

产品类成果

整体式合页活动坝

【创新性】

整体式合页活动坝是一种低水头拦水建筑物，采用独特的整体式底铰支座结合小幅度运动油缸驱动坝面的合页式结构。其创新性主要体现在以下几点：可通过退冰专用液压系统，确定超压泄压时序，实现闸体退让，保证坝面冬季运行；结合具有并联电路及阀组的集成开发模块，实现在有电、无电、有人值守及无人值守等多情形下的变速无动力降坝，满足河道应急行洪需求；可实现手动、本地 PLC 控制、远端控制、手机 APP 实时监控等多种控制形式，开发出程控水景、同步精准升降、梯级调度等多种控制功能，实现合页坝智能化管理，无缝对接智慧水利。广泛应用于河道景观、灌溉蓄水、水库扩容等水利水电、水生态文明及城镇化建设项目中。

【影响力】

整体式合页活动坝关键技术成果与全部技术产品已实现产业化，已陆续在北京、山东、辽宁、吉林、黑龙江、陕西等十多个省、市、自治区及国外缅甸、泰国等国家推广建设 30 余座，社会和经济效益显著。该技术已获得发明专利 11 项，实用新型专利 22 项，外观专利 4 项，软件著作权 2 项，工法 1 项，入选水利部 2014 年和 2017 年先进技术推广指导目录，通过水利部的新产品鉴定，达到国际先进水平。

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获奖单位：中水科



INTEGRAL HYDRAULIC ELEVATOR DAM

【Innovation】

Integral hydraulic elevator dam is a type of low-head water blocking structure that adopts the unique hinge structure consisted of the integral bottom hinge bearing and the cylinder-driven dam panel with small amplitude motion. Its innovation mainly manifests in: able to use the dedicated ice-removing hydraulic pressure system to confirm the overpressure and pressure relief timing, achieve the compromise of the gates, and ensure the operation of the dam panel in the winter; able to combine integrated development modules with parallel circuits and valve assembly to achieve the variable-speed powerless dam drop under various conditions, such as power supply, no power supply, manned guard and unmanned guard, and meet the demand of river courses for emergent flood discharge; able to achieve various control modes, such as manual control, local PLC control, remote control and real-time monitoring via the mobile app, and achieve the intelligent management of hydraulic elevator dams and seamless alignment with smart water conservancy through various control functions it has developed, such as programmable waterscape, synchronous precision rise and fall, cascade scheduling, etc. This structure is widely used in water conservancy and hydropower, water ecological civilization and urbanization construction projects, such as river channel landscape, irrigation and water storage and reservoir expansion.

【Influence】

Key technological achievements and all technology products of integral hydraulic elevator dam have been industrialized, through which nearly 30 hydraulic elevators have been popularized to various provinces, municipalities and autonomous regions, including Beijing, Shandong, Liaoning, Jilin, Heilongjiang and Shaanxi, as well as many foreign countries such as Myanmar and Thailand, generating remarkable social and economic benefits. This technology has obtained 11 invention patents, 22 new utility patents, four exterior patents, two software copyrights, one engineering method, was listed into the advanced technological promotion and guidance directory of the Ministry of Water Resources in 2014 and 2017 respectively, and achieved the international advanced level through the authentication of new products by the Ministry of Water Resources.

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