# METHODOLOGICAL PROPOSAL FOR CONVERTING GAS-DRIVEN COMPRESSORS TO ELECTRIC COMPRESSORS IN NATURAL GAS COMPRESSION STATIONS

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## ABSTRACT

In Bolivia, natural gas represents about 80,31% of the energy matrix, being essential for electricity generation, industry, the residential sector and vehicular transport. To meet this demand, compressor stations play an essential role, however, all compressor stations in Bolivia operate by burning part of the same gas they transport, which reduces the efficiency of the system. In this context, this paper proposes a methodology for the electrification of compressor stations, in line with global trends in energy efficiency and emissions reduction. The methodology includes the calculation of the power required in the compression, the design of the electrical connection to the national grid, the selection of the connection point, the layout of the line and the calculation of the voltage drop, ensuring that this does not exceed 7.5%. In addition, a procedure is incorporated to assess the techno-economic feasibility of the conversion. Finally, the methodology is applied and validated by means of a case study at the El Dorado Compressor Station, located in Santa Cruz, Bolivia. The results show that the electrification of the station would increase the availability of gas, reduce emissions, and improve the profitability of the system. This methodology can serve as a reference for implementing similar conversions in other compressor stations at national and international level.

**Keywords:** Natural gas, Electric-drive compression, Compressor stations

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