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Design of Online Monitoring Device for COD Parameter in Industrial Sewage Based on Soft Measurement Method

With the problem of water pollution is more and more prominent, online measurement of various parameters has been a basic requirement for the sake of water quality protection. However, the online monitoring equipment is very expensive, which hampered the scope and effect of monitoring. Thus, soft measurement technology in industrial sewage which using neural networks and data driven method can be applied to monitor parameters and reduce the cost. Here, a water quality analysis system is designed, which can measure the conventional five parameters directly, and also can infer the COD parameter by means of historical data and neural networks learning strategy. Hardware structure of monitoring device is based on Exynos4412 CPU chip, and five sensors such as PH, dissolved oxygen, temperature, conductivity, turbidity are connected with CPU via communication bus of RS485. By recording and learning the data of five parameters using BP neural networks, device can construct a model of the five parameters with COD parameter online. As a result, conventional parameters are measured directly and COD value is calculated predicatively. It is noted that the measurement software is designed and run on embedded Android platform, and all the six values are showed on a LCD screen in this device. At last, by sampling sewage in printing mill and verified by analysis instrument in laboratory, it is proved that this device is sensitive to water quality and is high efficiency. Therefore, it is much economic and practical to be applied in environmental monitoring field.