

# VARI-STEM<sup>®</sup> IMPROVE PRIMARY CRUSHER OUTPUT, WITH REDUCTION IN BACK HOE TIME AND BLASTING VIBRATION

## STEMMING PLUGS

UNIVERSITY OF MINES AND TECHNOLOGY  
MINING ENGINEERING DEPARTMENT  
TARKWA, GHANA



- **VARI-STEM<sup>®</sup> STEMMING PLUGS** gave better fragmentation in hard rock zones.
- The average crusher output with conventional stemming was 410.45t/hr, while stemming with **VARI-STEM<sup>®</sup>** improved to 466.09 t/hr. The **VARI-STEM<sup>®</sup>** increased primary crusher output by 13.56%.

MONTH	CRUSHER THROUGHPUT (ton/hr.)		INCREASE CRUSHER THROUGHPUT (ton/hr.)	COMPARATIVE PERCENTAGE (%) INCREASE (crusher throughput)
	CONVENTIONAL STEMMING	<b>VARI-STEM<sup>®</sup></b> STEMMING PLUG		
January	424	484	60	14.2
February	423	465	42	9.9
March	414	452	38	9.2
April	420	462	42	10.0
May	417	459	42	10.1
June	390	441	51	13.1
July	363	428	65	17.9
August	530	573	43	8.1
October	401	459	58	14.5
November	307	428	121	39.41
December	426	476	50	11.74

### DEPARTMENT OF MINING AND MATERIALS ENGINEERING PRINCE OF SONGKLA UNIVERSITY, THAILAND

#### NO VARI-STEM<sup>®</sup> - CONVENTIONAL BLASTING

DATE	CRUSHER 1		CRUSHER 3	
	HOURS	TONS	HOURS	TONS
1	1.00	234.23	6.00	1,684.37
2			7.00	2,031.12
3			4.75	1,375.51
4	3.75	1,092.09	2.00	582.46
5	1.25	338.06	4.75	1,242.82
6	2.50	806.38	1.00	274.27
7	2.50	783.76	1.50	420.98
8	3.00	874.89	3.75	994.25
9	5.50	1,647.53		
10	1.50	445.46	2.50	674.44
11	4.00	1,324.95		
12	2.50	742.74	3.75	946.56
13	2.00	579.69	2.25	602.68
14	5.25	1,384.37		
15	6.75	1,924.17		
<b>Average</b>	<b>293.45 ton/hr.</b>		<b>275.91 ton/hr.</b>	

#### CAPACITY OF PRIMARY CRUSHER ROCK FROM **VARI-STEM<sup>®</sup> STEMMING PLUG** BLASTING

DATE	CRUSHER 1		CRUSHER 3	
	HOURS	TONS	HOURS	TONS
1	1.75	525.61	4.50	1,560
2	3.00	956.42	2.50	761
3	3.75	1,286.02		
4	1.75	563.46	3.50	1,009
5	4.75	1,535.14	1.75	578
6	2.50	793.06	3.00	920
7	2.50	874.17	2.25	755
8	2.25	773.66	2.50	834
9	1.50	512.66	3.50	1,182
10	2.00	687.15	1.50	503
11	2.25	790.34	3.00	1,071
12	4.25	1,481.99		
<b>Average</b>	<b>334.25 ton/hr.</b>		<b>327.85 ton/hr.</b>	



**VARI-STEM<sup>®</sup>**  
STEMMING PLUGS  
A Division of **MOCAP**

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INCREASE IN CRUSHER CAPACITY 14-19%  
**CYCLE TIME OF BACK HOE CAT 330D  
REDUCED 6.17%**