

- When $dV_c < 1V$, $(1+n/5)V < dV_m \leq (2+n/5)V$, the bearing is in deterioration tendency.
- When $dV_c < 1V$, $(2+n/5)V < dV_m \leq (3+n/5)V$, the bearing condition is poor and need to be checked.
- When $dV_c < 1V$, $dV_m > (3+n/5)V$, the bearing damages seriously.

5. CONCLUSIONS

In this paper, the traditional shock pulse signal processing is improved. The pulse sequence generation circuit made up by the peak holding circuit after the early signal processing (band-pass filtering, envelope detection, low-pass filtering) to generate the rolling bearing shock pulse signal. The adjustment laws of dV_m value of the output under different noise amplification conditions is also discussed. Through the above analysis, the following conclusions can be drawn:

- The influence of the noise amplification factor on the SPM circuit is remarkable. With the increase of the noise amplification or the SNR reduced, the amplitude of dV_m is increased and is similar to linear relation.
- The influence of noise must be taken into account if the shock pulse voltage maximum value of dV_m is used to judge bearing state.
- The state of the bearing can be judged roughly based on the SPM circuit. The specific fault types can be diagnosed in more detail with the help of other auxiliary methods.

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