

Ebook free Control loop performance monitoring stiction detection and compensation (PDF)

valve stiction produces an offset between pv and sp and causes loop oscillation because the valve is stuck even though the integral action of the controller acts and increases the pressure in case of flow control loop the fast dynamics allows one to approximate mv op with pv op plot in industrial processes control valve stiction is known to be one of the primary causes for poor control loop performance stiction introduces oscillatory behaviour in the process leading to increased energy consumption variations in product quality shortened equipment lifespan and a reduction in overall plant profitability control loop performance monitoring solutions utilize a variety of metrics to detect a wide range of issues that hamper production and lead to unplanned downtime a pair of metrics used by clpm technologies specifically for identifying valve issues are the following valve stiction most valves are affected by some amount of stiction loss of performance due to stiction in control valves is an important problem that needs to be solved industrial practitioners have articulated that stiction diagnosis from routine operating in this paper two novel approaches for stiction compensation are proposed a simple two move approach and b an optimization based

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approach much in the spirit of predictive control strategies both the approaches are based on a data driven model for stiction the merits and demerits of both these approaches are discussed biao huang provides the reader with answers to the most common source of valve problems in process control comparative review of state of the art algorithms brings the reader up to date and able to choose the most appropriate solution for a given system managing the performance of control loops with valve stiction an industrial perspective rohit s patwardhana talal bakria feras al anazib and timothy j schroederb 5 abstract valve methods for the limitation of stiction effects are proposed within the general context of oscillation detection in control loops stiction detection and diagnosis and stiction quantification and diagnosis of multiple faults results are confirmed by application to industrial data a significant number of valves are analyzed for repeated acquisitions before and after plant shutdown the proposed procedure seems to be a valid methodology to monitor valve stiction and to schedule and check valve maintenance request pdf a performance monitoring tool to quantify valve stiction in control loops the paper presents main features of a performance monitoring system which allows stiction abstract the paper presents main features of a performance monitoring system which allows stiction quantification it implements a methodology which permits one to reproduce the unknown stem position without requiring any additional knowledge based only on data normally registered in industrial plants controller output op controlled performance monitoring tool to quantify valve stiction in control loops r bacci di capaci c scali prentice hall process control laboratory cplab department of civil and

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