart. I explain the details and risks in the article of Reference [4] including details of legal actions.

The electricity companies that created the existing Brazilian standard ABNT NBR 15688 will not correct it because it would mean short-term expenses. The bigger problem is that there's no planning, including from the regulatory agency ANEEL or the planner EPE , to eventually resolve the situation or gradually improve it. I personally did several formal claims and did not get responses as explained in the article.

The IEC and CIGRE are not interested in issues like these ones because their mind is in G7 country's needs. However, a "BRICS TECHNICAL STANDARD" could bring order and planning to this mess. I presented this issue to CIGRE, which did not consider it a priority. Maybe it's still there in some drawer.

ENERGY THEFT: a new standard could even address the issue of routinary energy theft that we see every day in the TV news. It's estimated that by 2023, approximately 16% of the electricity produced in Brazil was stolen or diverted. The most critical states include São Paulo and Rio de Janeiro.

• EXAMPLE 2: RAISE TEMPERATURE RISE LIMITS OF ELECTRICAL PRODUCTS TECHNICAL STANDARDS TO ALLOW SAVINGS ON COPPER, ALUMINUM AND OTHER MATERIALS

I explain all the details of this topic in References [5 & 6]. A simple adaptation of some texts in IEC standards like IEC62271-1, IEC 60943, IEC 61439 would allow for enormous material savings, resulting in lower-cost products. The path to implementing this kind of approach pass also by statements in the standards incentivizing efficiency and less use of materials.

I also presented this topic to CIGRE, which did not consider it a priority. After that, I understood the situation and gave up wasting my time proposing ideas there. So, I ended my membership with CIGRÉ in 2025. I am a co-author of several publications made there.

• EXAMPLE 3: A TECHNICAL STANDARD REGULATING THE FORMAL USE OF VALIDATED TEST SIMULATIONS INSTEAD OF (ONLY) REAL AND EXPENSIVE LABORATORY TESTS.

The more expensive part of the development of products innovations is the cost of tests for developments in high-power testing laboratories. There are few high-power testing labs in the World because to implement one involve amounts like 50 to 100 million Euros. This can be understood in the Reference [14]

The crucial question is: What is better for countries that have an industry for manufacturing equipment for substations, but does not have testing laboratories to test them? To use simulations is certainly a proper and validated option. However, IEC standards were created basing the verifications in lab type tests. Five to six decades ago this was the only possibility but nowadays testing simulations cost less than 10% of real lab tests and in many cases can provide even more useful results.

The only barrier for the wider use of testing simulations to replace many real high-power tests is that there is no formal IEC standards regulating that use. Reference [9] presents a ready draft text for this standard. The big world-wide manufacturers already mentioned in this text do not like the idea of the replacement because consider that many small and medium companies would gain a lot of competitivity.

The organized use of testing simulations is a possible and realistic solution and is increasingly accepted in the last decade. In the recent years the potential has been described in documents like IEC62271-307 and in CIGRE documents like References [10 to 13]. Here is a great opportunity for a BRICS TECHNICAL STANDARDS.

• EXAMPLE 4: LOW VOLTAGE TECHNICAL STANDARD LIKE OF IEC62271-307

This is a very useful and easy to do BRICS TECHNICAL STANDARD. It is only necessary to replace some lines of IEC62271-307 to extend the use of it for LV in addition to HV. Very easy to implement.

FINAL COOMENTS

There are several other examples that we will not include here to avoid losing the focus. One easy to mention is to reorganize some IEC standards to be valid simultaneously to high voltage and low voltage.

For example , the creation of a kind of ”BRICS TECHNICAL REPORT (TR) on “ GUIDELINES FOR THE DESIGN OF (lower cost) LV to HV ELECTRICAL PRODUCTS (with rational use of materials and resources) would create a more rational use of standards avoiding duplications of concepts.

To conclude, this is not a so innocent idea as it seems and could change deeply the world-wide electric industry in favour of BRICS. Business would become much more balanced, fair, and honest. The insane acts we have seen recently are helping to give rise to new ideas that could be very useful to non-G7 countries.

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ANNEX 1 - REFERENCES

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[3a] Free book by Sergio " PROJECT SAVE RIO IN 10 YEARS:
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