

过程系统工程

间歇过程动态SDG建模

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摘要 目前用于间歇过程的SDG建模方式不能达到计算机辅助HAZOP的要求, 本文在现有SDG-HAZOP理论上提出了面对间歇过程的动态SDG建模理论, 并详细阐述了如何运用SDG对间歇过程进行建模的思路和方法, 并运用该方法对一个煤制油流程的除灰工序进行建模和分析, 同时解决了间歇过程SDG建模的模型接续性与故障和危险覆盖面最大化两方面问题。

关键词

[间歇过程](#); [HAZOP](#); [SDG](#) [飞灰脱除](#); [建模方法](#)

分类号

Active modeling approach for batch process based on SDG

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Abstract

At present, the modeling method used in the batch process by signed directed graph (SDG) is oriented to the process in normal running state, which cannot describe the operating logic in abnormal running state, and it is inadequate to cover all faults and hazards. When the SDG model used for computer-aided hazard and operability study (HAZOP) is built for the complex chemical process including the batch process, the model of the batch process cannot always be associated to that of the other continuous systems. In order to meet the demand of computer-aided HAZOP, the paper presents a dynamic SDG modeling method based on the present SDG-HAZOP modeling method to deal with the batch process. The idea and procedures of dynamic modeling were elaborated. A real case about the fly ash removal in a complex process of coal-to-oil was modeled and analyzed by using the proposed method, which can resolve two problems at the same time: the sequential model about the SDG modeling of the batch process and the maximal covering of the faults and hazards.

Key words

[batch process](#) [HAZOP](#) [SDG](#) [dry fly ash removal](#) [modeling approach](#)

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