

## 模糊免疫PID控制在淀粉生产线中的应用

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**关键词:** 淀粉生产线 模糊免疫PID控制 RSVIEW32 Smith预估PID

**摘要:** 在分析比较传统PID、Smith预估PID和模糊免疫PID原理的基础上,提出了利用模糊免疫PID调节淀粉生产线中的液位。通过对淀粉生产线中某一液位回路进行数学建模,然后对传统PID、Smith预估PID和模糊免疫PID 3种控制器进行了设计与仿真。仿真结果表明,模糊免疫PID在控制效果上明显优于传统PID并且其鲁棒性高于Smith预估PID。最后,利用Matlab的DDE协议和ActiveX与淀粉生产线的上位机RSVIEW32进行了数据交换,将Matlab中模糊免疫PID控制算法准确传输到上位机上。 Fuzzy immune PID was used to adjust the liquid-level of the starch production line based on the analysis and comparison of the principle of tradition PID, Smith prediction PID and fuzzy immune PID and a mathematical model about one of liquid-level loop of starch production line was built, then these three controllers were designed and simulated. The simulation results showed that the fuzzy immune PID is better than tradition PID in respect of control effect and its robustness is higher than Smith prediction PID. In the end, DDE protocol and ActiveX of Matlab were adopted to realize data exchange with RSVIEW32 of the starch production line and transmit accurately the algorithm of fuzzy immune PID to RSVIEW32.

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