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Coal Recovery From Jig'S Tails Of Anjir-Tangeh Coal Washing Plant, By Flotation Method

S. Jannesar, A.Joudaki, M.Noaparast,S.Z.Shfaei, A.Ghorbani

Abstract

Anjir-Tangeh is one of the coal washing plant located in north of Iran. It uses three separation methods, hand sorting, gravity (jig), and flotation for coke coal production. The tails from jig contains about 58% of ashes. In this research work the possibility of supplying coal with ash contents less 11% from jig tails was investigated. Therefore, various experiments were carried out which were designed according to the factorial method, using DX7 software. The required samples were prepared in two different size fractions of -1000 and -600 microns. The samples were used in flotation tests to investigate on the effects of different parameters such as type and consumption of collector, type and consumption of frother, solid weight percent in pulp, etc. The obtained results indicated that flotation would be a convenient approach to reduce the ash contents to less than 11%, by two rougher and cleaner stages. The final concentrate was achieved with less than 11% ash, and recovery of 69% and 53% for -1000 and -600 microns samples, respectively.

Keywords: Anjir-Tangeh coal washing plant, jig tails, DX7 software.

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(¹MIBC)

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A65

%

pH .

%

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d₈₀ .

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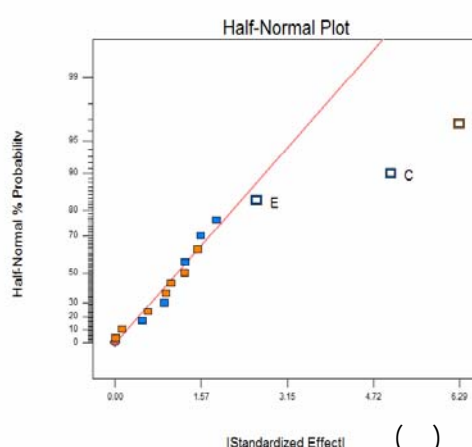
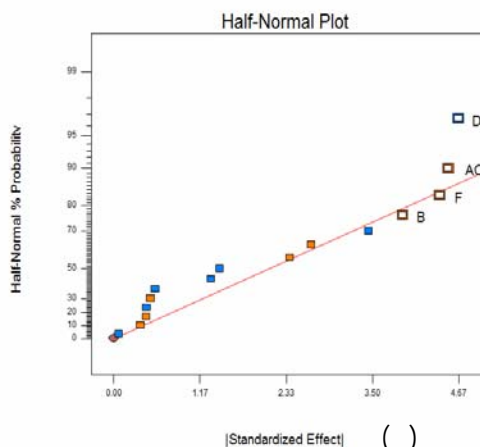
DX7

						(%)	(%)		
A	B	C	D	E	F	—————		(%)	(%)
		A65				/	/	/	/
		A65				/	/	/	/
		A65				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		A65				/	/	/	/
		A65				/	/	/	/
		A65				/	/	/	/
		A65				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		A65				/	/	/	/

F:rpm E: D: C: B: A:

Design-Expert® Software
S.E

Shapiro-Wilk test
W-value = 0.953
p-value = 0.678
A: Collector Type
B: Collectroes Value
C: Frother Type
D: Frother Value
E: Solid Percent
F: R.P.M
■ Positive Effects
■ Negative Effects



(²ANOVA)

$$\text{Conc.Ash} = 26.85 - 2.52 \times C - 1.29 \times E + 3.15 \times F$$

$$\text{S.E.} = 53.66 + 1.95 \times B - 2.33D - 2.21 \times F + 2.26 \times AC$$

A	B	C	D	E	F
		MIBC			/ / /
		MIBC			/ / /
		MIBC			/ / /

%

(%)	(%)	(%)
/	/	/
/	/	/
/	/	/
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pH

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- () () :
- () gr/ton () gr/ton :
- () MIBC () A65 :
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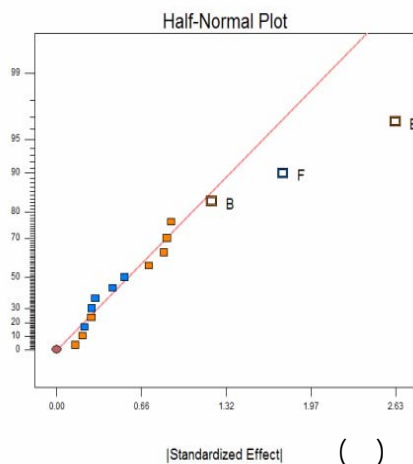
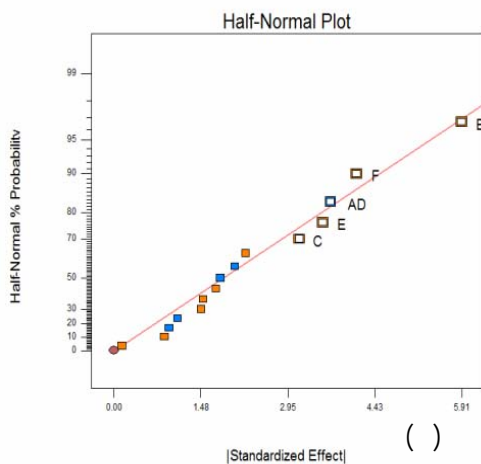
DX7

A	B	C	D	E	F	(%)	(%)	(%)	(%)
		A65				/	/	/	/
		A65				/	/	/	/
		A65				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/
		MIBC				/	/	/	/

MIBC	/	/	/	/
A65	/	/	/	/
A65	/	/	/	/
A65	/	/	/	/
A65	/	/	/	/
MIBC	/	/	/	/
MIBC	/	/	/	/
MIBC	/	/	/	/
A65	/	/	/	/
	F:rpm	E:	D:	C:
				B:
				A:

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Shapiro-Wilk test
W-value = 0.910
p-value = 0.278
A: Collector Type
B: Collectore Value
C: Frother Type
D: Frother Value
E: Solid Percent
F: R.P.M
■ Positive Effects
■ Negative Effects



(ANOVA)

$$\text{Conc Ash.} = 23.25 + 0.6 \times B + 1.32 \times E - 0.88 \times F$$

$$\text{S.E.} = 45.82 + 2.95 \times B + 1.58 \times C + 1.78 \times E + 2.06 \times F - 1.84 \times AD$$

A	B	C	D	E	F
		MIBC			/ / /
		MIBC	/		/ / /
		MIBC			/ / /
		%			
		(%)		(%)	(%)
		/		/	/
		/		/	/
		/		/	/
		/		/	/

%

MIBC

A65

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rpm

gr/ton

MIBC

gr/ton

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3- Leonard, Joseph W. "Coal Preparation", Mining Metallurgy and Exploration INC, 5th edition, 1991.

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¹ - Methyl Iso Butyl Carbonyl

² - Analysis Of Varians