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Improvement in Sample Preparation Equipment for Chemical Analysis in Steelworks

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Synopsis :

This report is concerned with the improvement and automation of sample preparation equipment in the analysis system for enhancing efficiency of analysis operation in the steelworks. Examples of improvement and automation of sampling are as follows: An automatic sampler for the on line analysis of plating solutions, swift sampler for continuously -cast slabs, BF slag sampler requiring on sample preparation, and sampler of white pig iron. Improved methods of sample preparation are as follows: Automatic sampler for the oxygen analyzer, automatic sampler of molten steel, sieving machine for collecting powdery samples, and centrifugal pressure mill. These samplers and sampling metho• e c

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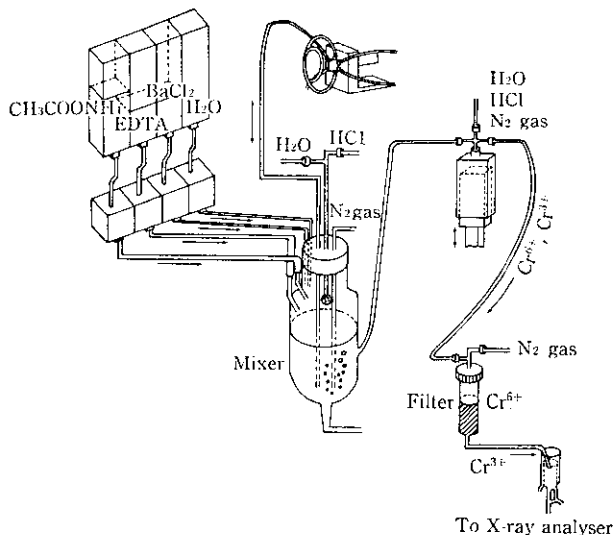


Fig. 1 Automatic separator of Cr^{3+} from chromate solution for the X-ray analyser

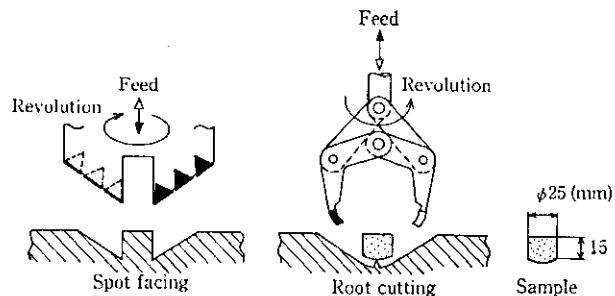


Fig. 3 Sampling method by hot slab sampling device

2.3 X線分析用の試料調製不要な高炉スラグサンプラー

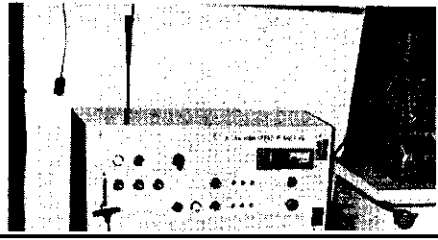
製鉄・製鋼分析の作業負荷と分析所要時間の半減化計画の1つとして、スラグのX線分析用の試料調製不要なサンプラーの開発に取り組んできた。数年を費やして高炉スラグサンプラーを完成した。Photo 1は、サンプリングモールドと平滑な分析面を得るための多孔質カーボンプレートとヤトバ採取用サンプラーでスラグ

Fig. 2は、ICP発光分光分析を用いたティンフリースチールラインのメッキ液類オンライン自動分析用のサンプラーを図示したものである。この図のV、L、Vは、メッキ液類の試料、標準液、

このサンプリング方法は、溶銑桶中の溶融スラグを鉄製の杓で汲み出し、スラグサンプラー（モールド）に流し込む。その後、手早

Table 1 Comparison of analytical results of BF slag between briqueting sample and molding sample (%)

項目	ブリケット試料 (%)	鋳造試料 (%)
SiO ₂		
CaO		
MgO		
FeO		
Al ₂ O ₃		
MnO		
P ₂ O ₅		
S		
その他		



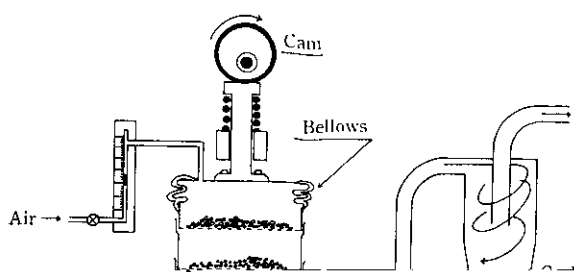


Table 4 Results of the crushing of lime stone, clinker and sinter ore using the centrifugal power mill (170 mm ϕ)

	Charge		Yield for each size of collection (%)					Types
	Size (mm)	Weight (g/2.5 min)	177~149 μ m	149~105 μ m	105~88 μ m	88 > μ m	total	
Lime stone	-5.0	50.0	0.2	3.0	0.2	94.4	98.0	bottom fixed
Clinker	-3.0	50.0	0.2	2.2	1.4	96.0	99.8	bottom fixed