

◆ 主要特点 Main feature

- ◎ 集约化设计、占地面积小、结构简单、性能稳定；
 - ◎ 稳定的背压阀，可自动调节的电动阀；
 - ◎ 撬装模块化结构，现场美观漂亮；
 - ◎ 溶液箱材质：PE、玻璃钢、碳钢衬胶、304不锈钢、316不锈钢；
 - ◎ 可实现全自动化投加，无人值守；
 - ◎ Brec的数据预处理模块对进水信号进行阈值判断、去跳、平滑等预处理，剔除异常和失真数据，保证后续计算结果的合理性；
 - ◎ 我司的加药系统通过仪表的在线监测自动调节加药量，保证在最佳工艺条件下，药剂量最少；
- ◎ Intensive design, small footprint, simple structure and stable performance;
- ◎ Stable back pressure valve, electric valve that can be adjusted automatically;
- ◎ Skid-mounted modular structure, the scene is beautiful and beautiful;
- ◎ Material of solution tank: PE, glass fiber reinforced plastic, carbon steel rubber lining, 304 stainless steel, 316 stainless steel;
- ◎ Fully automatic dosing, unattended;
- ◎ The data preprocessing module of Brec performs threshold judgment, de-jumping, smoothing and other preprocessing on the water inflow signal to eliminate abnormal and distorted data to ensure the rationality of subsequent calculation results;
- ◎ Our dosing system automatically adjusts the dosing amount through the online monitoring of the instrument to ensure that the dosage is the least under the best process conditions;

◆ Brec系统收益 Brec system benefits

- ◎ 实现药剂投加过程的自动化、闭环控制，减少人工操作强度；
 - ◎ 通过药剂投加过程的精细化、智能化控制，实现“按需加药”，避免过量加药带来的二次污染或加药不足导致的水质超标。
 - ◎ 可节省8%~20%的药剂投加量。
- ◎ Realize the automation and closed-loop control of the pharmaceutical dosing process and reduce the intensity of manual operation;
- ◎ Through the refined and intelligent control of the pharmaceutical dosing process, "dosing on demand" is realized, avoiding secondary pollution caused by excessive dosing or excessive water quality caused by insufficient dosing.
- ◎ It can save 8% to 20% of the dosage of pharmaceuticals.

◆ 选型注意事项 Selection considerations

- ◎ 用户选用加药装置时，首先根据系统需要投加溶液量来确定选用规格(包括计量泵参数、溶液箱容积等条件)，再根据投加情况，确定投加方式(一般采用“一用一备”的方式)。
 - ◎ 根据需要选取加药装置各部件的材质(不锈钢、碳钢、非金属材料)、计量泵型号(数字计量泵/柱塞泵)或向我公司提供所加药剂的参数(名称、浓度、温度、密度、粘度、腐蚀性等)。
- ◎ When the user chooses the dosing device, first determine the selection specification (including the parameters of the metering pump, the volume of the solution tank, etc.) according to the amount of solution required by the system, and then determine the dosing method according to the dosing situation (generally adopt "one use", one preparation" method).
- ◎ Select the material of each component of the dosing device (stainless steel, carbon steel, non-metallic materials), the model of the metering pump (digital metering pump/plunger pump) or provide our company with the parameters of the added drug (name, concentration, temperature, density, viscosity, corrosiveness, etc.).



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INTELLIGENT AND PRECISE DOSING SYSTEM 智能精准加药系统

广州新奥环境技术有限公司
NEAO Guangzhou Environmental Technology Co.,Ltd

智能精准加药系统

Intelligent and precise dosing system

◆ 系统简介 Introduction

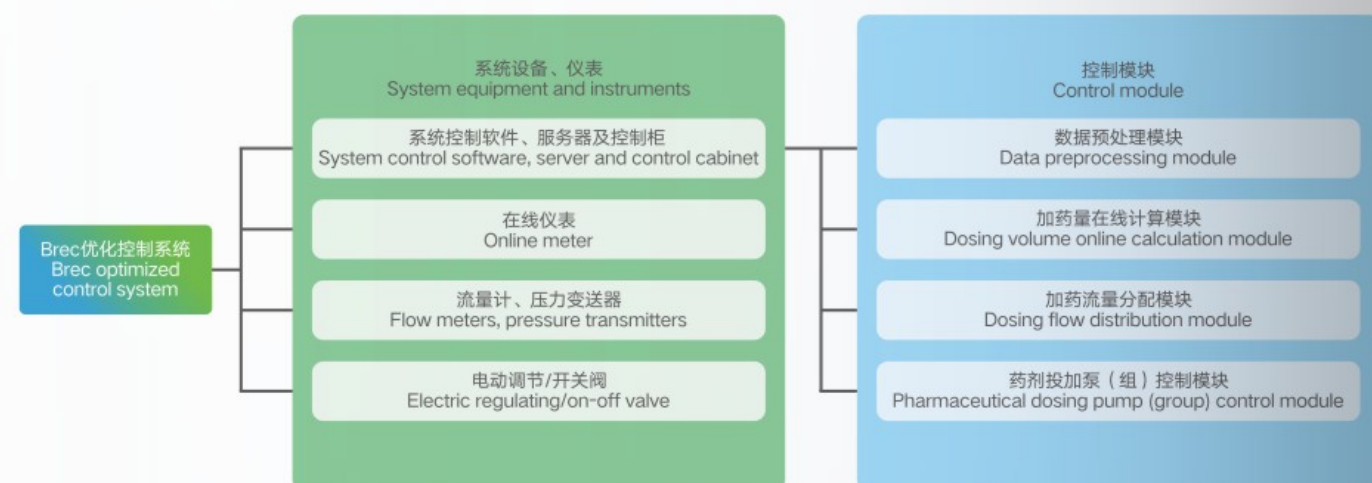
现有的市场上的加药系统仅根据简单的仪表信号实现比例性的药剂调节，水质的稳定性较差，需要人工干涉多，药剂的浪费性大，对水体造成了二次污染，对此我司开发出来智能化的精准加药系统，通过Brec控制模型进行优化后，相比传统的PID控制方法，Brec优化控制系统基于多变量的建模、预测、优化及控制软件，由于采用了多种变量的结合，相较于经典PID控制器，APC策略采用多变量优化算法，适合处理多层次、多目标和多约束控制问题，能够更方便地让生产过程控制反应生产过程的经济指标。

The existing dosing system on the market only realizes the proportional adjustment of the chemical according to the simple instrument signal, the stability of the water quality is poor, the need for manual intervention is large, the waste of the chemical is large, and it causes secondary pollution to the water body. Our company has developed an intelligent and precise dosing system. After optimization through Brec control model, compared with the traditional PID control method, Brec optimization control system based on multivariate modeling, prediction, optimization and control software, due to the combination of multiple variables, compared with the classic PID controller, APC strategy adopts multi-variable optimization algorithm, suitable for multi-level, multi-target and multi-constraint control problems, can more easily control the economic indicators of production process.

◆ 适用范围 Scope of application

应用在自来水的加矾，加氯工艺，污水处理的除磷，碳源投加工艺。
It is used in the addition of vanadium to tap water, chlorination process, phosphorus removal in sewage treatment, and carbon source addition process.

◆ 工艺流程 Process flow



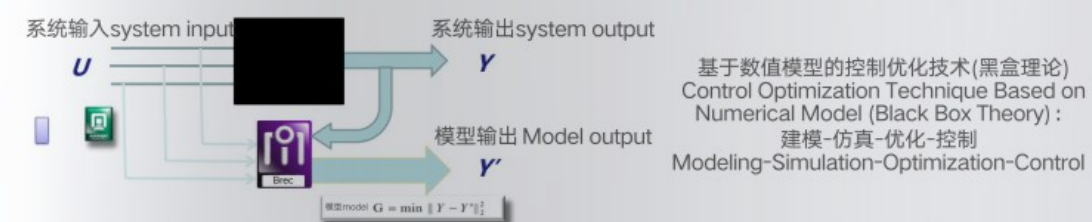
◆ 软件系统介绍 Software System Introduction

Brec控制系统拓扑图

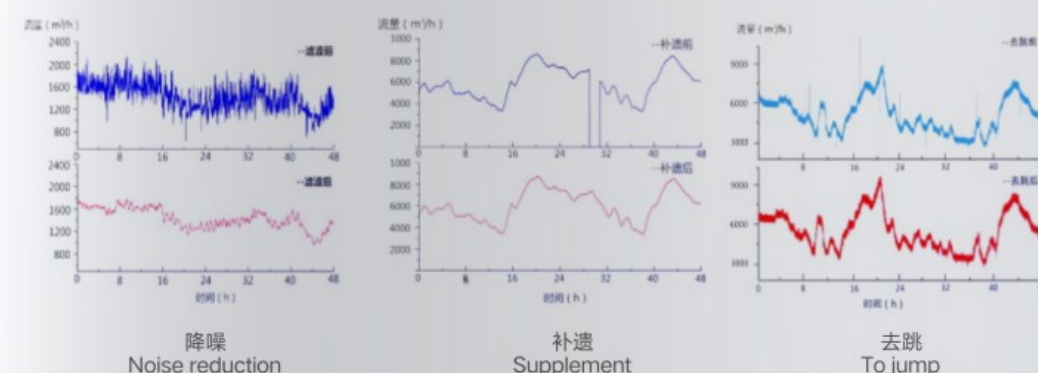
The Brec control system topology diagram



算法基础 Algorithm basis



信号处理方法 Signal processing method



◆ 系统模块 System module

卸料模块

- 采用一体式撬装装置，由卸料泵、流量计、阀门、撬装支架、就地控制箱组成；
- 功能：卸料，计量，冲洗，稀释功能；

储配单模块

- 包括储料罐、可视液位装置、超声波液位计、稀释装置、液封装置、电动球阀、取样阀、搅拌装置，检修爬梯组成
- 功能：药剂配置，药剂储存；

投加模块

- 包括数字计量泵、脉冲阻尼器、背压阀、安全阀、流量计、阀门、流量标定柱、Y型过滤器、撬装装置组成
- 功能：精准投加；

仪表模块

- 根据不同的药剂、配套不同的仪表、包括有在线余氯仪、流动电流仪、在线PH计、在线ORP计
- 功能：精确反馈药剂投加效果，实时调整药剂剂量；

控制模块

- 包括控制系统、控制软件、人机操作界面、控制柜、远程通讯模块等
- 功能：实现全自动控制，实现智能精准投加；

1 Unloading module

- It adopts an integrated skid-mounted device, which consists of a discharge pump, a flowmeter, a valve, a skid-mounted bracket, and an on-site control box;
- Function: unloading, metering, flushing, dilution functions;

Storage and distribution order module

- Including storage tank, visual liquid level device, ultrasonic liquid level gauge, dilution device, liquid sealing device, electric ball valve, sampling valve, stirring device, maintenance ladder
- Function: Pharmacy configuration, Pharmacy storage;

Dosing module

- Including digital metering pump, pulse damper, back pressure valve, safety valve, flow meter, valve, flow calibration column, Y-type filter, skid-mounted device
- Function: precise dosing;

Meter module

- According to different medicaments, supporting different instruments, including online residual chlorine meter, flowing current meter, online PH meter, online ORP meter
- Function: Accurately feedback the effect of drug dosage, and adjust the dose in real time;

Control module

- Including control system, control software, man-machine interface, control cabinet, remote communication module, etc.
- Function: realize automatic control, realize intelligent and precise dosing;

◆ 核心部件介绍 Introduction of core components

- 我司的加药装置主要部件均采用国内外知名品牌其中卸料泵主要采PAWORLD、SUPER、JK品牌；
- 投加泵主要选择进口品牌计量泵或者耐腐蚀的磁力泵；流量计品牌为科隆、肯特；
- 背压阀和安全阀主要选择德国斯德宝、意大利FIP、莫迪克；
- 过程仪表品牌为哈希、E+H、杰普；
- 减速机品牌为SEW、NORD。
- 核心控制软件Brec控制模型。

- The main components of our dosing device are all well-known brands at home and abroad, among which the unloading pump mainly adopts PAWORLD, SUPER, JK brands;
- The dosing pump mainly chooses imported brand metering pump or corrosion-resistant magnetic pump; the flowmeter brand is Cologne and Kent;
- Back pressure valve and safety valve are mainly selected from German Staples, Italian FIP and Modick;
- The brands of process instruments are Hach, E+H, JP;
- The reducer brands are SEW and NORD.
- The core control software Brec control model.