













(b)  
Fig.11: P&O and modified P&O comparison results: (a) PV voltage, (b) PV power

TABLE IV: COMPARISON OF MPPT METHODS

MPPTs	P&O	Modified P&O	Inc-Cond	Modified Inc-Cond
MPP (W)	8.386e4	8.441e4	8.442e4	8.466e4
Speed	+	+++++	+++	+++++
Ripples	-	-----	-	-----
Accuracy %	95	96.53	96.43	96.57
Efficiency %	98.65	99.3	99.31	99.60

## V. CONCLUSION

The aim of this paper is to improve the tracking of the maximum power point in the selected photovoltaic system. The study included two steps. The first one was a comparison between FL, classical Inc-Cond and classical P&O algorithms. The results proved that the performance of Inc-Cond was better than P&O, but despite the tracking performance and response speed that distinguished Inc-Cond it had a lot of undesired vibrations in the entire simulation field. The FL Controller had the most engaging results in this step with no undulations and a very fast response. In the second step, fuzzy based Inc-Cond and fuzzy based P&O are applied in order to cancel the limitations of traditional methods and this was proven by simulation results. That led to an increase in the MPP value and thus the levels of efficiency and accuracy.

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