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Improving Processes. Instilling Expertise.

ORICA   VOLVO   SANDVIK

Today's customer don't buy a machine they buy production

Workshops agenda

- Market situation
- The operator is the factor as affecting…
- Site reports
- Current operating training methods
- The requirements for tomorrow operating training is…
- The best training solution for the future is
- Advantages of simulator-based training

Loading and hauling

Market situation and feed back from the market

- Many of our customers are suffering today from being unable to get operators with operator skills for today's machines.

- Many machines in the market is under utilized today
  (According to Volvo internal MATRIS system)

- New machines don't meet the customers expectations
  (Production, fuel consumption, etc.)

- Site study is based on a "theoretic value"
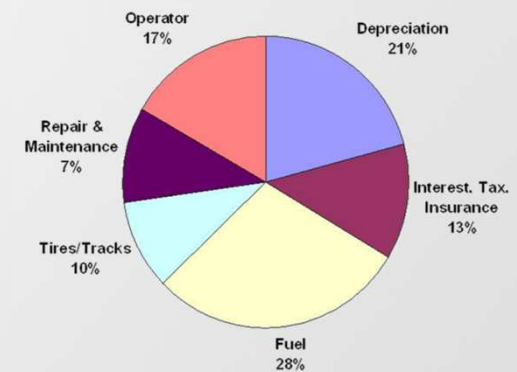 (Calculates not the human factor)

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Loading and hauling

The operator is the factor as affecting…

The operator is the factor as affecting…

- The total production
- The total production of cost
- Fuel consumption
- Loading efficiency
- Service cost, wear cost

- Operator A touch the ground 0.5 m before the pile
- 0,5m x 640cycles/shift = **320m/shift**

- Operator B touch the ground 5,0 m before the pile
- 5,0m x 640cycles/shift = **3200m/shift**

Fleet: Fleet-1		Haul Cycle: [PRJ] Haul Cycle From river to plant	
Material: [PRJ] Sand - with gravel dry		Schedule: [PRJ] 10 Hour Day - 50 Min hour	
Material Density	kg/cu.m	1 600,00	
Effective Working Time	hh:mm	07:50	
Loading Unit		[PRJ] VOLVO EC360B LC	
Availability	%	90	
Bucket Capacity	cu.metres	2,3	
Bucket Fill Factor		0,95	
Operating Hours per Year	OpHr/Year	2 669,50	Op. Hrs factored by availability
Operating Shifts per Year	shifts/Year	281	Shifts factored by availability
Average Bucket Cycle Time	min	0,5	
Avg. Production per Operating Hour	tonne	335,59	
Max. Production per Oper. Hr	tonne	406,99	Max. Prod with no Shift Delays
Production per Shift	tonne	3 188	Max. prod. based on 100% ldr avail.
Average Production per Year	tonne	895 844	Avg. prod. factored by ldr avail.
Wait Time per Operating Hour	min	0	
Hauler		[PRJ] VOLVO A25F II	
Availability	%	100	
Payload in Template	tonne	24	
Operating Hours per Year	OpHr/Year	2 669,50	
Average Payload	tonne	24,52	
Avg. Production per Operating Hour	tonne	167,79	
Production per Shift	tonne	1 594	Max. prod. based on 100% ldr avail.
Average Production per Year	tonne	447 922	Avg. prod. factored by ldr avail.
Queue Time at Loading Unit	min/ Cycle	0,25	
Maneuvering for loading	min/ Cycle	0,4	
Average Loading Time	min/ Cycle	3,1	
Average Travel Time	min/ Cycle	3,08	
Maneuvering for dumping	min/ Cycle	0,3	
Average Dump Time	min/ Cycle	0,2	
Average Cycle Time	min/ Cycle	7,33	
Fleet Size		2	
Average No. of Bucket Passes		7	
Fleet			
Average Production per Year	tonne/Year	895 844	
Owning / Rental Cost	SEK/tonne	0	Loading Methodology
Operating Cost	SEK/tonne	0	Single Sided
Total Cost	SEK/tonne	0	Full Hauler

Fleet: Fleet-1		Haul Cycle: [PRJ] Haul Cycle From river to plant	
Material: [PRJ] Sand - with gravel dry		Schedule: [PRJ] 10 Hour Day - 50 Min hour	
Material Density	kg/cu.m	1 600,00	
Effective Working Time	hh:mm	07:50	
Loading Unit		**[PRJ] VOLVO EC360B LC**	
Availability	%	90	
Bucket Capacity	cu.metres	2,3	
Bucket Fill Factor		0,95	
Operating Hours per Year	OpHr/Year	2 669,50	Op. Hrs factored by availability
Operating Shifts per Year	shifts/Year	281	Shifts factored by availability
Average Bucket Cycle Time	min	0,5	
Avg. Production per Operating Hour	tonne	302,03	
Max. Production per Oper. Hr	tonne	366,29	Max. Prod with no Shift Delays
Production per Shift	tonne	2 869	Max. prod. based on 100% ldr avail.
Average Production per Year	tonne	806 260	Avg. prod. factored by ldr avail.
Wait Time per Operating Hour	min	4,93	
Hauler		**[PRJ] VOLVO A25F II**	
Availability	%	100	
Payload in Template	tonne	24	
Operating Hours per Year	OpHr/Year	2 669,50	
Average Payload	tonne	24,52	
Avg. Production per Operating Hour	tonne	151,01	
Production per Shift	tonne	1 435	Max. prod. based on 100% ldr avail.
Average Production per Year	tonne	403 130	Avg. prod. factored by ldr avail.
Queue Time at Loading Unit	min/ Cycle	0,84	
Maneuvering for loading	min/ Cycle	1	
Average Loading Time	min/ Cycle	3	
Average Travel Time	min/ Cycle	3,08	
Maneuvering for dumping	min/ Cycle	0,3	
Average Dump Time	min/ Cycle	0,2	
Average Cycle Time	min/ Cycle	8,42	
Fleet Size		2	
Average No. of Bucket Passes		7	
Fleet			
Average Production per Year	**tonne/Year**	**806 260**	
Owning / Rental Cost	SEK/tonne	0	Loading Methodology
Operating Cost	SEK/tonne	0	Single Sided
Total Cost	SEK/tonne	0	Full Hauler

Loading and hauling
Current operating training methods

Today's operator training is based of yesterday's requirements

- Today's operating training doesn't focus on the customer and operator needs

- There is no continuity in the training,(follow up)

- Only operator training when the machine is delivered

- No site training (how to organize the work site etc)

- Individual operating training

- Practical training or theoretic training

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Loading and hauling
The requirements for tomorrow operating training is

The requirements for tomorrow operating training is

- Health & Safety
- The Environment impact
- Efficiency training program
- Cost efficiency
- Evaluations of the operator
- Simulate different scenarios
- Team operating
- Combination of theoretic training and practical training.
- Keeping operators motivated.

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Loading and hauling
The best training solution for the future is

The best training solution for the future is

- A combination of today's training method with help of new technique

- Combining entertainment with training, we create an interactive experience keeping the operators motivated

- Create understanding of a work site, work flow and methods

- Continuous training of operators

- Make the training easily accessible

Loading and hauling
Advantages of simulator-based training

Advantages of simulator-based training

- Focus instructor time

- Improve instructor environment

- Faster , more efficient training

- Operator safety

- Reduced training cost

- More training hours

Video clip Team Op

Video clip Op Wheel

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