



Asociación Mexicana
del Asfalto, A. C.

PAVIMENTANDO
EL CAMINO
HACIA UN
FUTURO
SOSTENIBLE



**SEMINARIO INTERNACIONAL DEL
ASFALTO**

9 al 11 de Octubre, 2024, Monterrey, N.L.

GREEN TECHNOLOGIES FOR RAP REUSE

Filippo D'Addato



Asociación Mexicana
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SEMINARIO INTERNACIONAL DEL ASFALTO


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Títulos y subtítulos



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**WHO WE
ARE**





CAMS was born in 1964 in the heart of the Italian manufacturing and motor valley and has operated in shredding and recycling industry ever since. In 2001, two divisions were created, one devoted to **production** of shredders and the other one to **service for paving equipment**.

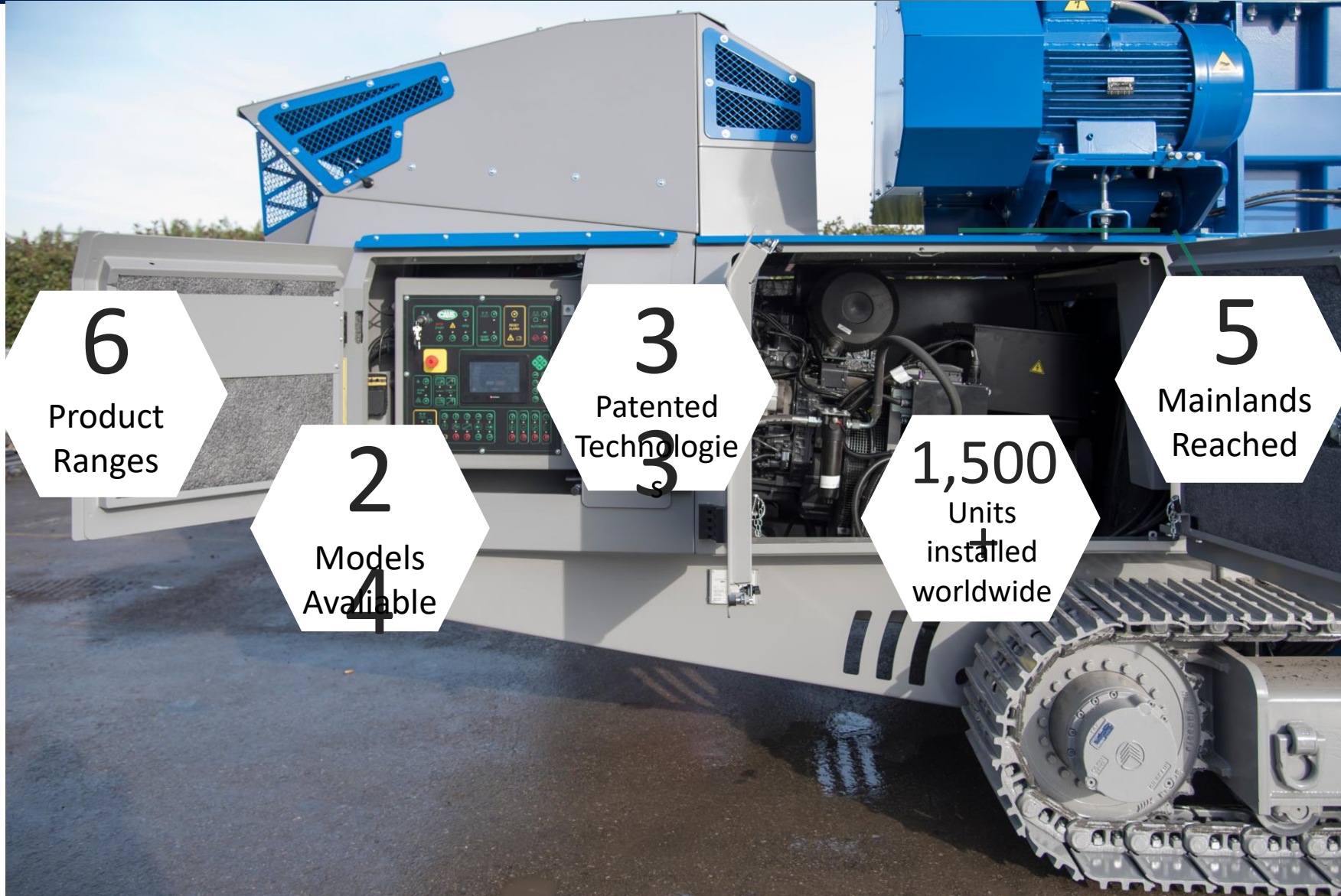
- 2022, CAMS opened a new business the United States.





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Títulos y subtítulos



6
Product
Ranges

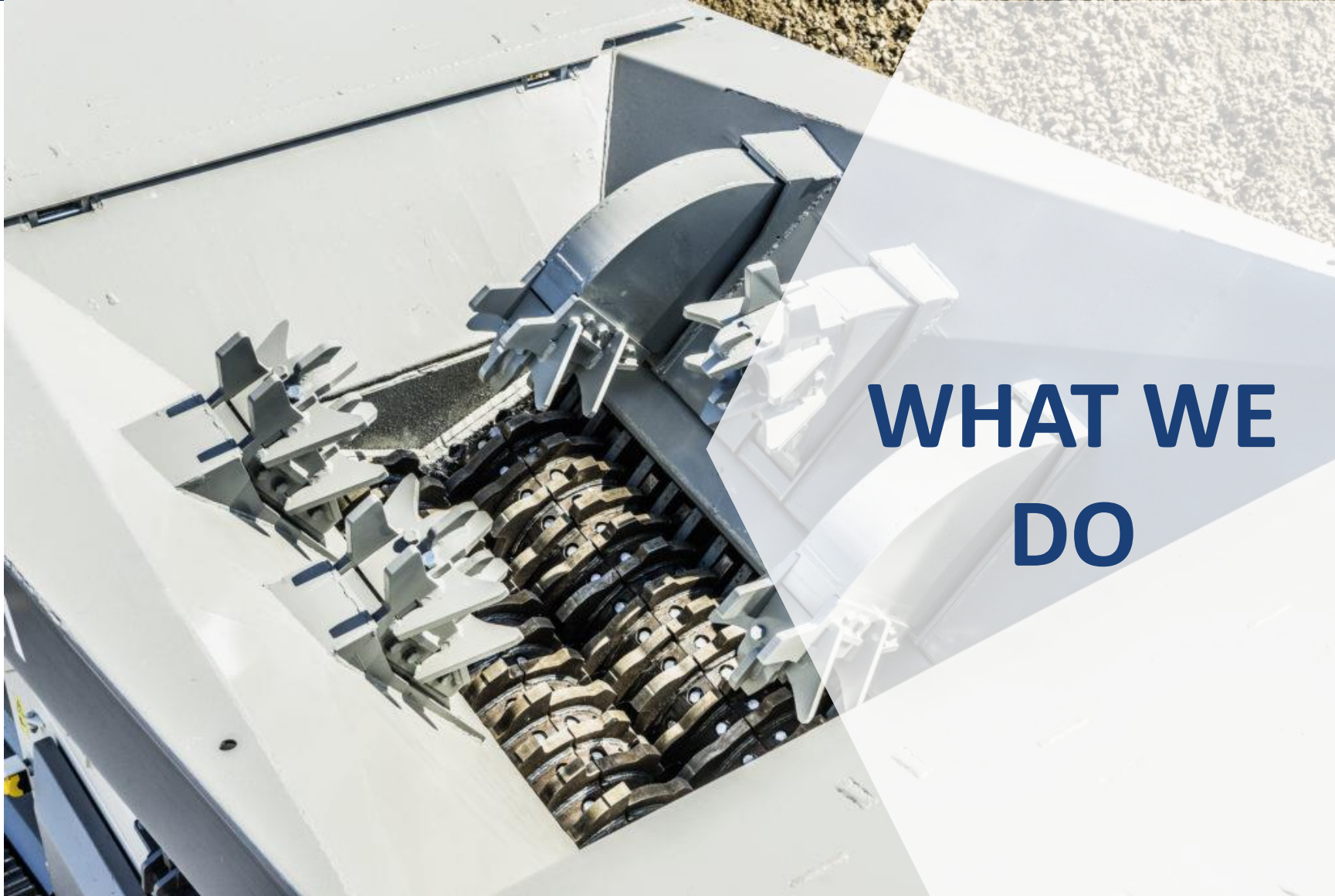
2
Models
Available

3
Patented
Technologies

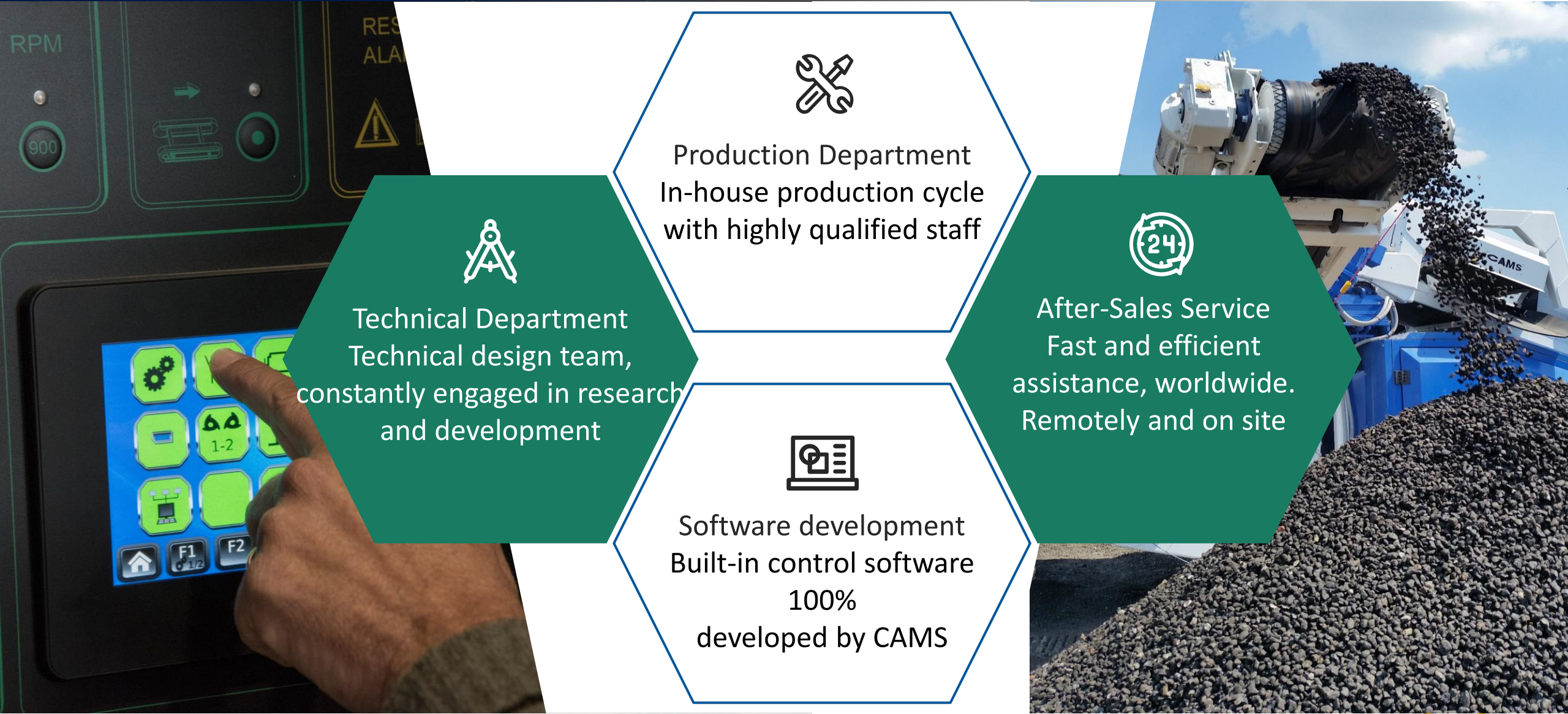
1,500
Units
installed
worldwide

5
Mainlands
Reached





WHAT WE DO



Technical Department
Technical design team,
constantly engaged in research
and development



Production Department
In-house production cycle
with highly qualified staff



After-Sales Service
Fast and efficient
assistance, worldwide.
Remotely and on site



Software development
Built-in control software
100%
developed by CAMS



TAILORED FOR RECYCLING
CAMS shredders are designed for recycling. Unlike other manufacturers, which adapt mining and quarrying machines to recycling applications, CAMS shredders were born for RAP processing.



IP CAMS

SHREDDERS

NOT

CRUSHERS



INNOVATIVE TECHNOLOGY
CAMS shredders shafts are meant to disrupt asphalt waste without crushing it to preserve its original grading curve and bitumen content. This is what makes the recycling process so efficient.



SHREDDERS

NOT CRUSHERS



GREEN MACHINES

CAMS technology gives back several environmental advantages. Low breathable dust production, low acoustic emissions, and the opportunity to plug the shredder to the jobsite electric power line.



LOW WEARING

The slow rotation mechanism of CAMS shredders shafts significantly reduces the wearing. A patented system allows to easily replace the components without disassembling the machine.



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SHREDDERS

NOT

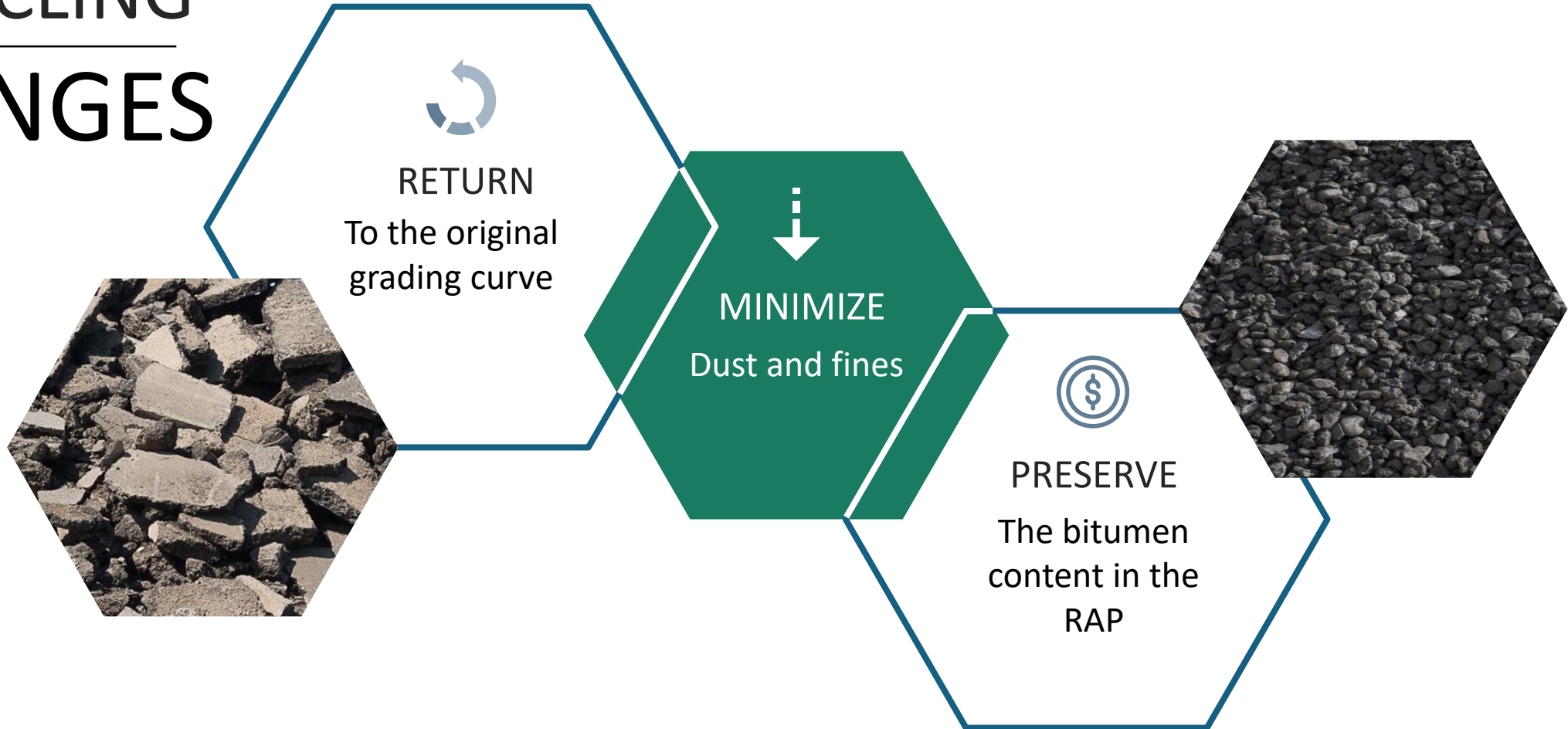




HOW WE DO IT



RAP RECYCLING CHALLENGES





SHREDDING TECHNOLOGY



- OPERATING PRINCIPLE

Both the primary and secondary shredders operate according to the shear shredding principle. In this process, the material is dumped directly on the shafts and grabbed by the picks, without the need for a feeder.

- DRIVE

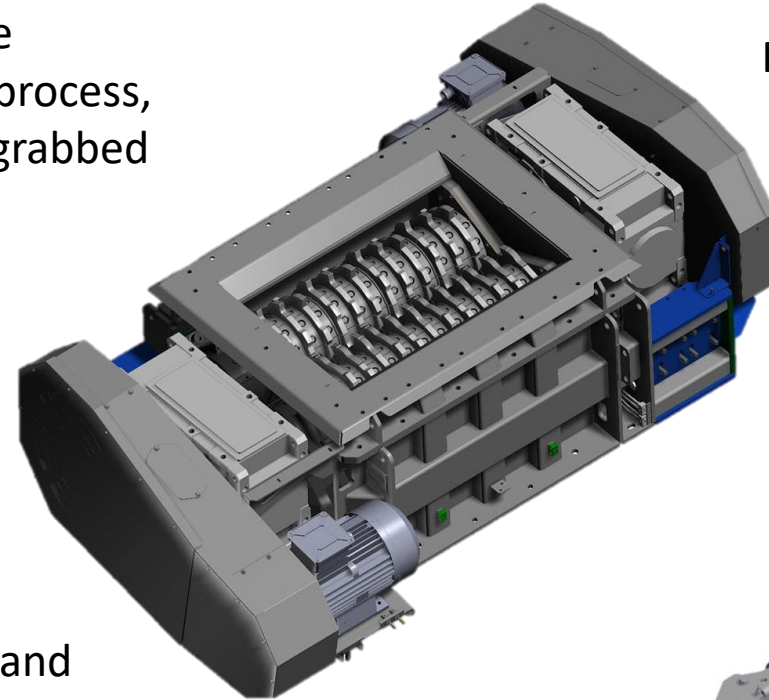
All the shredders are electrical powered.

- PRODUCT QUALITY

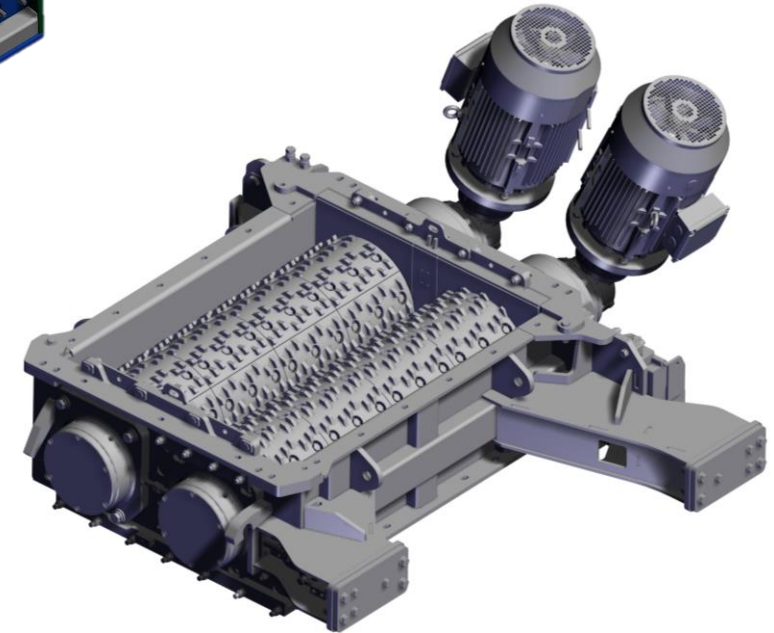
The slow speed of the shafts results in fewer fines and guarantees 100% of original bitumen content reuse.

- WEARING

The slow rotation technology amazingly reduces the wearing and the running costs.



Primary electric shredder



Secondary electric shredder



SHREDDED RAP VS CRUSHED RAP

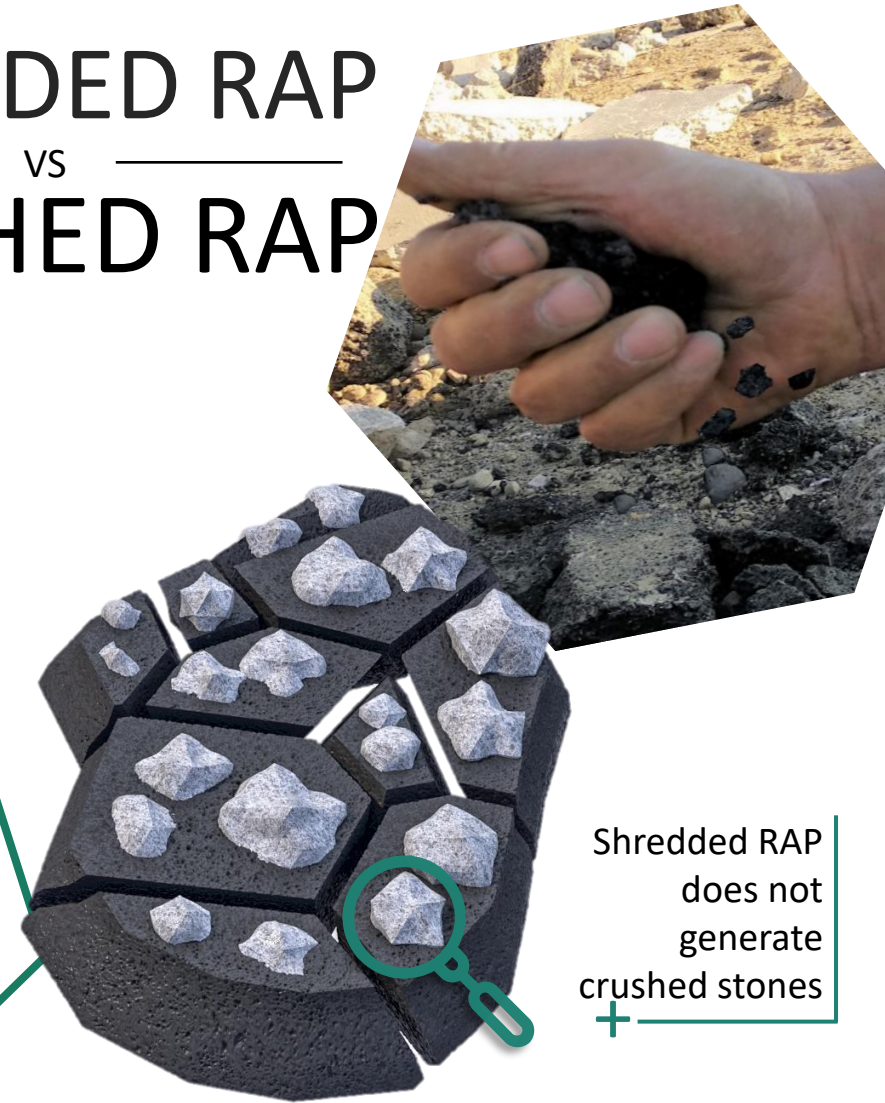
Crushed stones absorb humidity over time, This requires energy to evaporate

Can a shredder that's kinder and gentler than a traditional impact crusher help your recycling operations?

The answer is YES. The patented gentle shredding action of CAMS™ machines results in fewer fines and guarantees 100% of original bitumen content reuse, the essential source of

economic efficiency

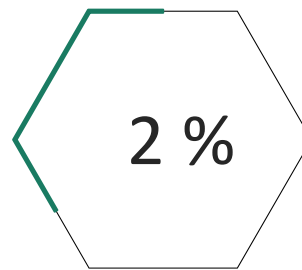
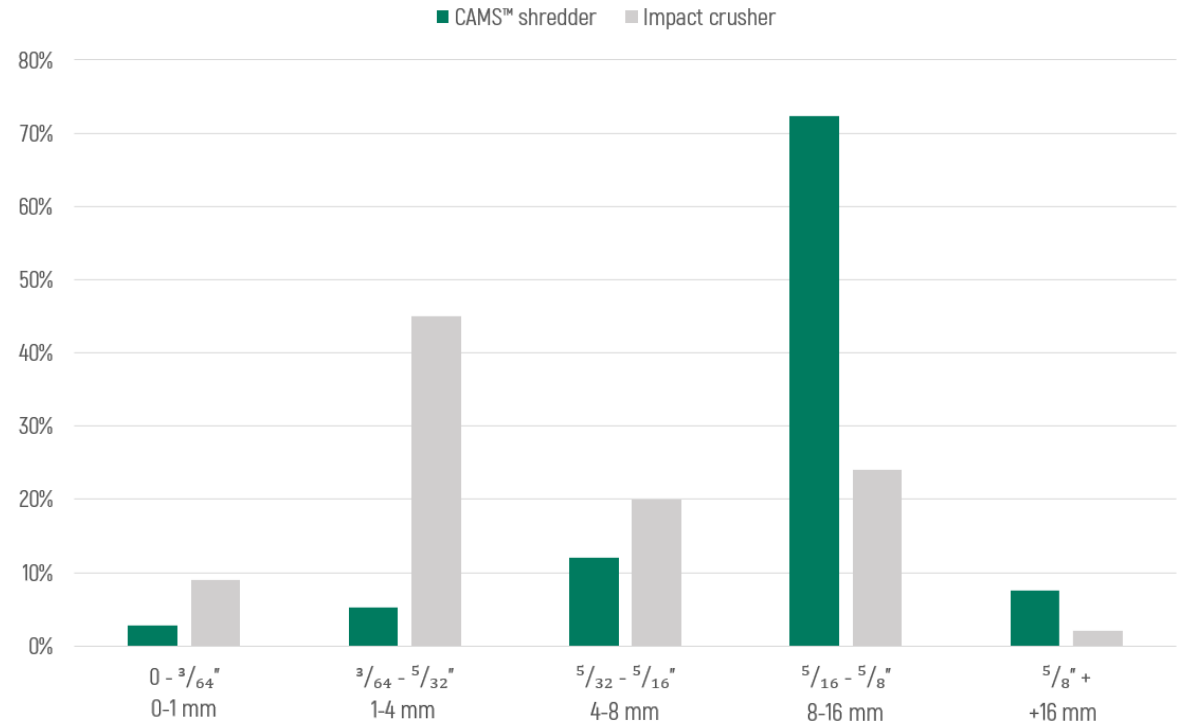
Shredded RAP does not generate crushed stones +



SHREDDED RAP VS CRUSHED RAP

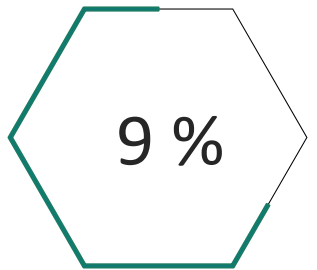
The comparative plot is based on two 0 - $\frac{25}{32}$ " (0-20 mm) RAP samples processed with an electric shredder and a traditional impact crusher.

Percentages of filler coming from the shredder are significantly lower.



Electric shredder
Shredder

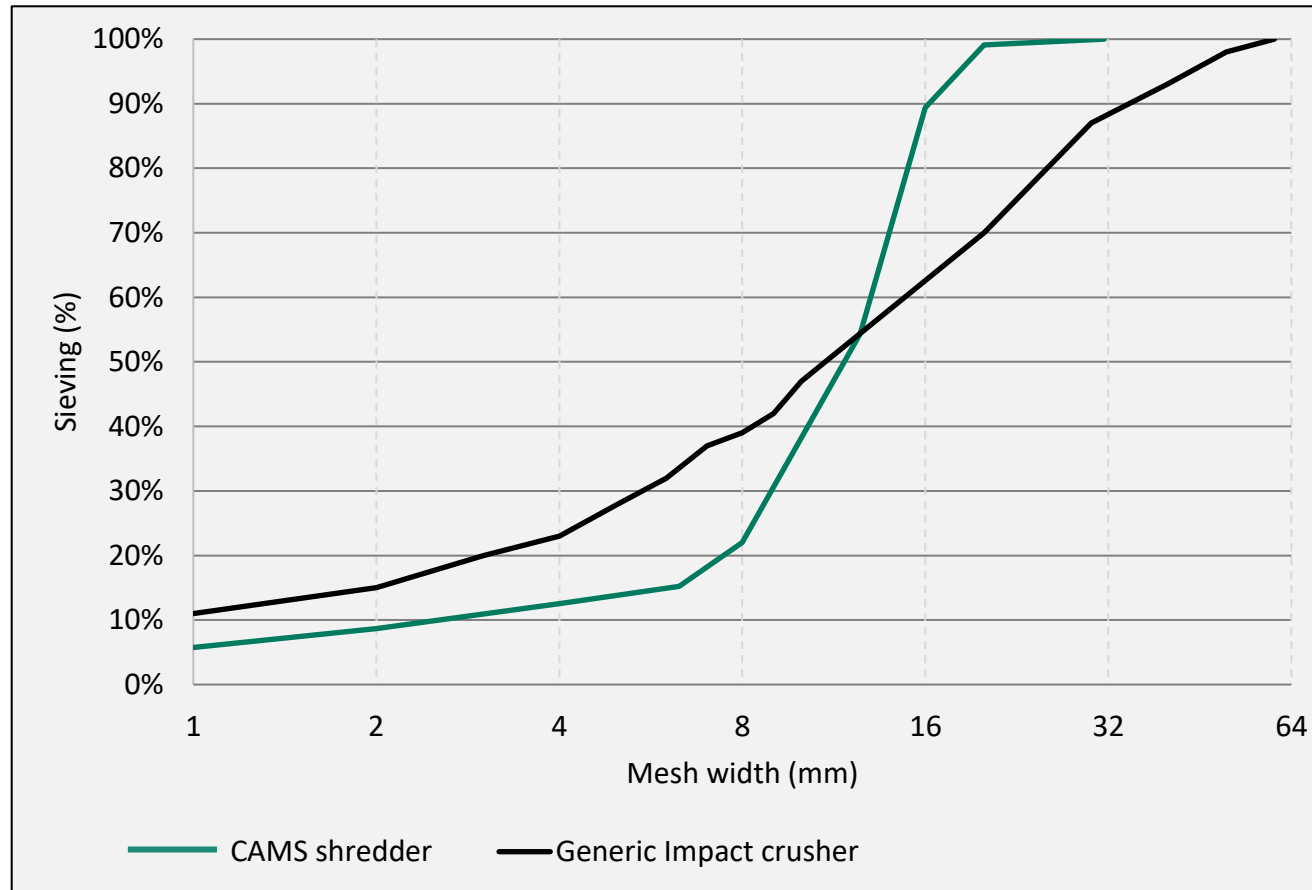
Impact
Crusher



0 - $\frac{3}{64}$ " (0-1 mm) material content

FEWER FINES HIGHER QUALITY

Tests performed on
asphalt samples



CAMS field test data

Crushing
curve
comparison

100% BITUMEN SAVINGS

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Electric slow speed shredders are meant to unbind asphalt cluster while keeping the original bitumen lining on the aggregate, without crushing the stone.

Electric
shredder
material

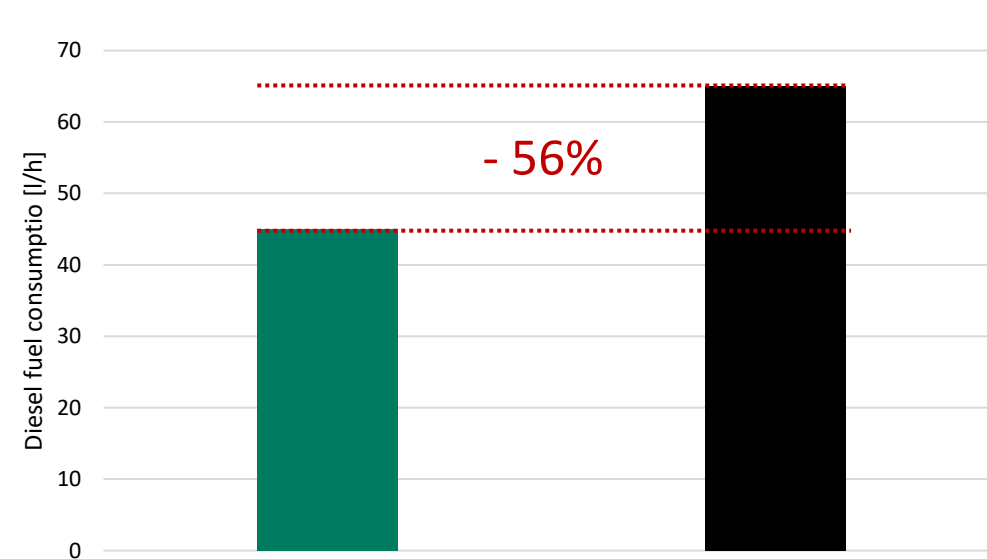


Impactor
material

Bitumen content comparison between CAMS shredder and impact crusher.
Darker stockpile has a higher bitumen content and comes from a CAMS shredder.



	Electric Shredder	Generic impact crusher	
Sound power level (L_{WA})	107 dB	119 dB	-12 dB
Diesel fuel consumption*	5 US gal/h <20 l/h	17.2 US gal/h 65 l/h	-56%
Breathable dust concentration (TLV-TWA) <small>Data measured according to UNI EN 481/1994 UNI EN 10568/1997 DIN/SAE equivalente</small>	3 mg/m ³	---	---



*Calculated using the same method

Market data with superimposed CAMS data

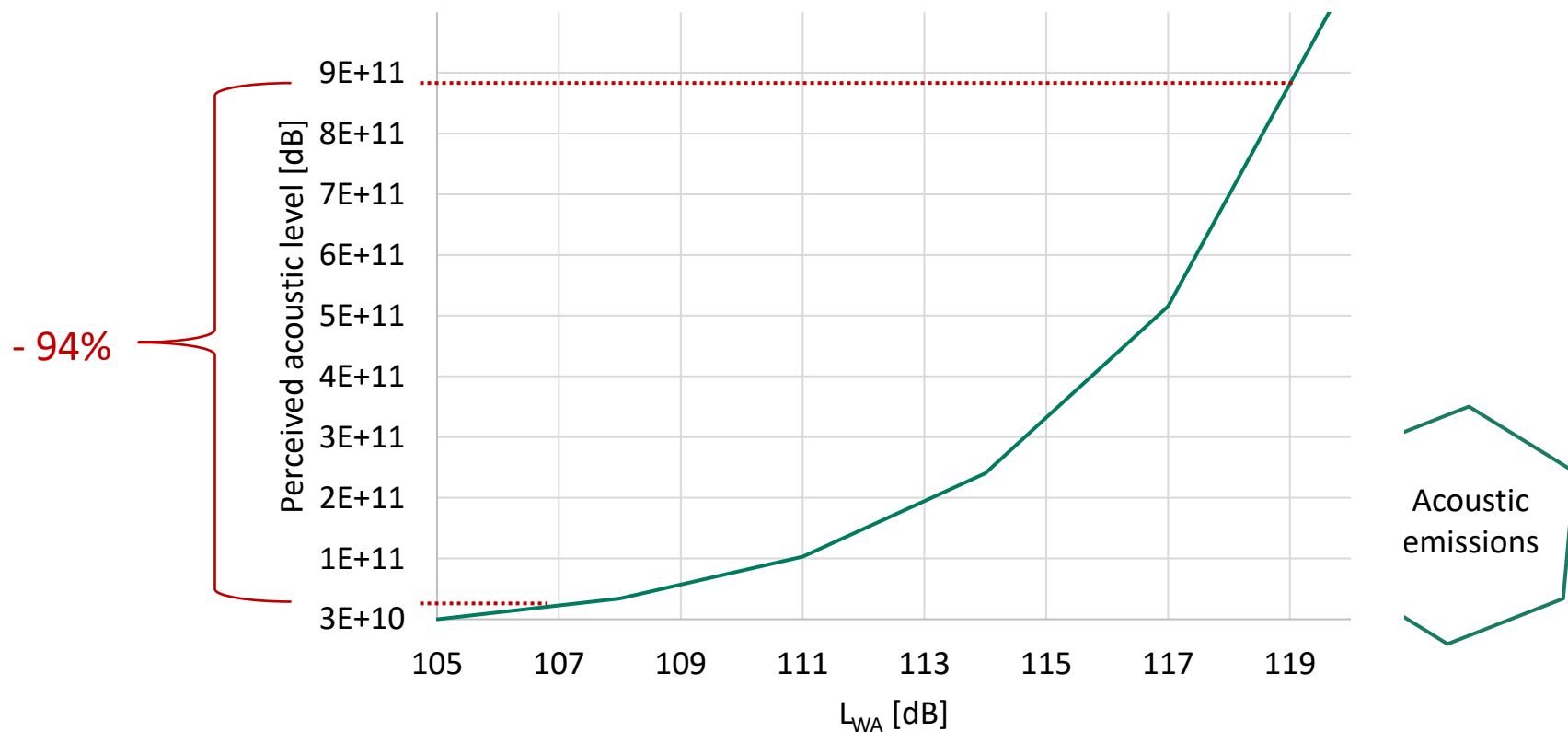


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GREEN METRICS



	Electric Shredder	Generic Impact Crusher	
Sound power level (L_{WA})	107 dB	119 dB	-12 dB

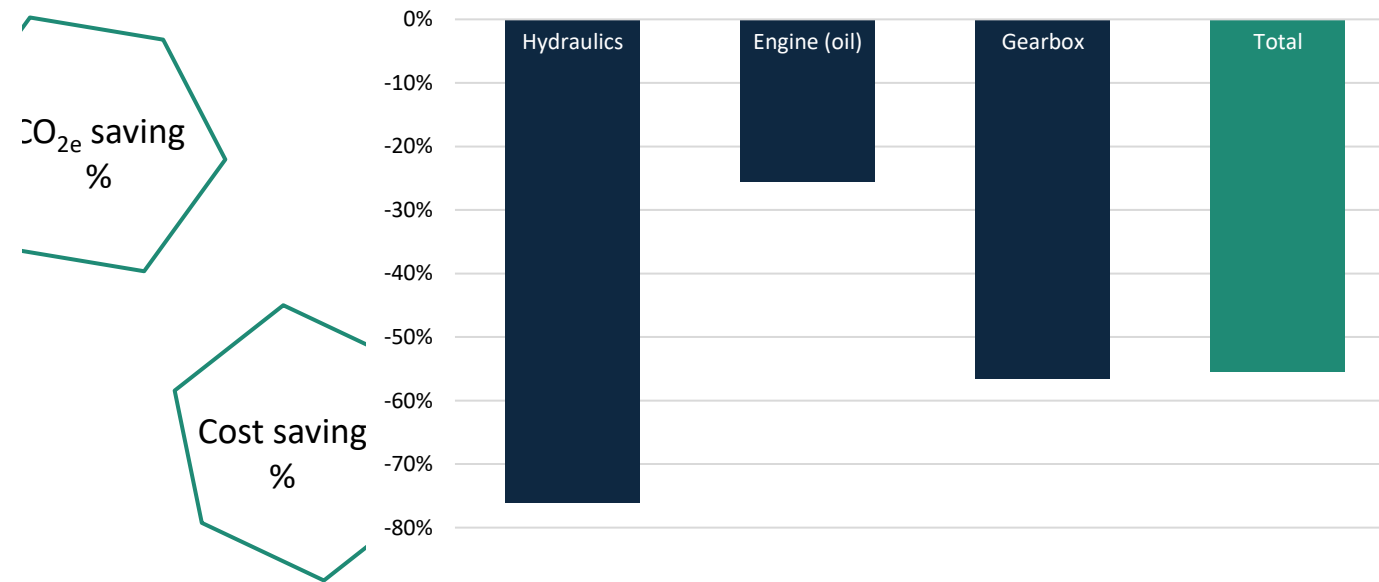
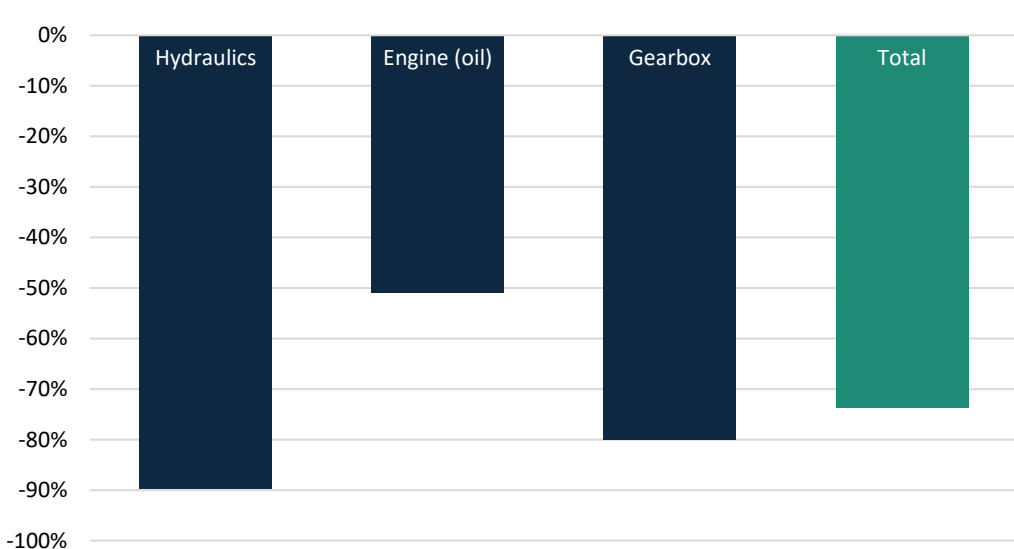


Market data with superimposed CAMS data



ADVANTAGES IN USING BIO LUBRICANTS - HOURLY RATES

Lubrication point	CO _{2e} (lbs/h)		Costs (USD/h)	
	Electric Shredder	Generic Impact Crusher	Electric Shredder	Generic Impact Crusher
	Bio oil	Mineral oil	Bio oil	Mineral oil
Hydraulics	0.07	0.68	0.16	0.67
Engine (oil)	0.26	0.53	0.35	0.47
Gearbox	0.04	0.20	0.10	0.23
Total	0.37	1.41	0.61	1.37



Market data with superimposed CAMS data



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HYBRID DRIVE

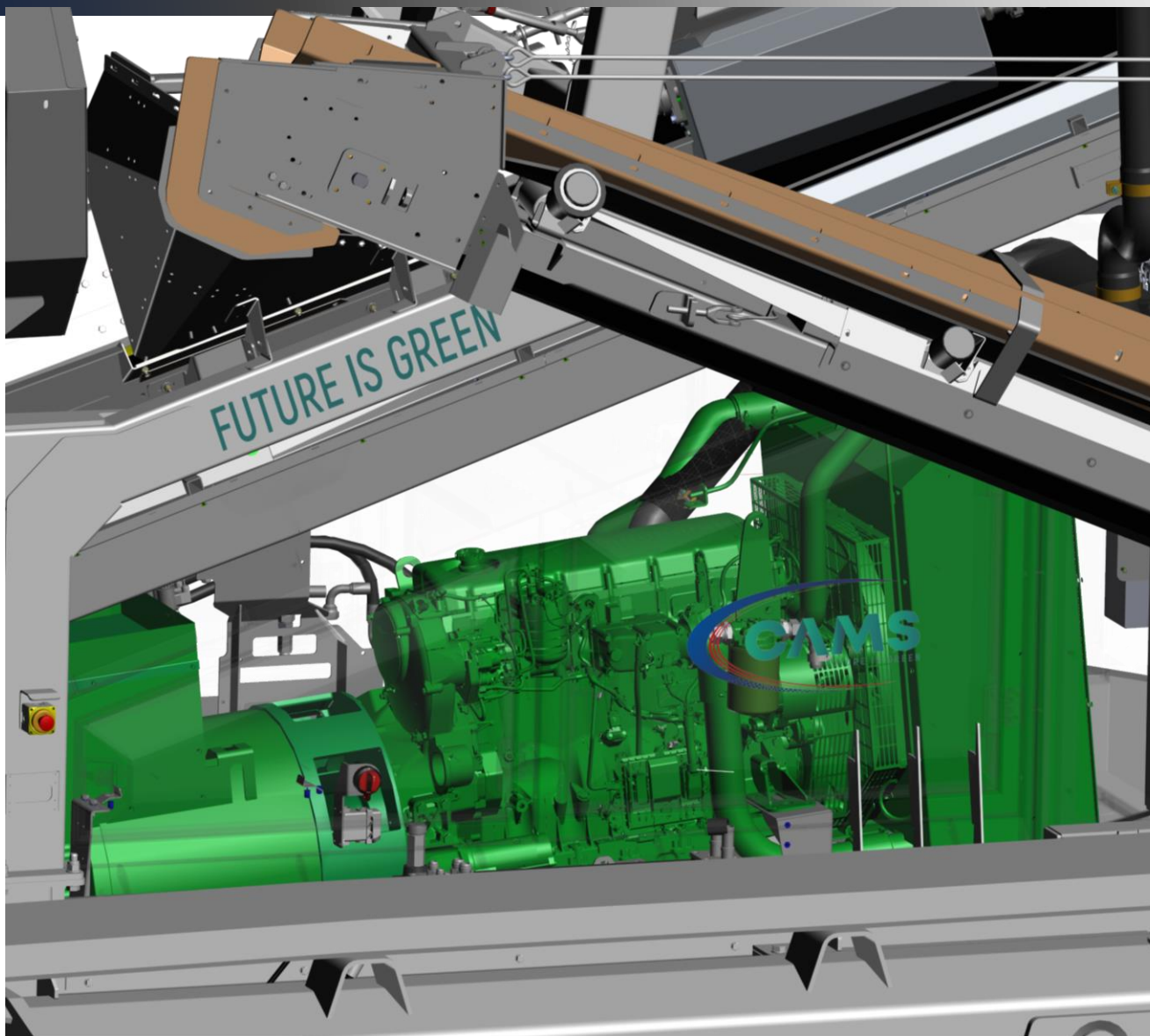


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All CAMS mobile machines are equipped with powerful and fuel efficient diesel-electric drives.

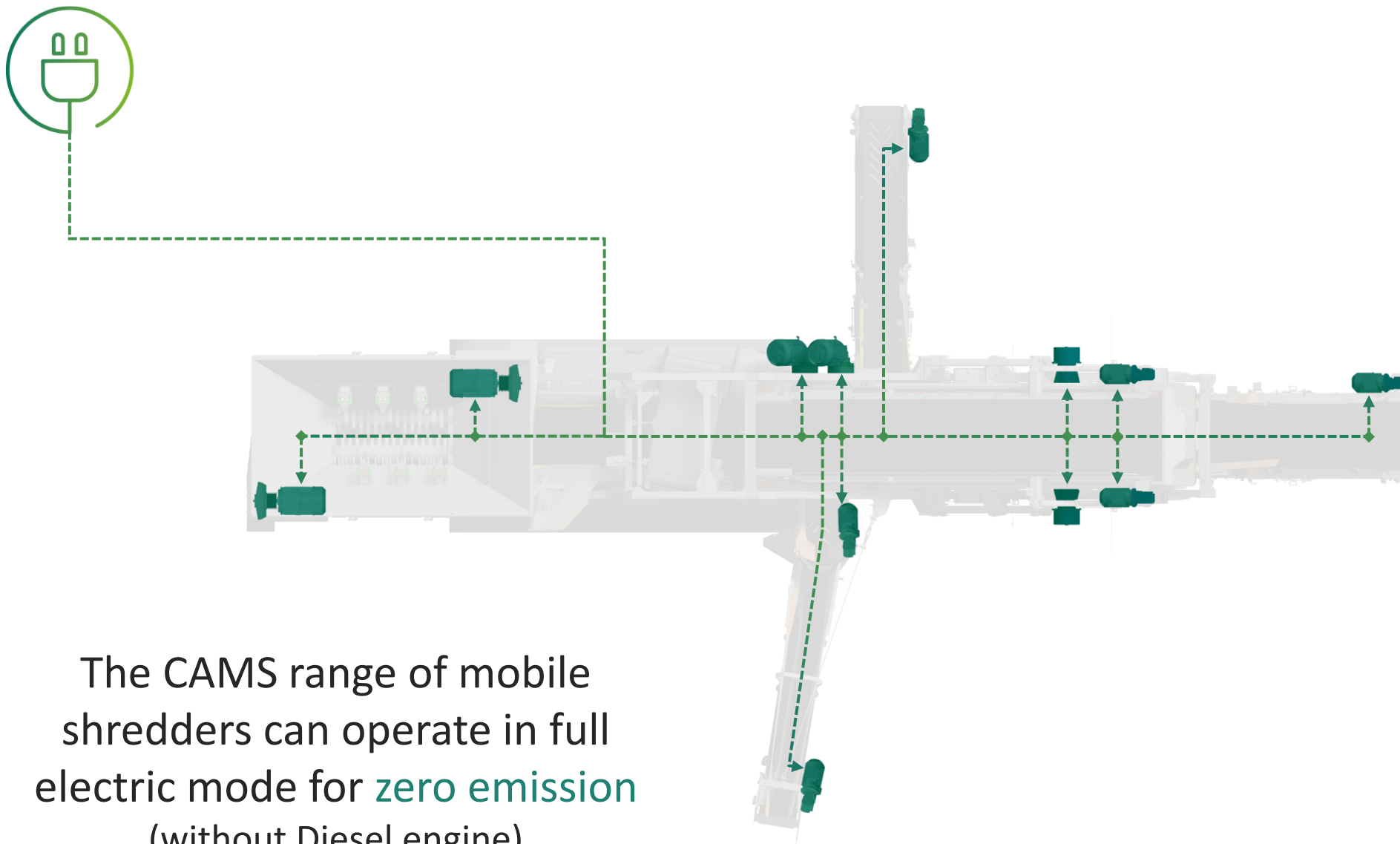
The generator set is designed to provide energy to all the equipment, including the shredders.





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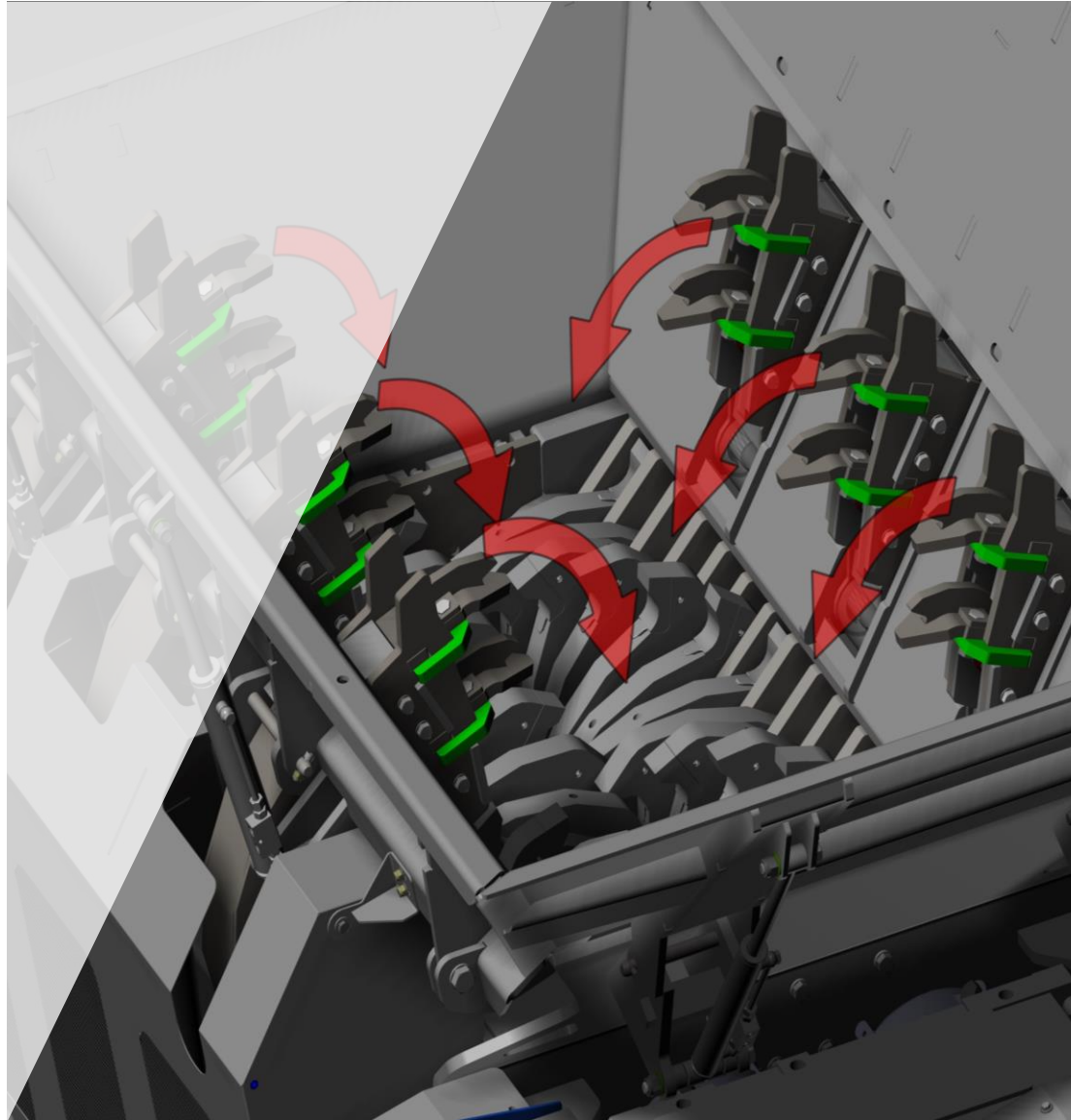
HYBRID DRIVE



The CAMS range of mobile shredders can operate in full electric mode for **zero emission** (without Diesel engine)



PATENTED FINGERS SYSTEM



INTERNATIONAL PATENT

HOW ABOUT SLABS?

Fingers System patented by CAMS makes your machine processing the biggest asphalt slabs. This completely automated technology grabs the huge pieces of asphalt inside the feeding hopper, making it easy for the shafts to shred them.



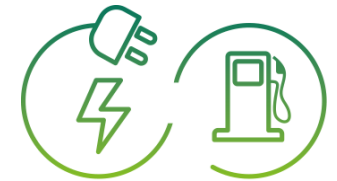
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CENTAUR



Mobile integrated shredders and
screens



Hybrid Power

The CENTAURO range can
operate in full electric mode for
zero emission (without Diesel
engine)





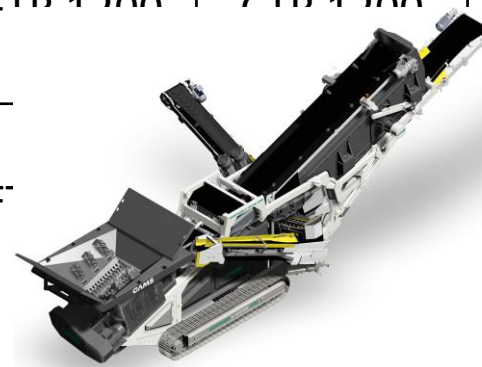
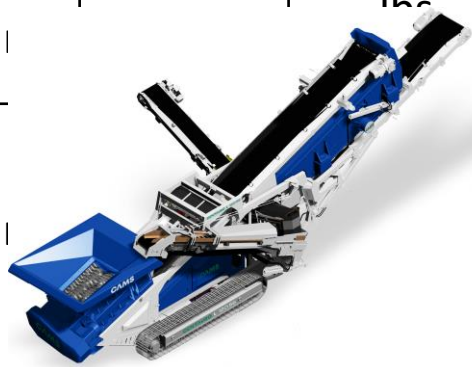
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CENTAURO



*shipment dimension

MODEL	LENGTH*	WIDTH*	HEIGHT*	WEIGHT	PRIMARY SHREDDER	SECONDARY SHREDDER	SCREEN	OUTPUT SIZES	OUTPUT POTENTIAL
CENTAURO 100.32	36' 9" 11.20 m	8' 4" 2.55 m	10' 2" 3.10 m	54,000 lbs 24,500 kg	FTR 1000	-	CVV032/2 [3.2 m ²]	3	120 ton/h
CENTAURO L 120.56	42' 7" 13.00 m	8' 4" 2.55 m	10' 2" 3.10 m	66,150 lbs 30,000 kg	FTR 1200	-	CVV056/2 [5.6 m ²]	2 or 3	180 ton/h
CENTAURO L 120.56 ADD	42' 7"	8' 4"	10' 2"	80,000 lbs	FTR 1200	CTR 1200	CVV056/2 [5.6 m ²]	2 or 3	180 ton/h
					FTR 1200		CVV059/2 [5.9 m ²]	2 or 3	250 ton/h





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STATIONAR Y PLANTS

Integrated solutions



Electric Power

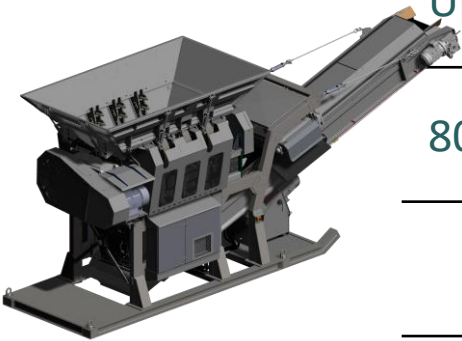




How to couple CAMS stationary shredders and screens?

Here's a simple guide:

PRODUCTION REQUIREMENT	UTS MODEL	SHAFTS LENGTH	UVS MODEL	SCREEN SURFACE
Up to 80 ton/h	UTS 750	70' 750 mm	UVS 25	27 sqft 2.5 m ²
80 – 120 ton/h	UTS 1000	40' 1000 mm	UVS 25	
120 – 150 ton/h	UTS 1200	47' 1200 mm	UVS 56	60 sqft 5.6 m ²
Over 150 ton/h	UTS 1500	70' 1500 mm	UVS 56	

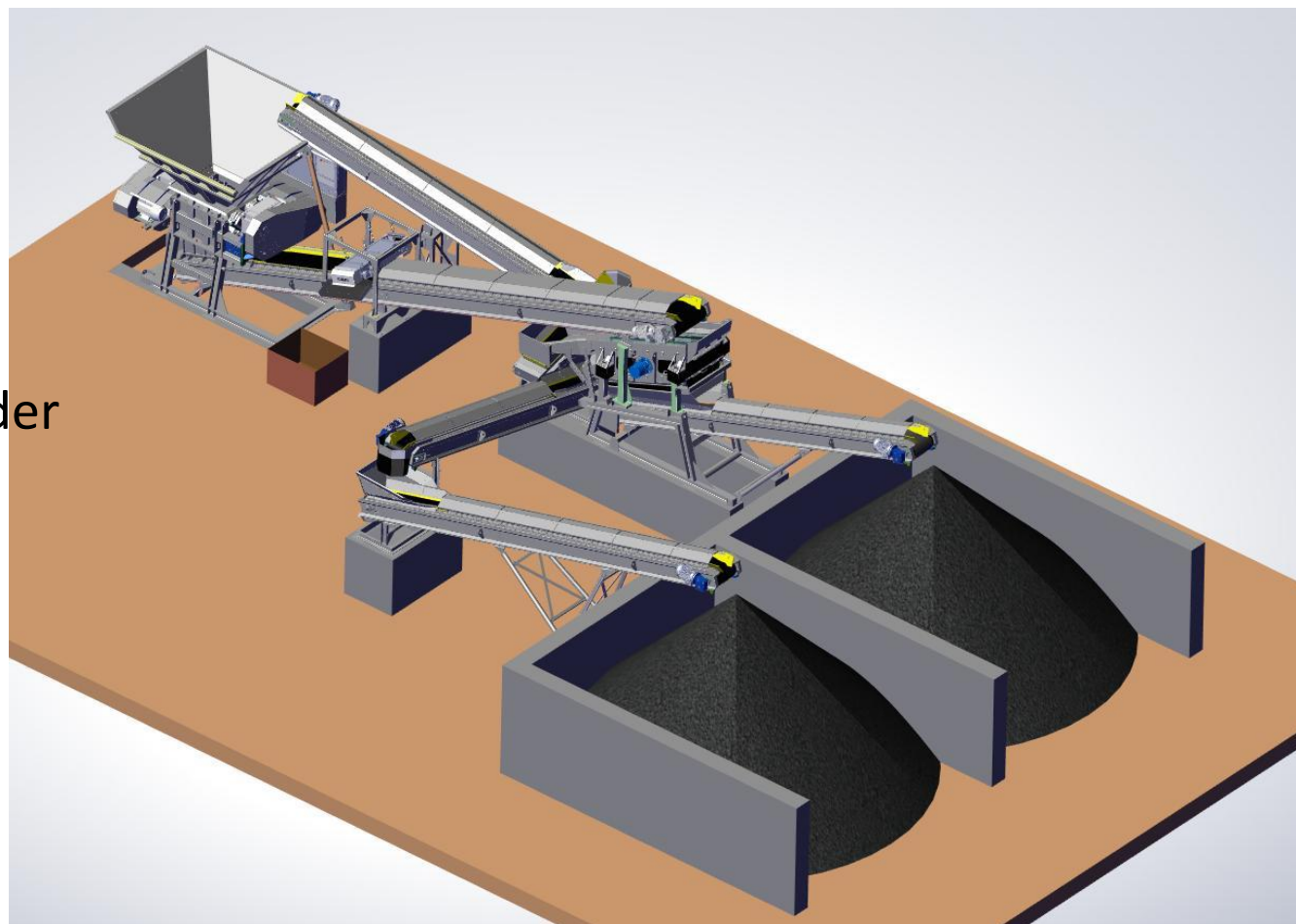




How to couple UTS and UVS to fit customer requirements?

DOUBLE OUTPUT

- Primary shredder
- Double-deck screen
- Finesize and midsize go to stockpile
- Oversize goes back to the primary shredder

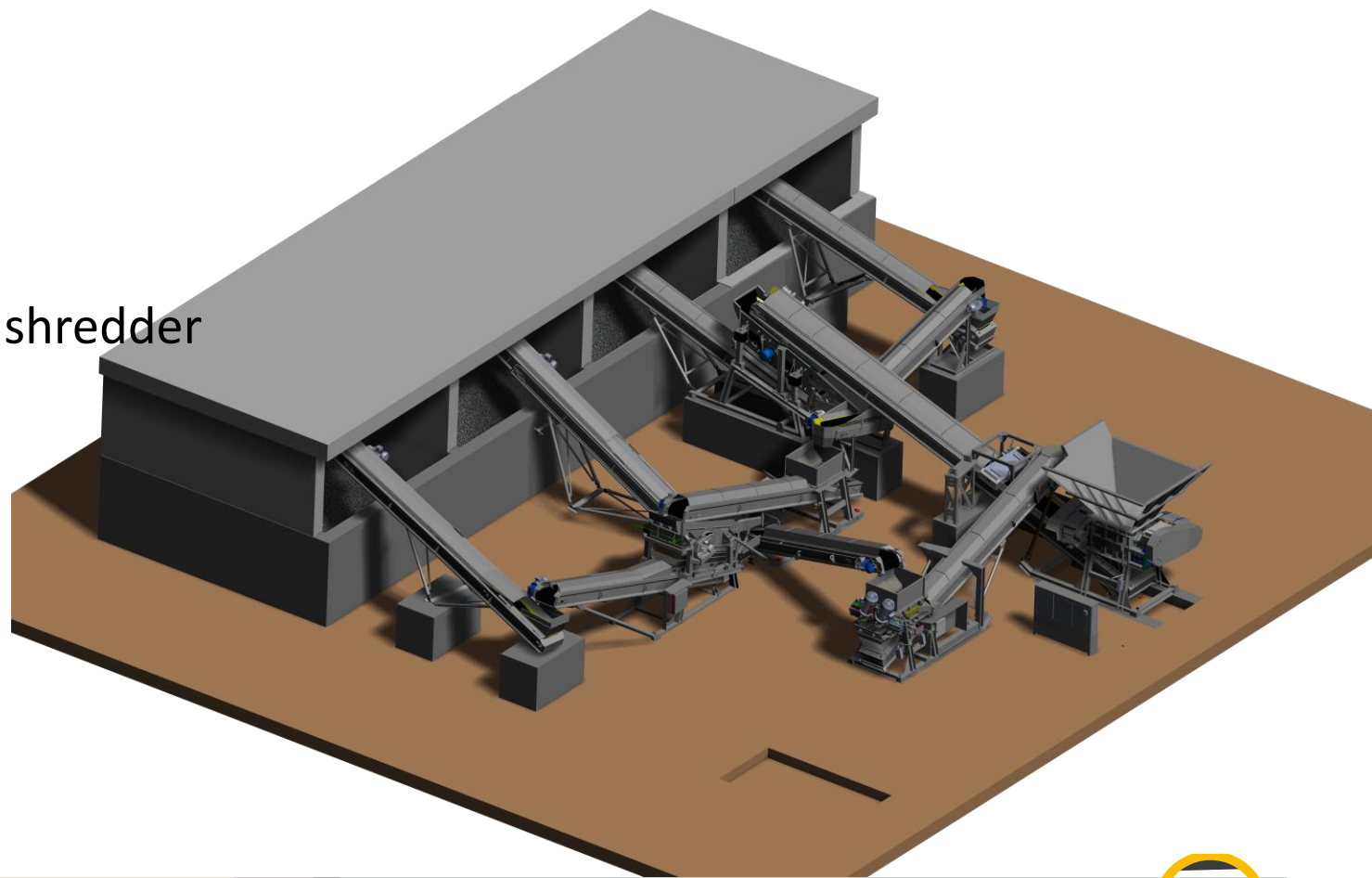




How to couple UTS and UVS to fit customer requirements?

FOUR OUTPUT BAYS

- Primary shredder
- Two double-deck screens
- Four sized outputs go to stockpile
- Oversize is reprocessed by a secondary shredder





¡Muchas gracias!

PONENTE

CARGO Y EMPRESA (puede incluir logotipo de la empresa)

MEDIOS ELECTRÓNICOS DE CONTACTO