

Title (en)
BLAST FURNACE IRREGULARITY ASSESSMENT DEVICE, BLAST FURNACE IRREGULARITY ASSESSMENT METHOD, BLAST FURNACE OPERATION METHOD, AND MOLTEN PIG IRON PRODUCTION METHOD

Title (de)
VORRICHTUNG UND VERFAHREN ZUR BEURTEILUNG DER UNREGELMÄSSIGKEIT EINES HOCHOFENS, VERFAHREN ZUR BEURTEILUNG DES BETRIEBS EINES HOCHOFENS UND VERFAHREN ZUR HERSTELLUNG EINES GESCHMOLZENEN ROHEISENS

Title (fr)
DISPOSITIF D'ÉVALUATION D'IRRÉGULARITÉ DE HAUT FOURNEAU, PROCÉDÉ D'ÉVALUATION D'IRRÉGULARITÉ DE HAUT FOURNEAU, PROCÉDÉ DE FONCTIONNEMENT DE HAUT FOURNEAU ET PROCÉDÉ DE PRODUCTION DE FONTE BRUTE FONDUE

Publication
EP 3985132 A4 20220907 (EN)

Application
EP 20853668 A 20200819

Priority
• JP 2019151653 A 20190822
• JP 2020031287 W 20200819

Abstract (en)
[origin: EP3985132A1] [Object] An object is to provide an anomaly determining apparatus and method capable of detecting not only a state anomaly, but also a premonitory sign of state anomaly in a blast furnace.[Solution] An anomaly determining apparatus 10 detects an anomaly in a blast furnace 1 using a plurality of sensors S1 to Sn installed at different positions of the blast furnace 1. The anomaly determining apparatus 10 includes an evaluation value calculating unit 11 configured to calculate an evaluation value from a plurality of pieces of measurement data D1 to Dn detected by the plurality of sensors S1 to Sn, and an anomaly detecting unit 12 configured to detect an anomaly in the blast furnace 1 on the basis of the evaluation value EV calculated by the evaluation value calculating unit 11 using an anomaly threshold EVref1 and an anomaly premonitory sign threshold EVref2 smaller than the anomaly threshold EVref1. If the evaluation value EV is greater than the anomaly threshold EVref1, the anomaly detecting unit 12 determines that there is an anomaly, and if a period during which the evaluation value EV is greater than the anomaly premonitory sign threshold EVref2 continues for a set period PT or longer, the anomaly detecting unit 12 determines that there is a premonitory sign of anomaly.

IPC 8 full level
C21B 5/00 (2006.01); **C21B 7/24** (2006.01); **F27B 1/28** (2006.01); **F27D 21/00** (2006.01)

CPC (source: CN EP KR)
C21B 5/00 (2013.01 - CN KR); **C21B 5/006** (2013.01 - EP); **C21B 7/24** (2013.01 - CN EP KR); **F27D 21/00** (2013.01 - EP); **F27D 21/0028** (2013.01 - KR); **C21B 2300/04** (2013.01 - EP); **F27D 2021/0007** (2013.01 - EP)

Citation (search report)
• [X] JP 2018009224 A 20180118 - KOBE STEEL LTD
• [XI] JP S63210223 A 19880831 - KOBE STEEL LTD
• [AD] JP 2017128805 A 20170727 - JFE STEEL CORP
• See also references of WO 2021033721A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3985132 A1 20220420; EP 3985132 A4 20220907; BR 112022003100 A2 20220517; CN 114258433 A 20220329; JP 6940030 B2 20210922; JP WO2021033721 A1 20210913; KR 102668061 B1 20240521; KR 20220035233 A 20220321; TW 202113086 A 20210401; TW I748604 B 20211201; WO 2021033721 A1 20210225

DOCDB simple family (application)
EP 20853668 A 20200819; BR 112022003100 A 20200819; CN 202080058401 A 20200819; JP 2020031287 W 20200819; JP 2021516499 A 20200819; KR 20227005502 A 20200819; TW 109128422 A 20200820