

(Daisuke

Onoda)

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Synopsis :

In No.3 blast furnace of Mizushima Works, several functions applying AI (artificial intelligence) techniques were realized, utilizing the thoroughly re -modernized plant control system. The representative AI -applied functions are blast furnace operation expert system, which diagnoses blast furnace condition and controls furnace heat, hot stove heat control with th e fuzzy theory, planning of material hopper arrangement which is a planning type expert system, distribution control of granulated slag which is a control type expert system in real -time, and feed speed control of material with the fuzzy theory. These functions have greatly contributed to the achievement of highly automated and efficient operation of the furnace.

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Application of AI Technique to Blast Furnace Operation

要旨

水島製鉄所第3高炉では、最新鋭の運転制御システムを活用することによって、AI技術の適用による生産性の向上が図られている。

炉ガス)と三様であるうえに、これらが複雑な反応挙動をするため、プロセスの動きを理論的に表現することは非常に難しい。さらにプロセスが大規模かつ高温高压であるため、プロセス特性を表す物理量を測定し、それに基づいた制御理論によるモデルを組み立てることが困難である。そのため、その操業経験に頼って行われ

4 高炉における AI 技術の適用事例

水島第3高炉では Fig. 3 に示すような AI 技術を適用したさまざまな機能を実現している。ここでは、診断型エキスパートシステ

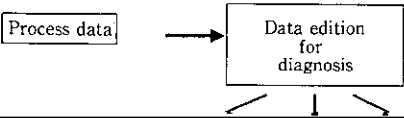
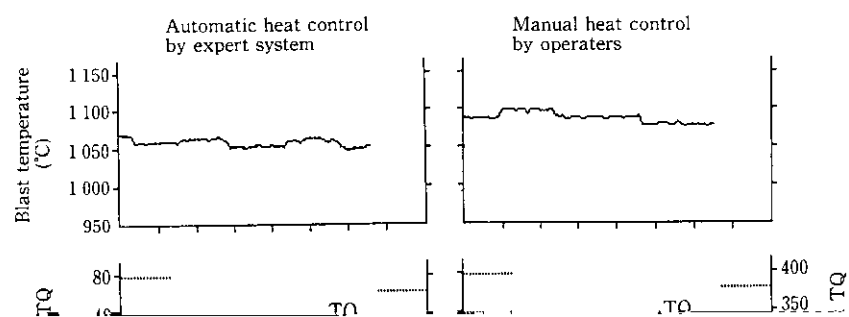


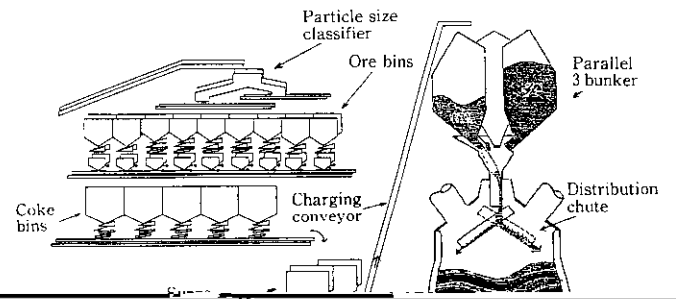
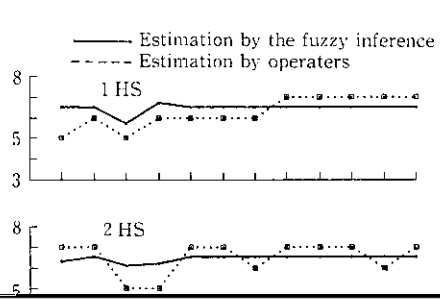
Table 1 Scale of the knowledge base

Name	Number of production	Number of knowledze	Execution
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Set point of
blast volume → Physical

形で現われる。本ルール群は単独の炉の熱付状態を判断する必要が
あるため、全炉の稼働は四つあり、判断すべき炉の熱付状態は



出荷ヤードへ運搬する。

本システムのその他の特徴を以下に示す。

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and the role of the accounting system in providing reliable financial information.

2. The second part of the document describes the various methods used to collect and analyze data, including interviews, surveys, and focus groups.

3. The third part of the document presents the results of the study, showing that the accounting system is a critical component of the organization's financial management.

4. The fourth part of the document discusses the implications of the findings for the organization and provides recommendations for improving the accounting system.

5. The fifth part of the document concludes the study and summarizes the key findings.