Bergerat RENT

MONNOYEUR

08 JUNE 2023

Decarbonisation & Sustainability Day

Thursday 8th of june 2023

Who Are We?

Ben Maes

Rental Manager

BeLux

Pieter Quaegebeur

Senior

Demonstrator/Instructor

BeLux

Thomas Verschooten

GCI Manager

BeLux

Bergerat Monnoyeur CAT

Bergerat RENT

MONNOYEUR

Eneria CAT


Bergerat
RENT
Fleet
Management

Topics for Today

What do we do for decarbonisation?

Caterpillar Technology on our Next Generation Hydraulic Excavators.

How can this technology influence the total cost, time management and CO2.

The impact of good and "bad" machine operation.

How can operator training enhance your daily operation?

Actual Fleet Improvements

How can we improve our daily performance?

01

Caterpillar technology on Next Generation Excavators.

How can this technology influence the total cost, time management and CO2.

02

The impact of good and "bad" machine operation.

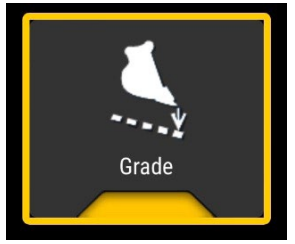
How can operator training enhance your daily operations.

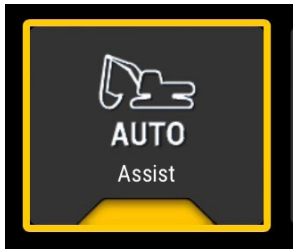
Caterpillar Technology

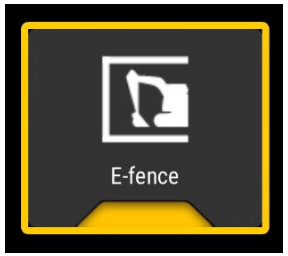
Standard on Next Generation Excavators since 2017.

EOU
(Ease Of Use)

- Cat Grade 2D
- Cat Payload
- Cat Grade with Assist
- E-fence

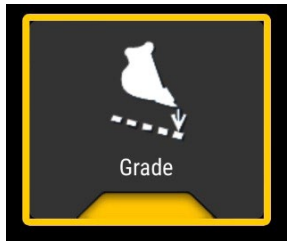


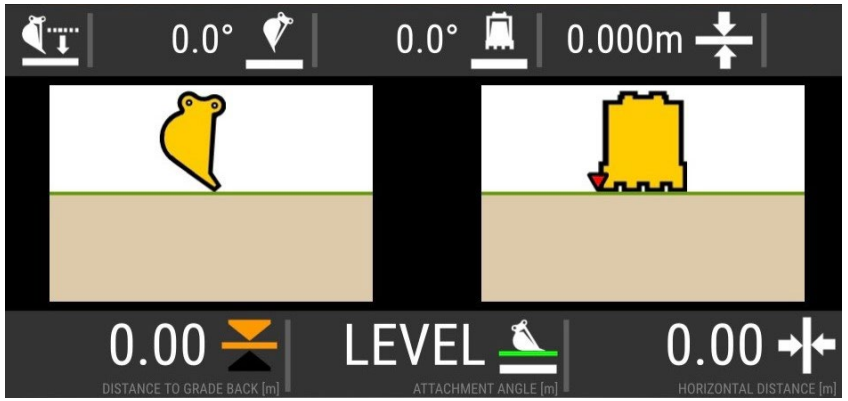


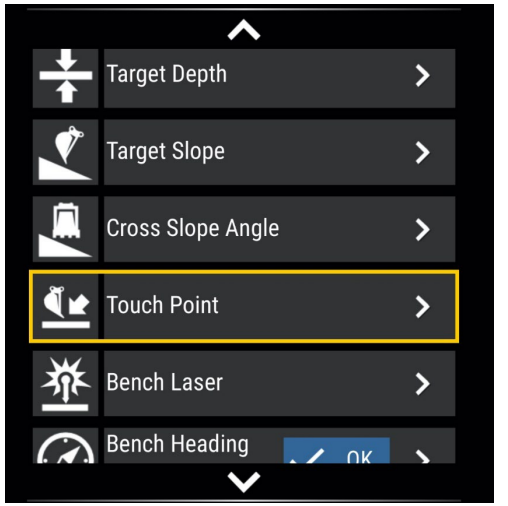


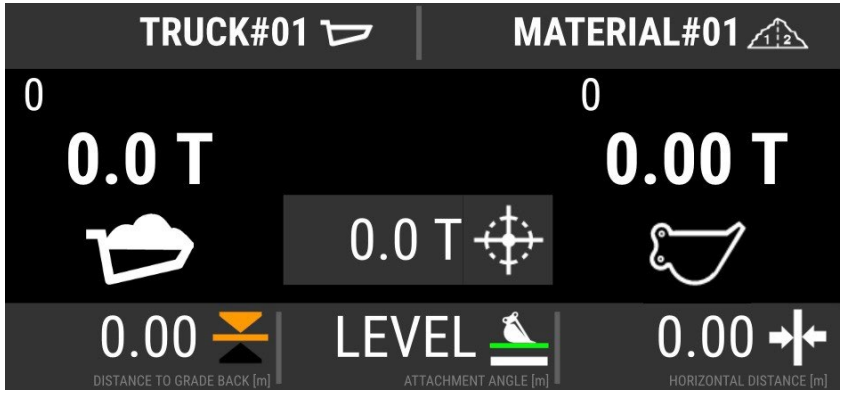
Ease Of Use

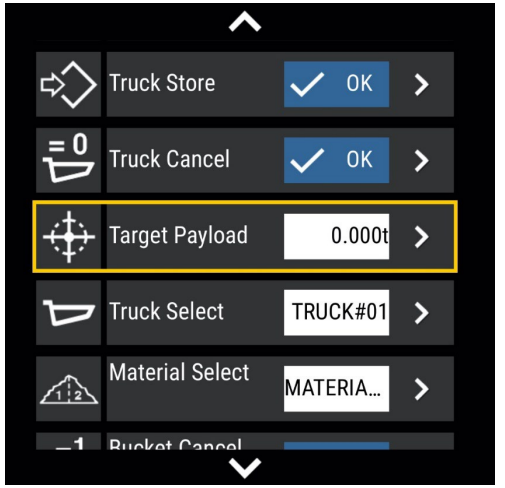
What is it?











Ease Of Use

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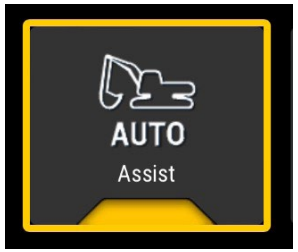
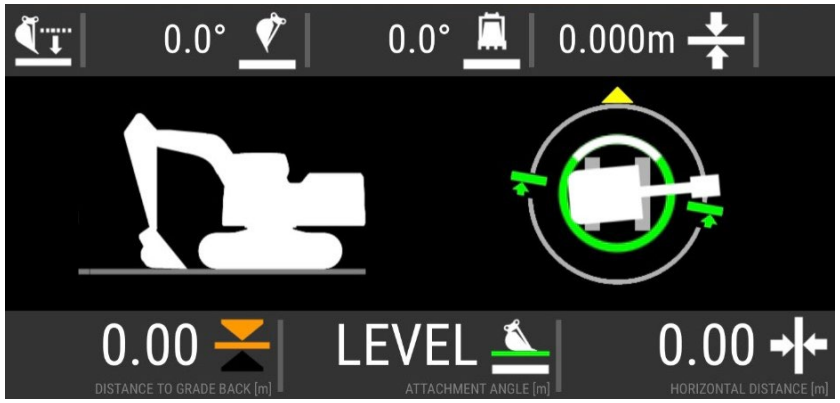
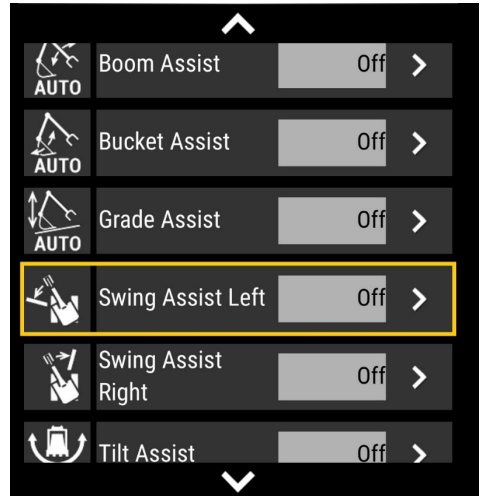
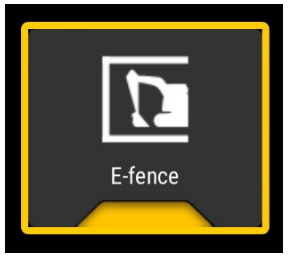
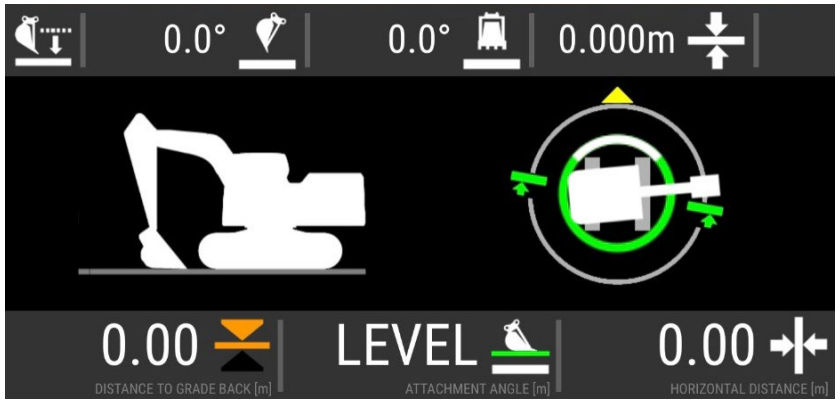
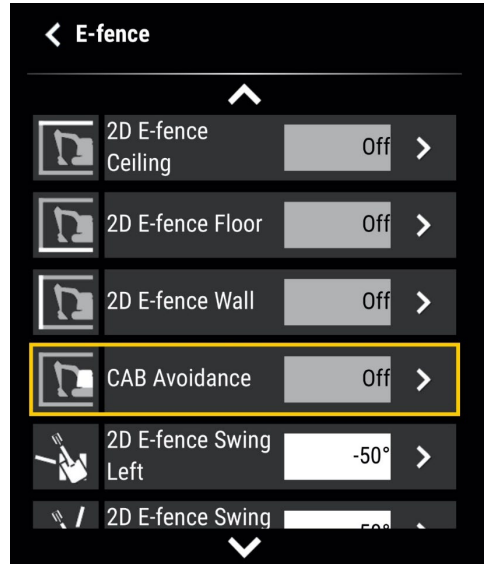






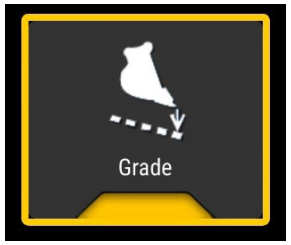


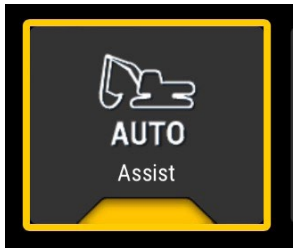


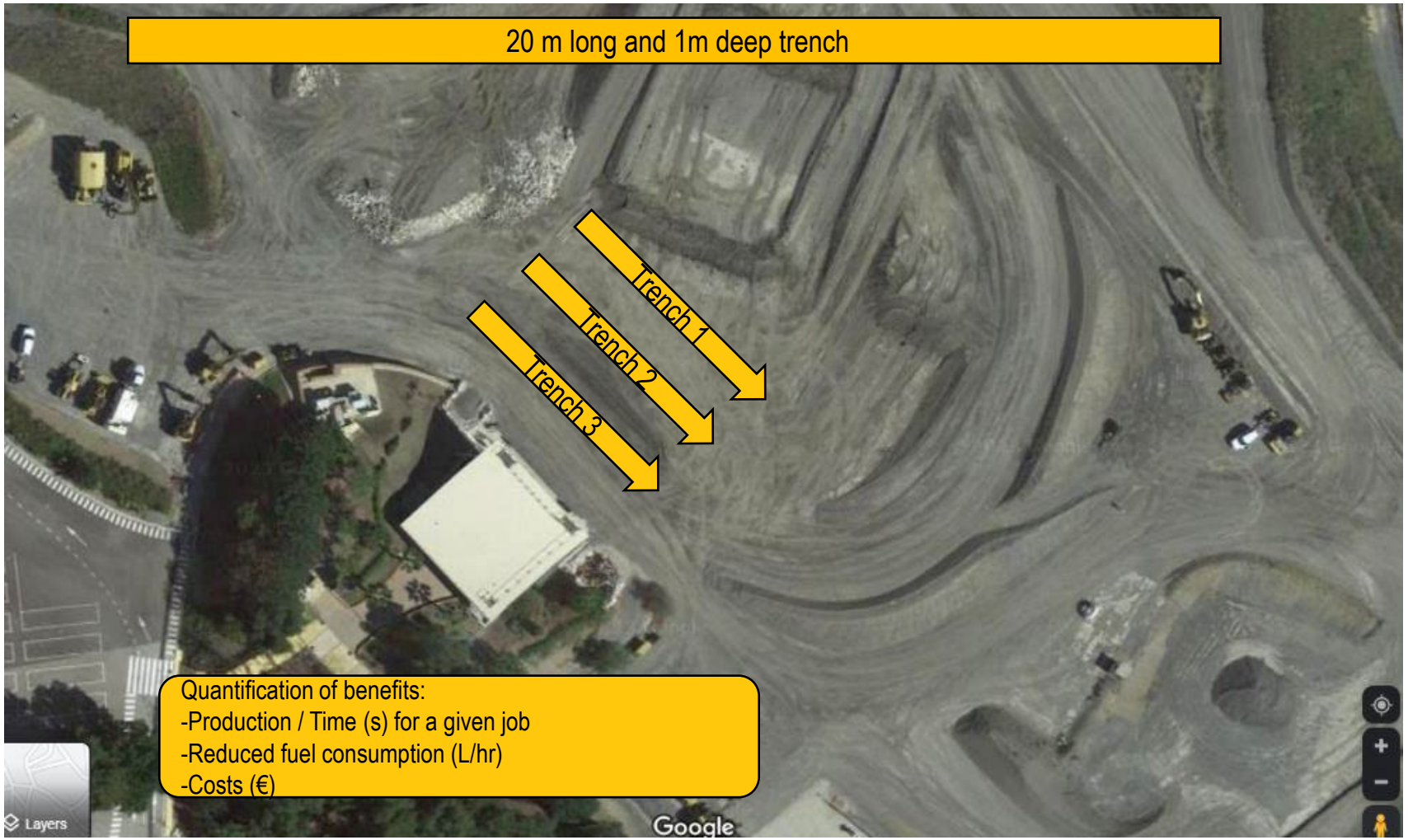


Grade 2D With Assist

Trenching-test.





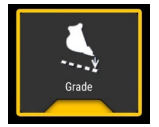


Trench 1

NO TECH-ZONE

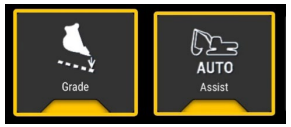
- No technology
- Surveyor support

Trench 2



- Technology: 2D
- No surveyor support

Trench 3



- Technology: 2D & Grade Assist
- No surveyor support

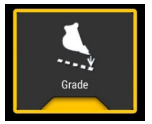
Grade 2D with Assist

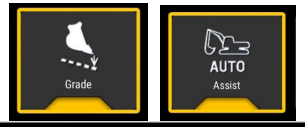
Trenching-test results.

Grade 2D with Assist

Trenching-test results.

NO TECH-ZONE





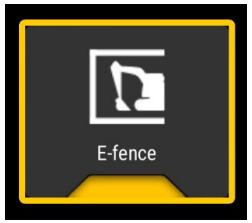
	Trench 1 (without technology)	Trench 2 (with Grade 2D)		Trench 3 (with Grade 2D & Assist)	
Time (s)	1271	1090	-14%	839	-34%
Fuel consumption (L) for given job	5.70	4.70	-18%	3.80	-33%
CO2 Emission (kg) for given job	15.05	12.41	-18%	10.03	-33%
Fuel consumption (L/hr)	16.14	15.52	-4%	16.31	1%
Number pf passes (#)	46	45	-2%	40	-13%
Material moved (T)	42	49	17%	57	36%
Material moved (T/hr)	119	162	36%	245	106%
Manpower (#)	2	1	-50%	1	-50%
Trenching production rate (m/hr)	56.65	66.06	17%	85.82	51%
Considering a trenching project of	**1000**	**meters**			
Time for project completion (hr)	18	15	-14%	12	-34%
Fuel consumed over the project (L)	285	235	-18%	190	-33%
Fuel consumption cost (1.3 €/L)	371 €	306 €	-18%	247 €	-33%
Manpower cost (35€/hr)	1,236 €	530 €	-57%	408 €	-67%
Total project cost (€)	**1,606 €**	**835 €**	**-48%**	**655 €**	**-59%**
CO2 Emission (kg) over the project	752	620	-18%	502	-33%

Things to Think about

What about just these things?
And there is way more…

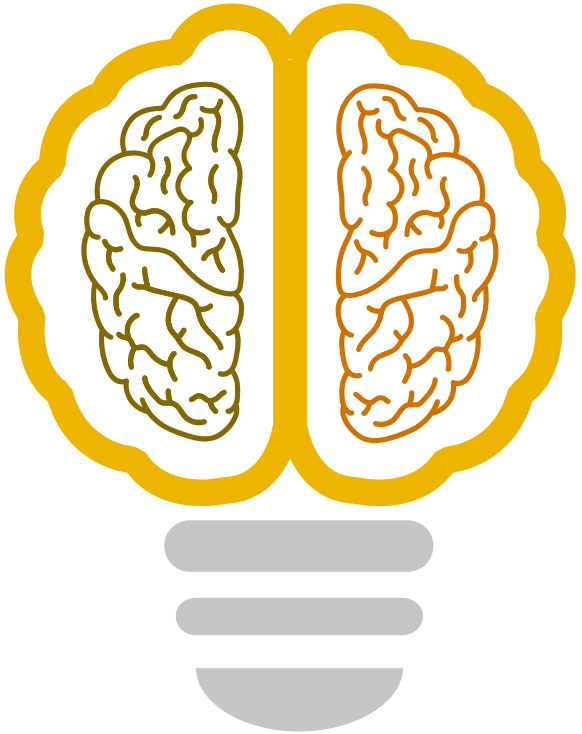
Cat Payload

How can payload influence the costs and emissions of your on-highway trucks? Under loaded, overloaded, , truck driver wages, wear, fuel, CO2, …

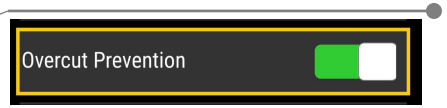


Cat E-fence

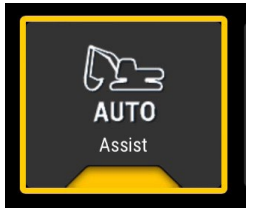
How can E-fence influence cycle times, operator fatigue and thus efficiency and safety.



Cat Assist



Faster and smoother finish.
Less dirt to evacuate. Less concrete to bring in.
The impact on dump fees, truck fuel, CO2,…



Cat Grade with 3D

A 3D system will enhance total machine operation, reducing operating time, fuel, and CO2.

Actual Fleet Improvements

How can we improve our daily performance?

01

Caterpillar technology on Next Generation Excavators.

How can this technology influence the total cost, time management and CO2.

02

The impact of good and "bad" machine operation.

How can operator training enhance your daily operations.

Good vs "bad" Operations

The impact on costs and CO2

Good operations

- **Know your machine**
  - A — The importance of a good handover
  - B — Use the OMM, contact the Demo-team, research
- **Understand the application**
  - A — The importance of operator training
  - B — Talk to experienced operators
- **Use the proper techniques**
  - A — Operating techniques can be taught trough operator training
  - B — Well trained jobsite managers
- **Use the proper technology**

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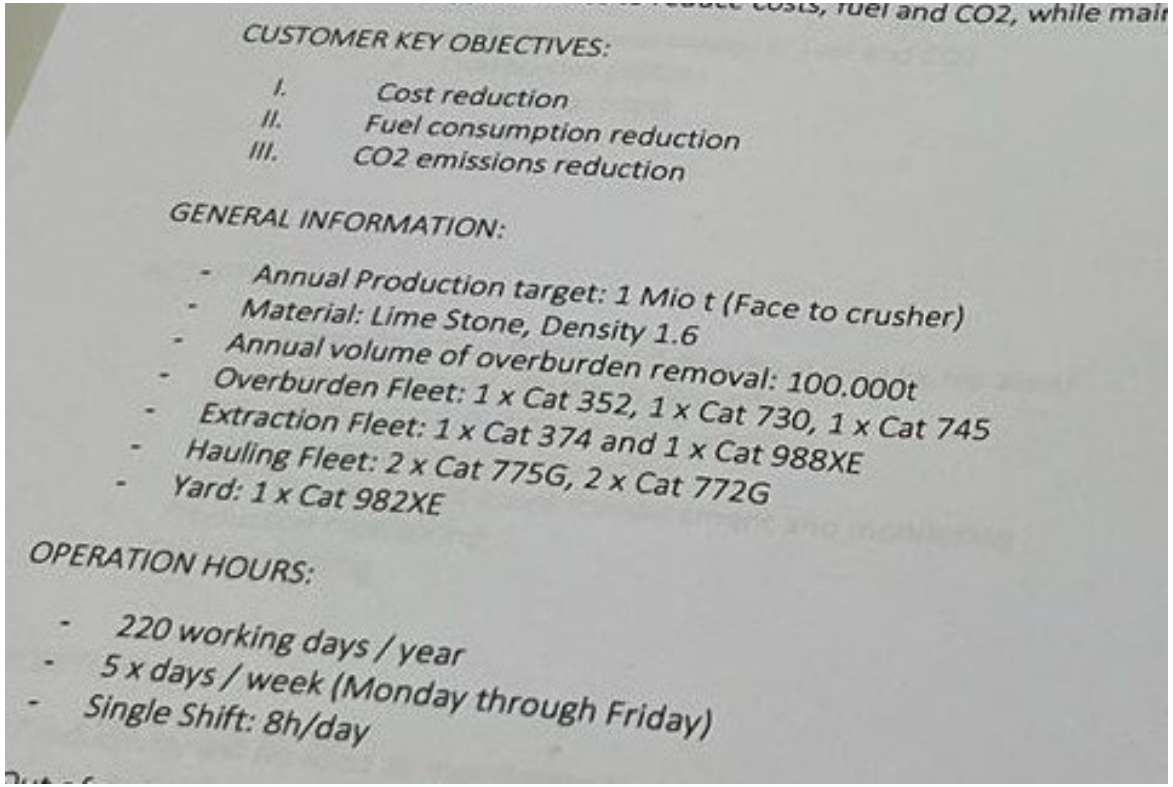
Good vs "bad" Operations

The impact on costs and CO2

Good vs "bad" operation.

Total operation; from *Face to Finish*.*



CUSTOMER KEY OBJECTIVES:

I. Cost reduction
II. Fuel consumption reduction
III. CO2 emissions reduction

GENERAL INFORMATION:

- Annual Production target: 1 Mio t (Face to crusher)
- Material: Lime Stone, Density 1.6
- Annual volume of overburden removal: 100.000t
- Overburden Fleet: 1 x Cat 352, 1 x Cat 730, 1 x Cat 745
- Extraction Fleet: 1 x Cat 374 and 1 x Cat 988XE
- Hauling Fleet: 2 x Cat 775G, 2 x Cat 772G
- Yard: 1 x Cat 982XE

OPERATION HOURS:

- 220 working days / year
- 5 x days / week (Monday through Friday)
- Single Shift: 8h/day

Analyze all the segments of the operation one by one.

Evaluate the room for improvement per segment:

- Machine fleet
- Equipment configuration
- GET
- Machine maintenance
- Operator techniques
- Used technology
- Haul roads
- …

* MAPS Training by Caterpillar

Good vs "bad" operation.

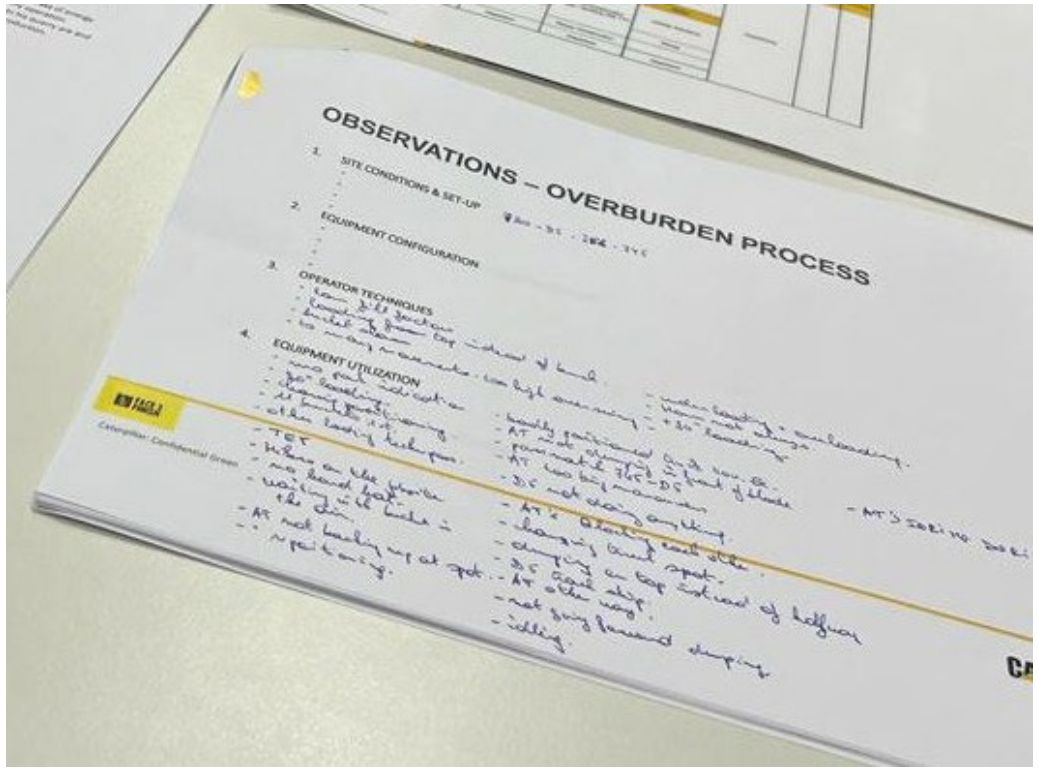
Overburden: Load and haul operation of 100.000T annually in one operation.

3 machines:

- Cat 352 Excavator
- Cat 745 Articulated truck
- Cat 730 Articulated truck

"Bad" operation.

Overburden: Load and haul operation of 100.000 T annually.



Analyze for this segment the .

- Equipment configuration
- Operator techniques
- Used technology
- Truck cycles / Payloads
- Excavator cycles / Payloads
- Haul roads state and usage
- …

And start creating calculation sheets

"Bad" operation.

Overburden: Load and haul operation of 100.000 T annually.

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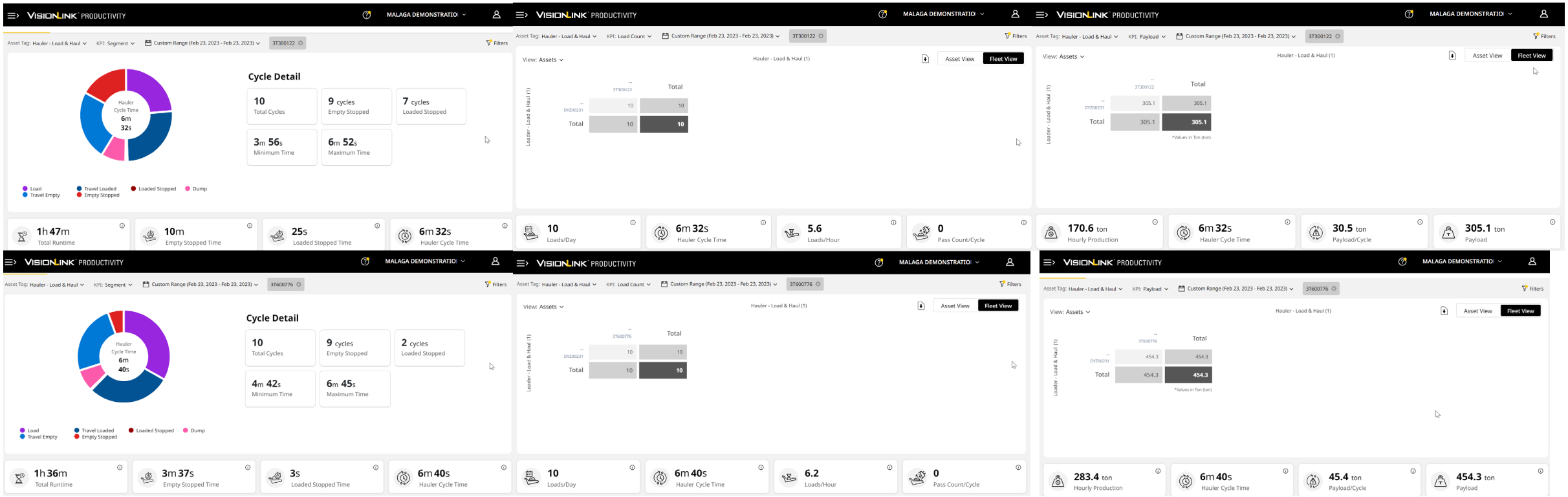

"Bad" operation.

Overburden: Load and haul operation of 100.000 T annually.

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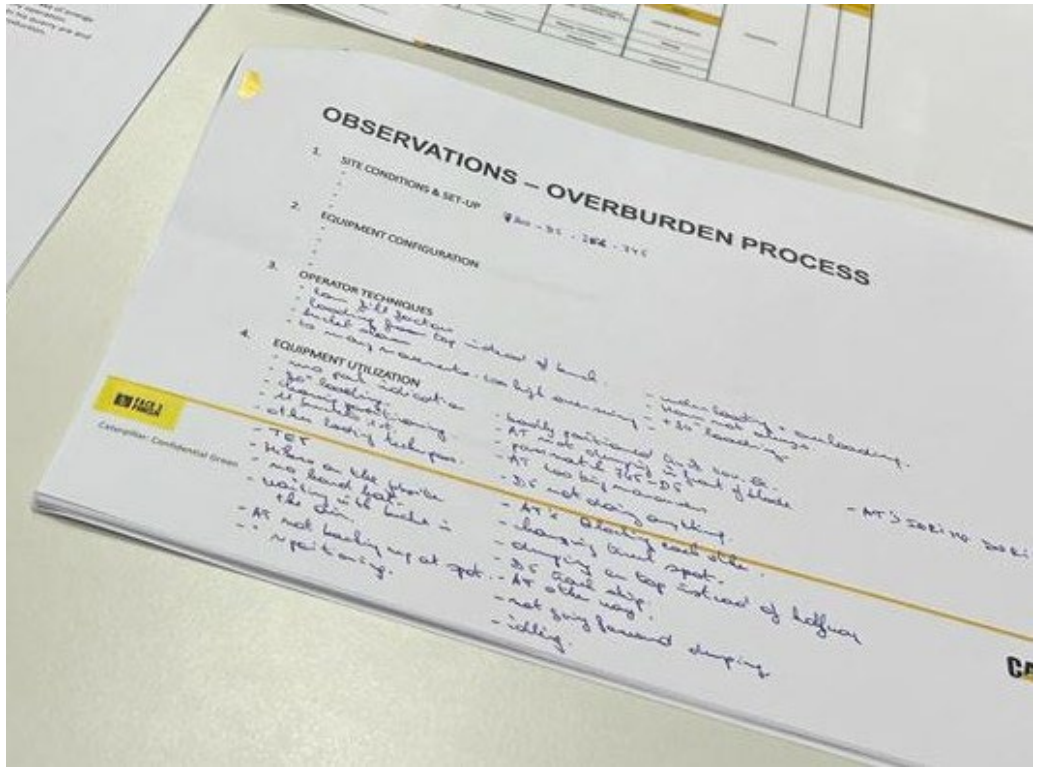
Model	Total Loads	Working L/hr	Payload Total	Payload Measured	Cycle time	Average / Fuel per cycle	Tonnes per hour	Site Operation hours	Target Tonnage	Fleet cost per hour
352		34,20								€ 84,38
745	4	24,50	161	40,45	7,18	3,06	322,00			€ 78,13
730	4	23,00	112	27,90	7,01	2,27	223,40			€ 50,00
Totals	8	81,7	272,7	68,35	14,19	5,33	545,4	6,6	100.000,00	€ 212,50

Good operation.

Overburden: Load and haul operation of 100.000 T annually.



Advise operators and jobsite managers regarding:

- Bench height
- Swing angles and positioning
- Power set-up
- TeT (Truck exchange Time) reduction
- Truck positioning
- Bucket fill factors
- Haul roads, where to wait, where to cross
- …

Good operation.

Overburden: Load and haul operation of 100.000 T annually.

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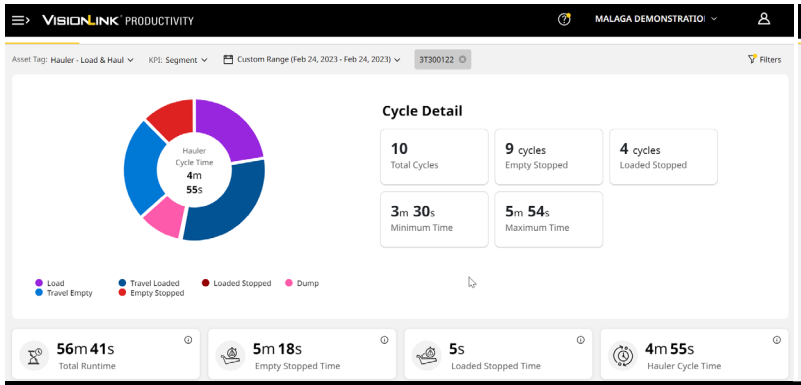

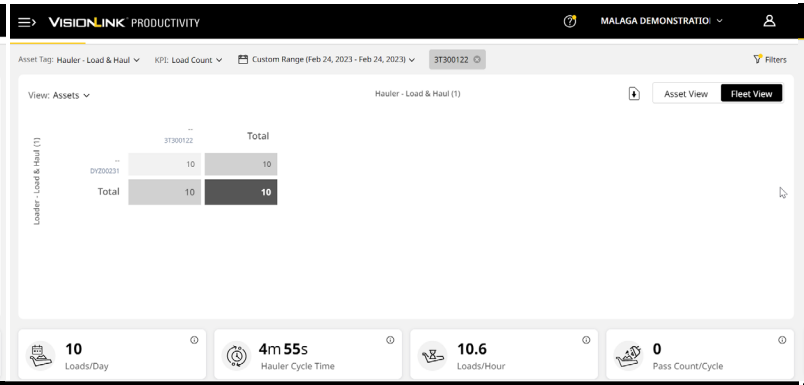

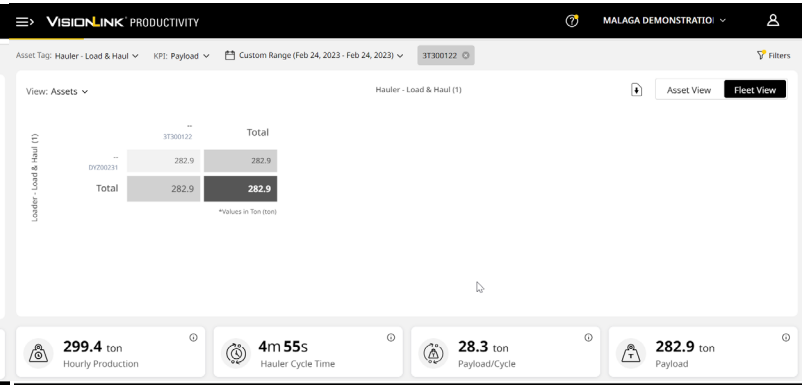

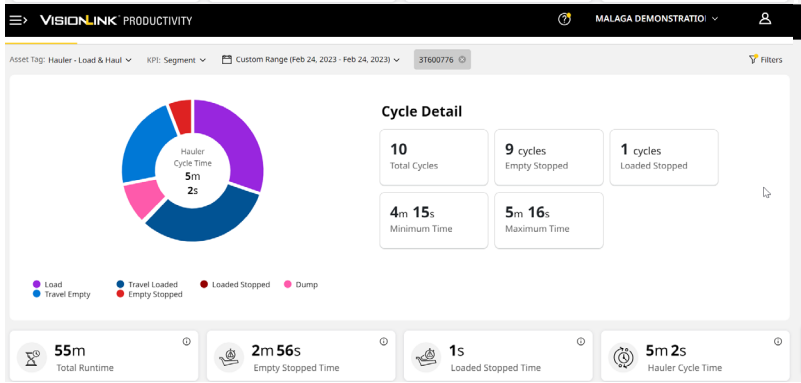

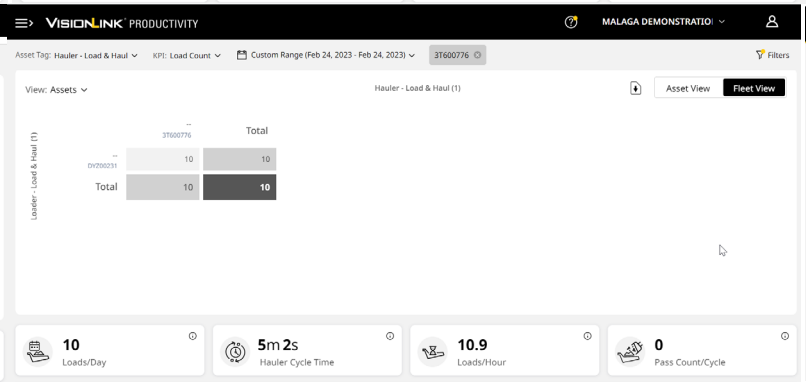

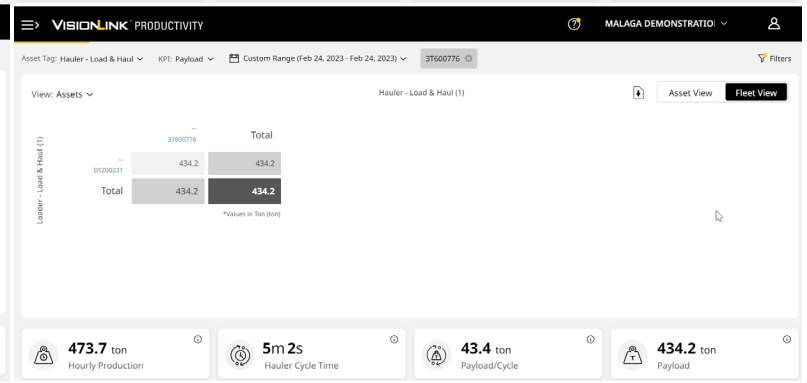

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Good operation.

Overburden: Load and haul operation of 100.000 T annually.

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Model	Total Loads	Working L/hr	Payload Total	Payload Measured	Cycle time	Fuel per cycle	Tonnes per hour	Site Operation hours	Target Tonnage	Fleet cost per hour
352		35,00								€ 84,38
745	5	21,40	187	37,36	5,16	2,74	373,60			€ 78,13
730	6	18,10	176	29,33	5,06	2,20	352,00			€ 50,00
Totals	11	74,5	362,8	66,69	10,22	4,94	725,6	6,6	100.000,00	€ 212,50

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Bad vs Good operation: Compare

Overburden: Load and haul operation of 100.000 T annually.

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"Bad" Operation

Model	Total Loads	Working L/hr	Payload Total	Payload Measured	Cycle time	Average / Fuel per cycle	Tonnes per hour	Site Operation hours	Target Tonnage	Fleet cost per hour
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Good Operation

Model	Total Loads	Working L/hr	Payload Total	Payload Measured	Cycle time	Fuel per cycle	Tonnes per hour	Site Operation hours	Target Tonnage	Fleet cost per hour
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Bad vs Good operation: Compare

Overburden: Load and haul operation of 100.000 T annually.

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Bad Operation

		Daily Tonnage		3599,64
		Days Required		27,78
		Fleet Cost Daily (8h)	€	1.700,00
		Total Rental Cost	€	47.600,00
	€			
Fuel cost /l	1,50	Fuel Cost	€	27.451,20
Operator cost /hr	€ 35,00	Operator Cost	€	23.520,00
		Total Cost	€	98.571,20
CO2 KG/L	2,64	CO2 KG		48314,11

Good Operation

		Daily Tonnage		4788,96	33%
		Days Required		20,88	-25%
		Fleet Cost Daily (8h)	€	1.700,00	0%
		Total Rental Cost	€	35.700,00	-25%
	€				
Fuel cost /l	1,50	Fuel Cost	€	18.774,00	-32%
Operator cost /hr	€ 35,00	Operator Cost	€	17.640,00	-25%
		Total Cost	€	72.114,00	-27%
CO2 KG/L	2,64	CO2 KG		33042,24	-32%

Things to Think about

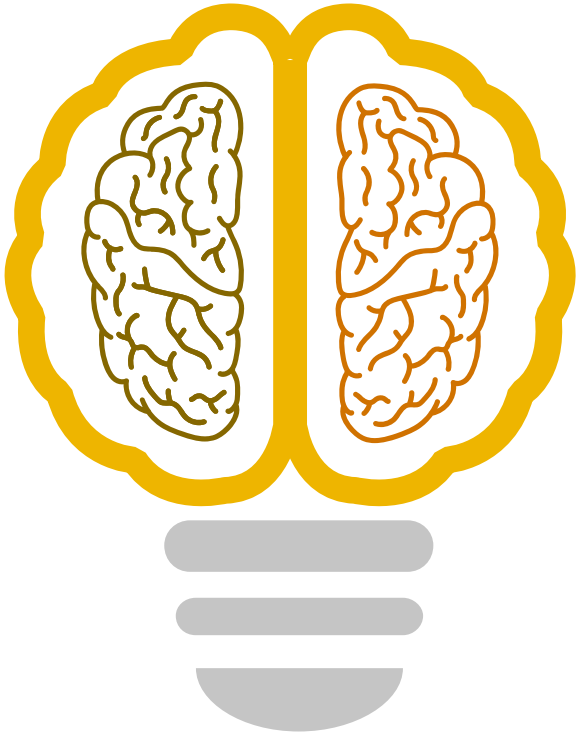
What about just these things?
And there is way more…

Parasitic CO2

What about idling? What is the influence of idling on CO2 @ 5ltrs/h fuel burn?

Useless wear and tear

Every useless movement of a machine is one to many. Half buckets, useless preparing of material to be loaded…



Machine Hand-Over

A demonstrator will hand-over every GCI machine in BeLux. They teach the operator how to use the onboard technology in a efficient way and how to daily maintain their machine.

Operator training

You can recuperate training costs by the Belgian organizations. This will reduce your costs training your operators and your trained operators will reduce your costs on the jobsite.

Questions?

Fleet updates to current new technologies like XE models
can have significant improvements for your company!

APPROVED FOR HVO RENEWABLE FUEL

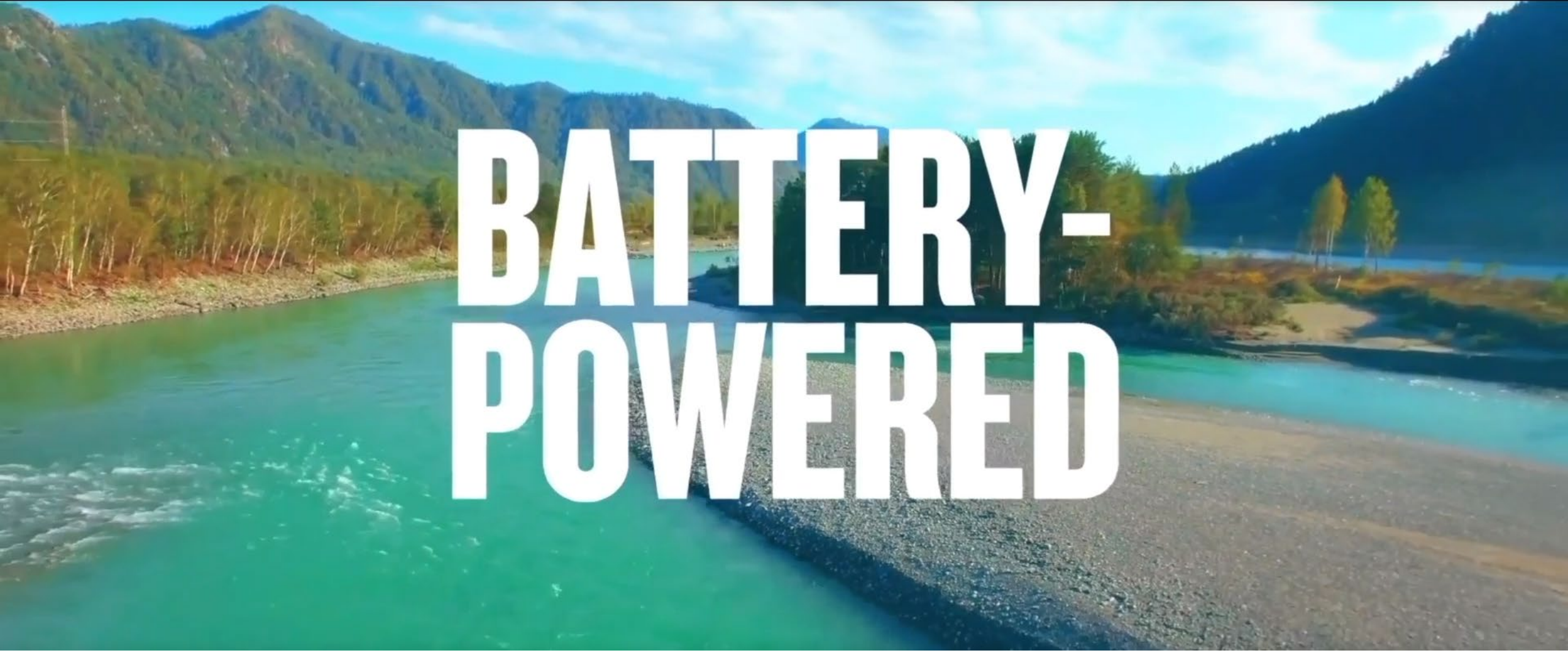
Bergerat Monnoyeur CAT

Bergerat RENT

MONNOYEUR

Eneria CAT

We calculate the possible CO^2 reduction of your fleet for you!



Battery & electricity powered machines available

Thank YOU!!

Pieter Quaegebeur

Senior Demonstrator – Instructor
Caterpillar Certified Demonstrator – Instructor
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LET'S DO THE WORK.™