



HAULAGE AND LOADING 2017.

**THE 2 MOST UNDER UTILIZED PIECES OF EQUIPMENT IN MOST OPEN PIT MINES,
IN TERMS OF TPH ACHIEVED VERSUS TPH CAPABILITY.**



HAULAGE AND LOADING 2017.



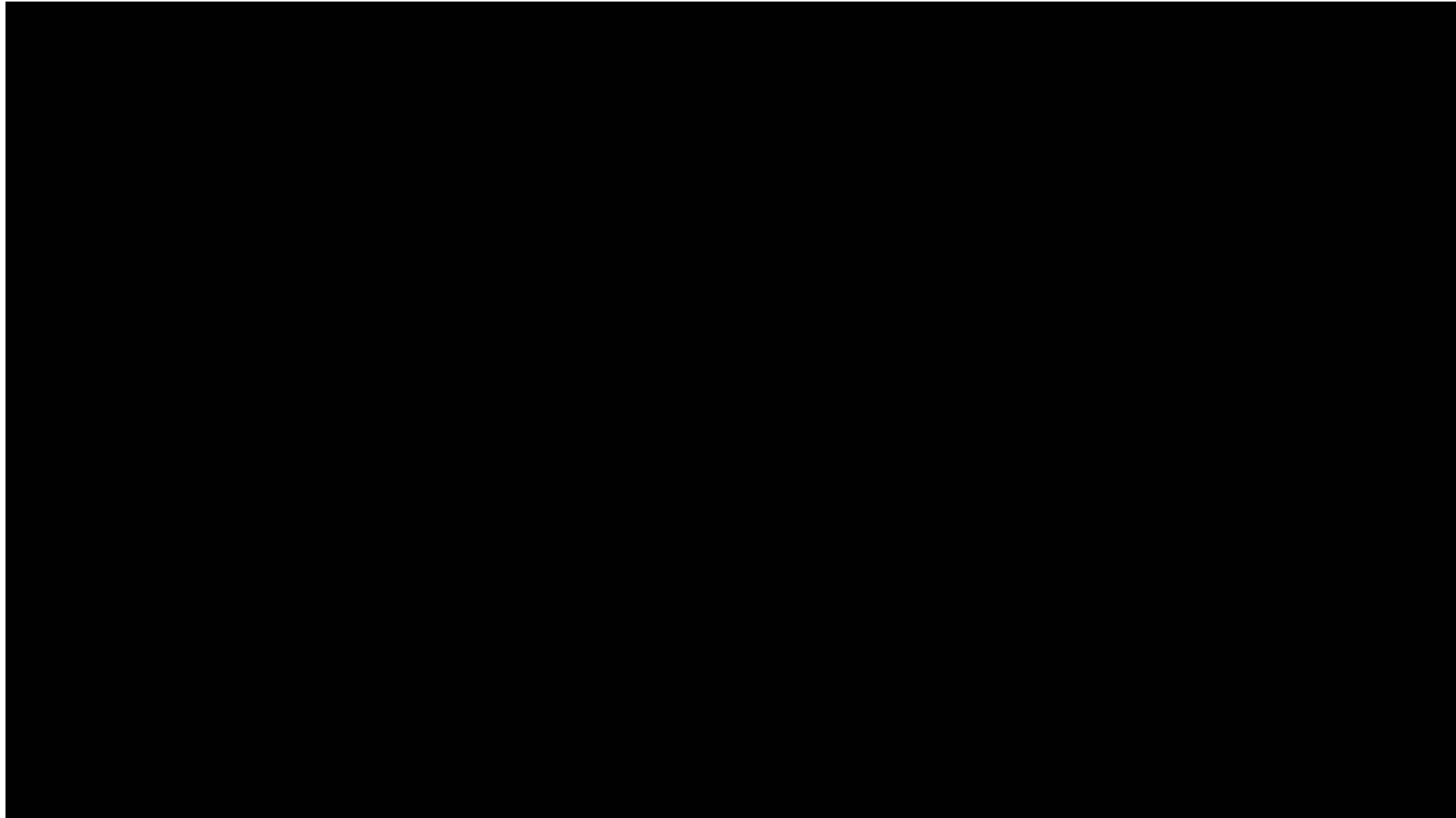
A MINE HAUL TRUCK VERY RARELY CARRIES 98-100% PAYLOAD.

REASON: SHOVEL CANNOT ACCURATELY LOAD THE TRUCK,
AND WILL ONLY ACHIEVE A 90-95% AVERAGE FILL OVER A SHIFT.

A TYPICAL ELECTRICAL ROPE SHOVEL WORKING IN CONJUNCTION
WITH HAUL TRUCKS RARELY EXCEEDS 6K TPH DURING A SHIFT;
BUT IS CAPABLE OF 10-12K TPH.

REASON: WAITING FOR TRUCKS.

SEMI-MOBILE TRUCK LOADING FEEDER.



FULLY MOBILE SIZER STATION.



FULLY MOBILE SIZER STATION.



HOW CAN INTEGRATE THESE SYSTEMS INTO A CONVENTIONAL OPEN PIT MINE.



1. We can see from this how the FMSS operates with Conveyor systems which allows the shovel to be a continuous loader and achieve its potential of loading at 10K TPH.
2. We all know that a large majority of the worlds **Existing** “Open Pit” mines are not suitable for this style of Mining.
3. We all know that **Existing** mines have a “Truck and Shovel” fleet.
4. We can see that the **Feeder Truck Loading System** has many advantages.
 - a) No reversing into position
 - b) 3 x faster loading
 - c) 98% + load factor every time for the truck.

CHUQUICAMATA COPPER MINE (CHILE) .



EQUIPMENT.

Shovels. Qty. 9

Trucks (360T) Qty. 80

Trucks (400T) Qty. 15

PRODUCTION PER DAY.

Ore: 120,000 Tons

Waste: 330,000 Tons

**Average Shovel production
5000TPH per 10 Hour shift.**

ESCONDIDA COPPER MINE (CHILE)..



EQUIPMENT.

Shovels. 395 Qty. 8

Shovels. 495B Qty. 9

Shovels. 4100XPB Qty. 3

Trucks (218Tonnes) Qty. 15

Trucks (363Tonnes) Qty. 100

Trucks (291Tonnes) Qty. 9

Trucks (327Tonnes) Qty. 42

PRODUCTION PER ANNUM.

Ore processed: 153 M Tonnes

HOW CAN WE BRING THESE TWO IDEAS TOGETHER AND ALLOW THE SHOVEL TO REACH ITS FULL OPERATING CAPACITY.



QUESTION.

CAN WE UTILISE THE MMD FULLY MOBILE SIZER STATION IN THESE TYPES OF MINING OPERATIONS.

ANSWER.

YES WE CAN. WE CAN PROVE THAT PRODUCTION FROM THE SHOVEL ON THE WORKING BENCHES WOULD BE IMPROVED BY UP TO 30%.

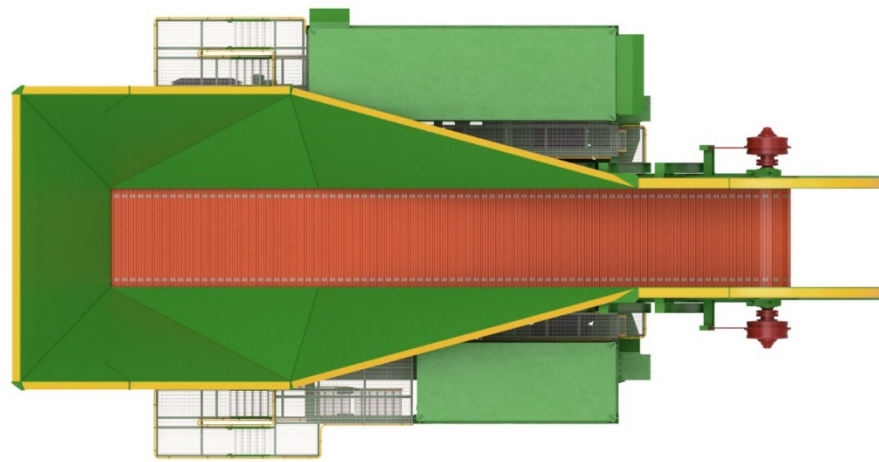
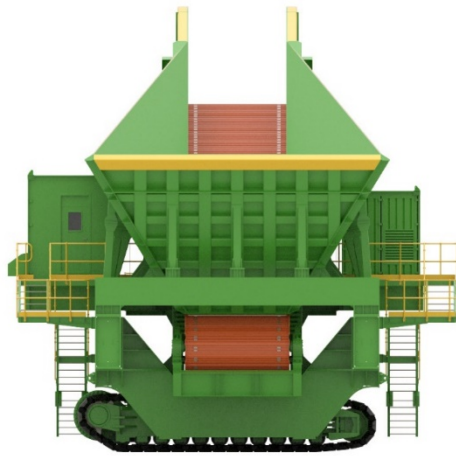
TYPICALLY A SHOVEL WILL WORK AROUND THE PIT CREATING A BENCH OF 60-100M WIDE. TRUCKS WILL REVERSE INTO POSITION TO BE LOADED AND THEN DRIVE TO THE SURFACE.

THE SHOVEL'S CAPABILITY (TPH) IS LIMITED BY WAITING TIME FOR TRUCKS TO MANOUVER INTO POSITION AND ITS INABILITY TO LOAD THE TRUCK TO THEIR OPTIMUM CAPACITY. THE PROBLEM IS:-

“HOW MANY FULLY LOADED BUCKETS CAN THE OPERATOR PUT IN ONE TRUCK”.

FULLY MOBILE SIZER STATION.





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Green Mining Solutions
Sizers | Feeders | IPSC

Shovel - MMD Surge Loader - Truck



OVERBURDEN



Shovel - MMD Mobile Sizer - MMD Surge Loader - Truck

MINERAL SIZING AT THE FACE.

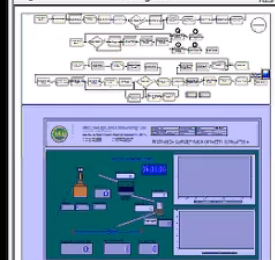




File Edit View Tools Arrange Object Run Window Help

56%

- Project Bar
- Advanced Process
- Flow Process
- Advanced Transfer
- Basic Process
- Reports
- Navigate



- Top-Level
- Animation (a)
- Logic (l)
- Plot (p)

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Enquiry No.	2016-11-0005	Date	14-09-2016
Enquiry Name	Escondida	Revision	A
Country of Application	Chile	Compiled By	C Pearson

ESCONDIDA SURGE/TRUCK CAPACITY SIMULATION

Wait for Surge Refill Mode

08:00:00

Truck System Av. Capacity TPH: 0

Cum. Total Truck M3: 0

Trucks Out: 0

Bucket Vol M³ cv BFF: 0

Hopper Level M³: 0

Surge Hopper Level M³: 0

Surge Process Rate M³/hr: 0

Surge Refill Count: 0

Shovel Chockstone: 0

Shovel Azale: 0

Actual Fill Time: 0

Surge Hopper

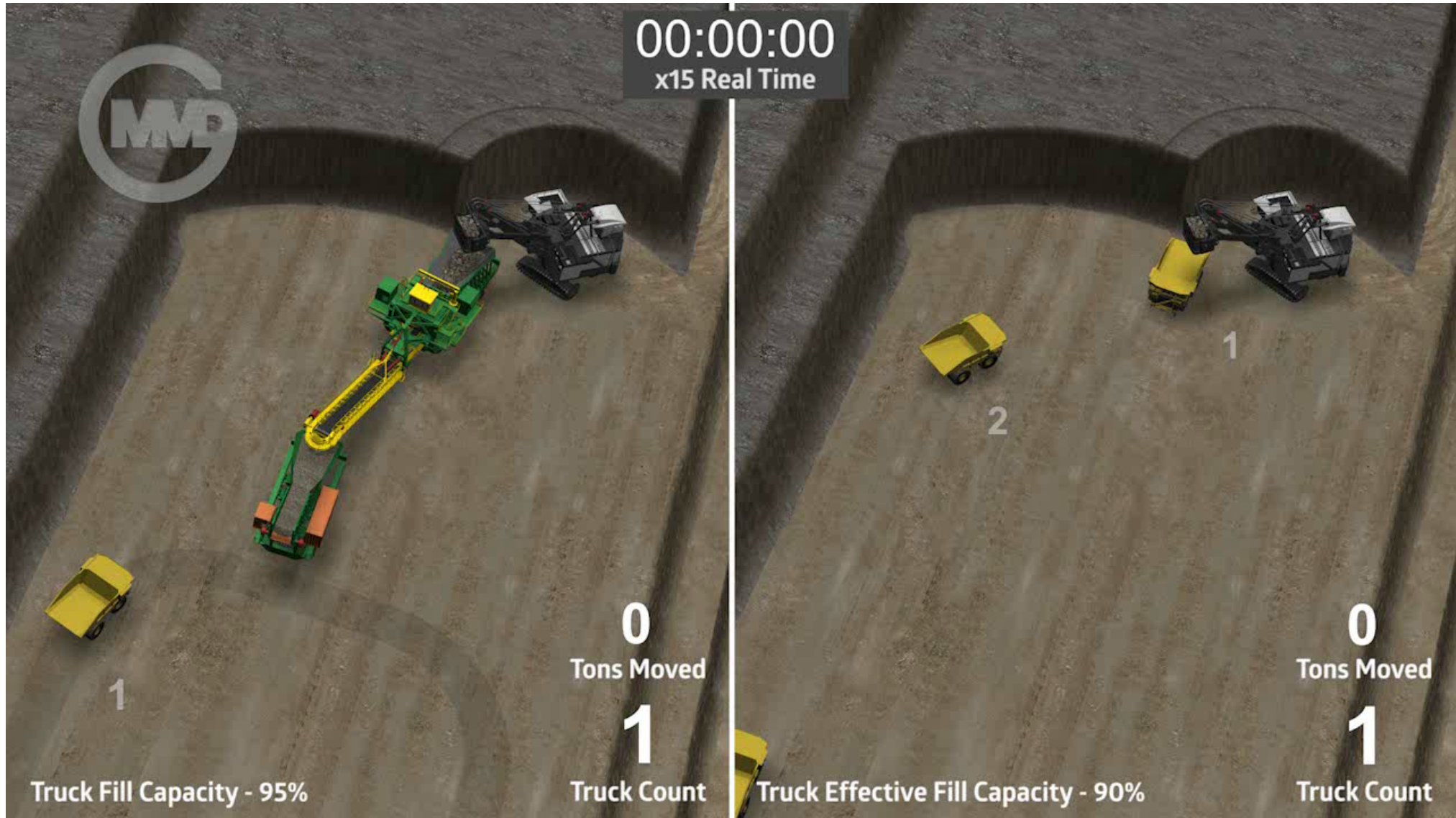
Actual Fill Cycle (secs): 0

Shovel Cycle Time: 0

Plot 1: Iner Hopper, Surge Hopper, Truck Throughput

Plot 2: Actual Fill Cycle (secs), Shovel Cycle Time

FULLY MOBILE SIZER STATION.



60M (200ft) BENCH MINING SYSTEM.



MMD Surge Facility Simulation



Any existing open pit mine would see the following benefits:

- Higher volumes due to precise truck fill level; or alternatively Opex savings due to reduced truck fleet size.
- Reduced truck body wear and improved truck body fill factors.
- Improved tire life.

POTENTIAL INCREASE OF 1400 TPH



T&S with Fully Mobile Surge Loader	
Parameters	
Material	
Material Denisty	2t/m ³
FMSL	
Designed Capacity	9,800 TPH
Hopper Volume	270m ³
Shovel	
Model	P&H 4100/495B
Qty	1
Shovel Bucket Volume	61m ³
Shovel Cycle Time	40-50 Seconds
Shovel Fill Factor	90 to 95%
Truck	
Truck Volume	360t Truck
QTY	12
Truck Fill Factor	98 to 100%
Drive in Time	5 Seconds
Drive out Time	5 Seconds
Drive to Dump Time	60 Minutes
Dump Cyle Time	38 Seconds
Drive back to FMSL	45 Minutes
Simulation	
Duration	20 hours
Results	
Average System Capac	7,607 TPH
Surge Refills	0
Avg Trucks Waiting at	0

Truck and Shovel	
Parameters	
Material	
Material Denisty	2t/m ³

Shovel	
Model	P&H 4100/495B
Qty	1
Shovel Bucket Volume	61m ³
Shovel Cycle Time	40-50 Seconds
Shovel Fill Factor	90 to 95%
Truck	
Truck Volume	360t Truck
QTY	12
Truck Fill Factor	90 to 95%
Drive in Time	15 -20 Seconds
Drive out Time	10 - 12 Seconds
Drive to Dump Time	60 Minutes
Dump Cyle Time	38 Seconds
Drive back to FMSL	45 Minutes
Simulation	
Duration	20 hours
Results	
Average System Capacit	6,194 TPH
Avg Trucks Waiting at S	1

POTENTIAL OF 2 LESS TRUCK REQUIRED.



T&S with Fully Mobile Surge Loader	
Parameters	
Material	
Material Denisty	2t/m ³
FMSL	
Designed Capacity	9,800 TPH
Hopper Volume	270m ³
Shovel	
Model	P&H 4100/495B
Qty	1
Shovel Bucket Volum	61m ³
Shovel Cycle Time	40-50 Seconds
Shovel Fill Factor	90 to 95%
Truck	
Truck Volume	360t Truck
QTY	10
Truck Fill Factor	98 to 100%
Drive in Time	5 Seconds
Drive out Time	5 Seconds
Drive to Dump Time	60 Minutes
Dump Cyle Time	38 Seconds
Drive back to FMSL	45 Minutes
Simulation	
Duration	20 hours
Results	
Average System Cap	6,254 TPH
Surge Refills	0
Avg Trucks Waiting at	0

Truck and Shovel	
Parameters	
Material	
Material Denisty	2t/m ³
Shovel	
Model	P&H 4100/495B
Qty	1
Shovel Bucket Volum	61m ³
Shovel Cycle Time	40-50 Seconds
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Simulation	
Duration	20 hours
Results	
Average System Capa	6,194 TPH
Avg Trucks Waiting at	1

MMD FULLY MOBILE SURGE LOADER.



QUESTIONS PLEASE.

WE ARE ALSO AVAILABLE OUTSIDE AT
BOOTH No. 16