







And from the THD harmonic spectrum before and after the compensation filter in Figure 9 we can see the advantages of the device. The harmonic detection module based on the neural network can obtain fast and accurate detection and suppression effect, it has a good prospect in the future.

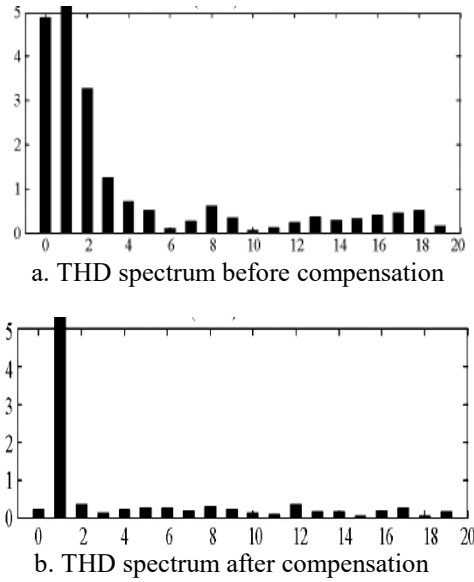


Figure 9. Comparison of the THD spectrum

#### 4. CONCLUSIONS

In this paper, we analyze and study the linear and nonlinear harmonic at the present stage of harmonic pollution. On the basis of traditional harmonic detection, multiple adaptive neural network detection system is combined with PI controller for the detection and control of the current harmonics and reactive power of the loads. So the method of active power harmonic detection based on neural network is proposed. With the advantages of neural network such as the ability to approximate any nonlinear function, fast response, small overshoot, small error, good robustness and so on, it improves the poor compensation performance and low efficiency of the APF. The validity and practicability of the design scheme is also verified by the simulations. This paper mainly focuses on the improvement of the hardware and

software of the APF device, and it will make some useful attempt and exploration for the practical design.

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