Low Cost TMTC-based Impedance Spectrometer as a Reference Tool for Instrument Makers

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The acoustical impedance is one of the indissociable factors in the studies of sound production in woodwind instruments. Its experimental acquisition is obtained with impedance spectrometers, which has been developed since 1970. Most of the recent methods present practical requirements of hard access, although these same requirements ensure better and more accurate results, like the semi- infinite calibration ducts. In order to suggest an accessible and efficient tool for instrument makers, an adaptation of the apparatus proposed by Gibiat and Laloe in 1990 was built. Recicled or cheap materials were used for the mechanical parts. Also, all the computational tools were based on free softwares. The apparatus that works with the TMTC method was tested for simple ducts (cilindrical PVC tubes) and for variations of the brazilian woodwind instrument called pífano. The results are shown and discussed in this paper.