

Finally, the dependence of the inverter's properties as a function of the frequency f_s used in the *pwm* signal generator is of interest. At low frequencies, irritating audible noise is frequently produced by this type of equipment due to the nonlinearities that generate harmonics. For this reason, higher frequencies are preferred. The efficiency and the distortions at higher frequencies are therefore of interest.

Fig. 9 depicts the dependence of the efficiency of both types of inverter as a function of the frequency used in the PWM signal generator. The general conclusion is that the efficiency decreases with the rise of f_s . Given the trend suggested by the curve, it could be argued the Si_MOS based inverter is preferable at high frequencies. From the perspective of distortion, as can be seen from Fig. 10, at high frequencies both the IGBT based and VDMOS based inverters perform very well.

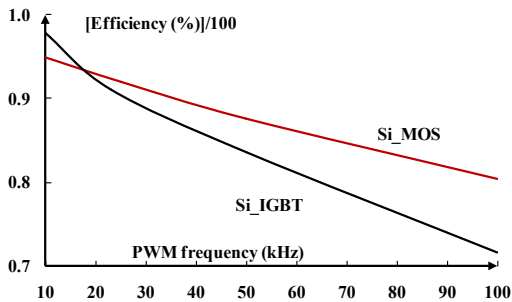


Fig. 9. Efficiency as a function of the frequency f_s used in the PWM subsystem for different technologies

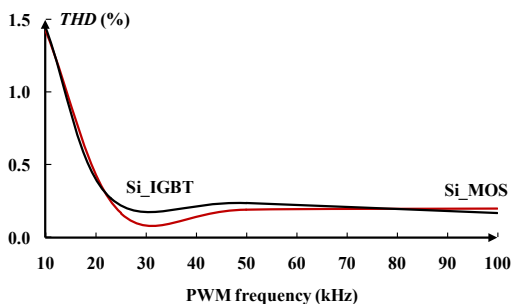


Fig. 10. *THD* as a function of the frequency f_s used in the PWM subsystem for different technologies

V. CONCLUSION

The DC-to-AC inverter is a ubiquitous subsystem of modern renewable alternative energy sources. Its properties map themselves directly into the characteristics of the waveforms delivered to the load (or the grid), thus the device deserves much attention in the search for improvement. This study investigated the advantages and disadvantages of using existing Si based voltage controlled switching devices in a conventional single-phase single-triangle PWM H-bridge inverter. The efficiency and the *THD* were used as measures of merit. LTSPICE simulation was used for all results reported here. Based on the results obtained, we may conclude that the VDMOS and the IGBT have application

niches of their own in which they perform better.

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