



#### TAILORED FOR RECYCLING

CAMSAMERICA™ shredders are designed for recycling. Unlike other manufacturers, which adapt mining and quarrying machines to recycling applications, CAMSAMERICA™ shredders were born for RAP processing.



#### **SHREDDERS**

#### NOT CRUSHERS



#### **INNOVATIVE TECHNOLOGY**

CAMSAMERICA™ 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

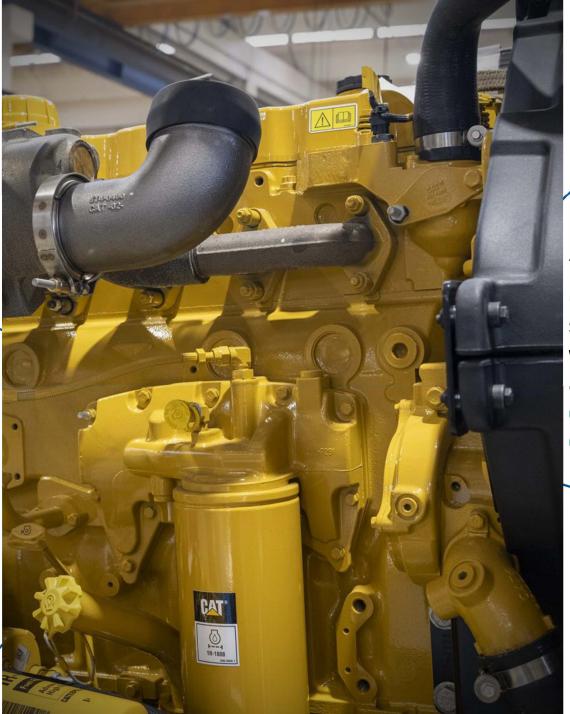


#### **GREEN MACHINES**

CAMSAMERICA™ technology gives back several environmental advantages. Low **breathable dust** production, low **acoustic emissions**, and the opportunity to plug the shredder

to the jobsite electric switch and

operate without Diesel engine.





#### **LOW WEAR**

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

# SHREDDERS VS CRUSHERS



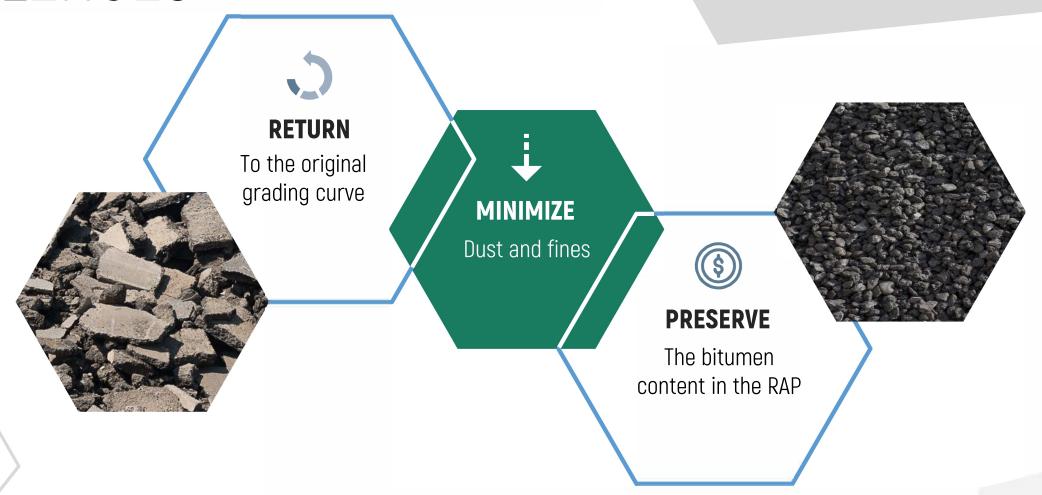




	CAMS™ SHREDDER	GENERIC IMPACT CRUSHER	GENERIC JAW CRUSHER	
Native application	plication Recycling		Mining and quarrying	
Technology	Shearing	Impact	Compression	
Running cost	Low	High	High	
Start-up	Very fast	Slow	Slow	
Plug-in full electric operation	Yes	No	No	
Hydraulic setting of output material size	Yes	Yes	Yes	
Automatic crushing process adjustment	Yes	Yes	Yes	
Built-in pre crushing	Yes	No	No	
All-in-one tracked primary and secondary machine	Yes	No	No	
Wearing resistance	High	Very low	Medium	
Acoustic pollution	Very low	High	High	
st pollution Very low		High	High	
Soil vibration	None	Very high	Very high	
Wet material processing	Yes	No	No CAMSAMERICA	

# RAP RECYCLING

# CHALLENGES



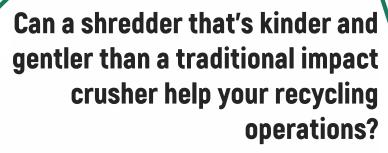


### SHREDDED RAP

VS

# CRUSHED RAP

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



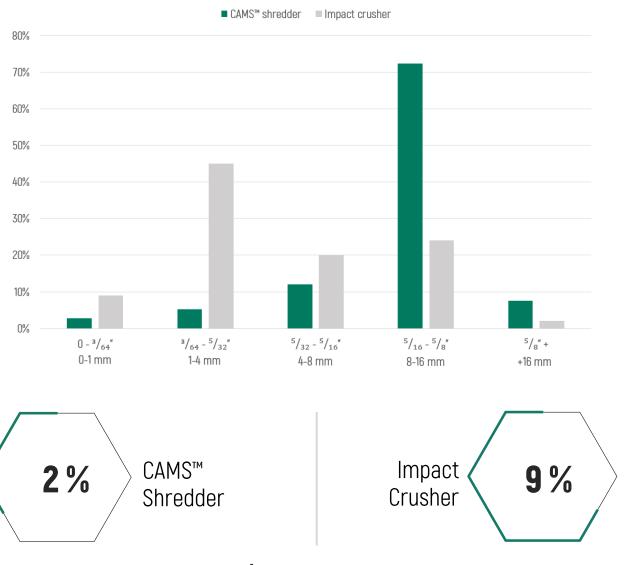
The answer is **YES**. The patented gentle shredding action of CAMS™ machines results in fewer fines and guarantees 100% of original bitumen content reuse, **the essential source of economic efficiency**.



# SHREDDED RAP CRUSHED RAP

The comparative plot is based on two 0-3/4" RAP samples processed with a CAMSAMERICA<sup>TM</sup> shredder and a traditional impact crusher.

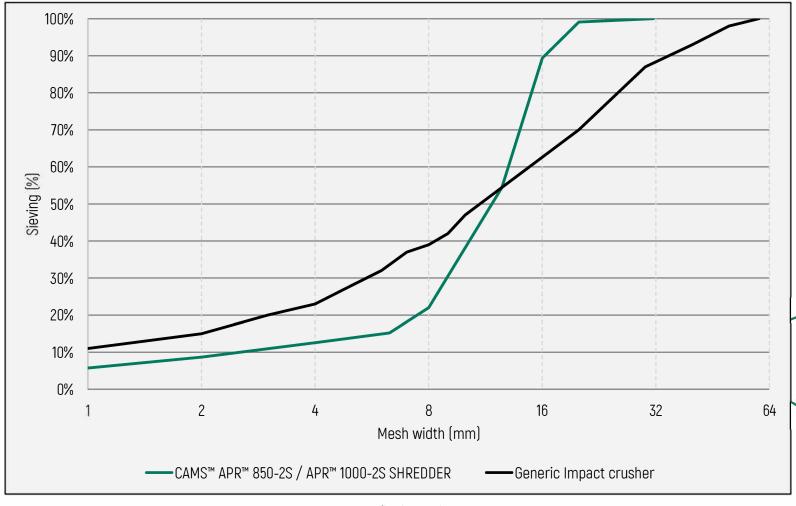
Percentages of filler coming from the shredder are significantly lower.



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

# FEWER FINES **HIGHER QUALITY**

Tests performed on **asphalt** samples



Crushing curve comparison

### 100% BITUMEN SAVINGS

	APR™ 1000-2S	
Potential throughput (ton/h)	240	
Average mass percentage of bitumen in generic road pavementations	5%	
Bitumen content per hour (ton/h)	12	
Bitumen cost (USD/ton)*	430	
Savings on bitumen (USD/h)	\$5,160.00	



APR™

**Impactor** material

\$1.200.000 \$1.000.000 \$800.000 Savings on bitumen [\$] \$600.000 \$400.000 \$200.000 100 120 Operating time (h) APR 1000-2S

Bitumen content comparison between APR™ shredder and impact crusher. Darker stockpile has a higher bitumen content and comes from an APR™ shredder. **CAMSAMERICA** 





#### **FEATURES**

#### **PERFORMANCES**

Three shredding stages plus screening unit in one machine

• High production and quality rates

#### **TECHNOLOGY**

 Capability to handle steel chunks (toolholders, manhole covers, rebars...)

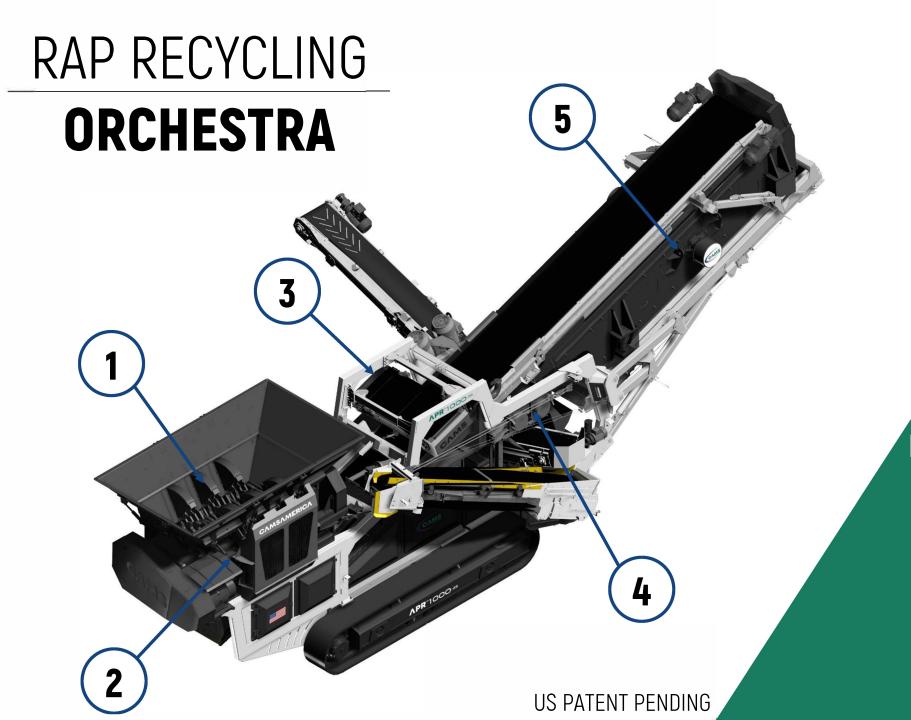
Unloading and automated commissioning in 30 min.

- Built-in software
- Output weighing system
- Remote service
- Transport with just one truck, standard size

#### **GREEN DESIGN**

- Green technology for asphalt recycling
- RAP and asphalt slabs processing





# THE ORCHESTRA CONCEPT: A SINGLE, INTEGRATED MOBILE PLANT IS THE ONLY WAY TO GUARANTEE THE BEST EFFICIENCY IN RECYCLED BITUMEN COLLECTION

SC260 primary shredder
Magnetic separator
SRU80c secondary shredder
ES900 screen

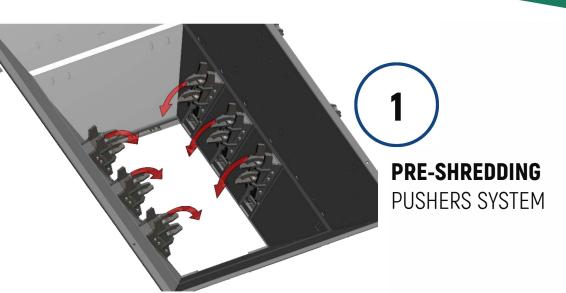
**CAMSAMERICA** 

### **MAIN DESIGN DATA**

	APR™ 1000-2S	
Total weight	92,600 lbs	
Crushing unit weight 22,000 lbs + 7,700 lbs		
Screening unit width x length	4′ 3″ x 17′ 2″ + 4′ 3″ x 14′ 9″	
Total screening unit area approx. 15.237 yd <sup>2</sup>		
Hybrid drive power supply	402 hp	
Fuel consumption	5 US gal/h	
Primary shredder shafts speed	12 RPM	
Secondary shredder shafts speed	20 RPM	
Crushing units drive power supply	<b>80 + 80 hp</b> [60+60 kW]	
Max production with <b>DEMOLISHED ASPHALT</b> *  250 US t/h		
Power density  (Max. production/crushing unit drive power supply)	1.56 US tph/hp	
Fuel consumption density  (diesel fuel consumption/max. productionl)	0.02 US Gal/US tph	

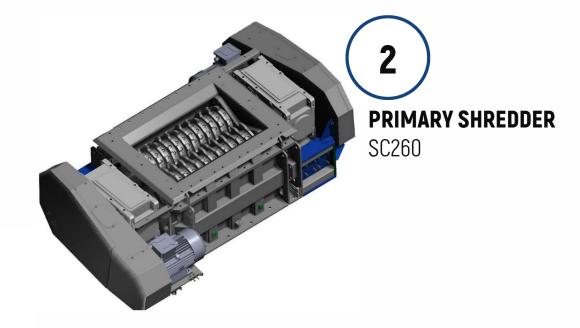
#### INTEGRATED MULTI STAGE SHREDDING

### HIGH SHREDDING RATIO



**SECONDARY SHREDDER** 

SRU80c



#### THEORETICAL TOTAL SHREDDING RATIO

Approx. 40:1

Combined result of the three shredding stages
Calculated without recirculation with maximum feed size



#### SHREDDING TECHNOLOGY FEATURES

#### OPERATING PRINCIPLE

Both the primary and secondary shredder operate according to the slow-speed 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

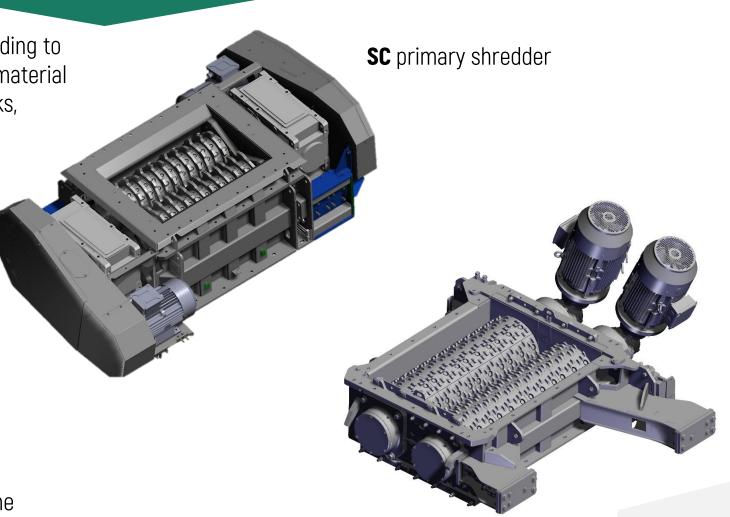
All the shredders are **electrical powered**.

#### PRODUCT QUALITY

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

#### WEAR

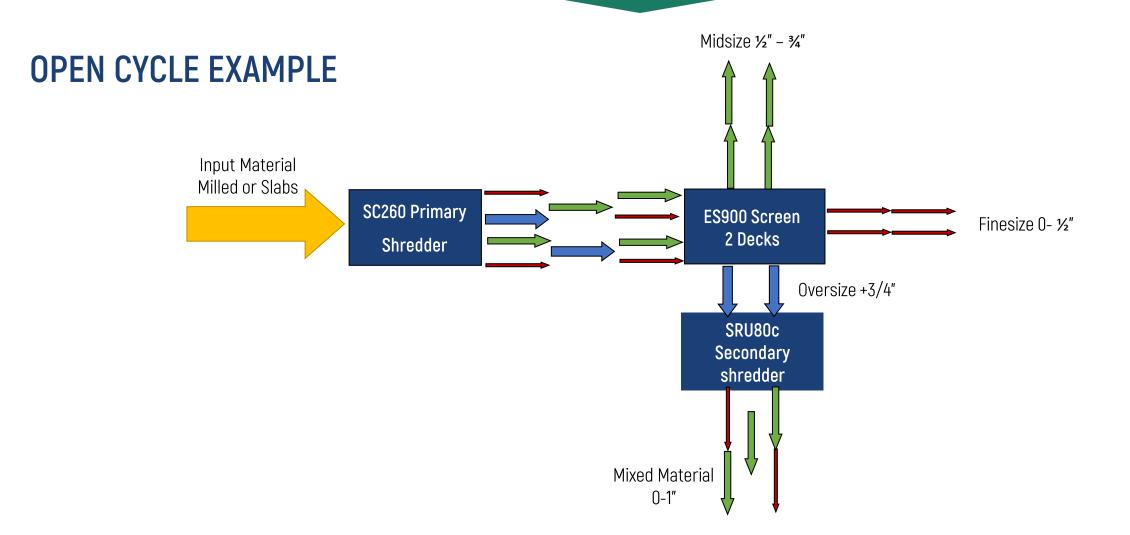
The slow rotation technology reduces the wearing and the running costs.



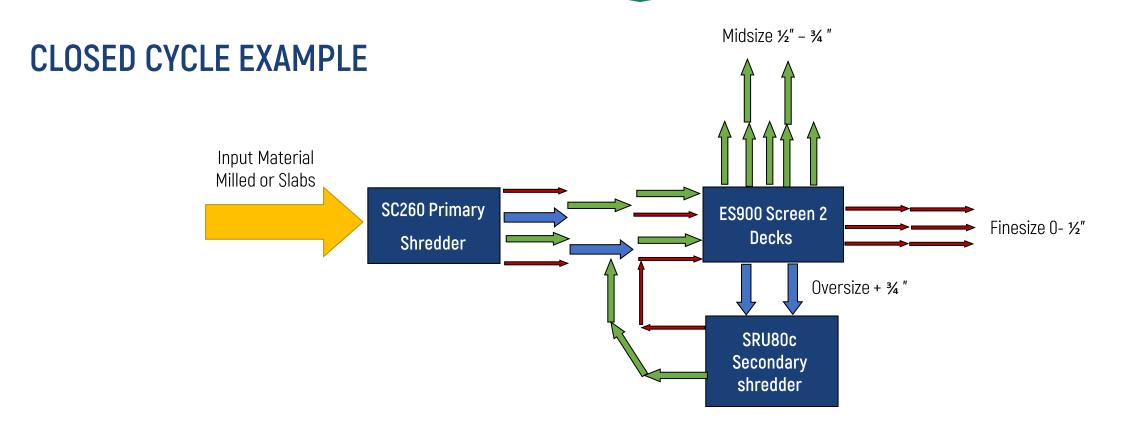
**SRU** secondary shredder

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# **APR™1** O O -25 OPEN CYCLE



# **APR™1000-25**CLOSED CYCLE



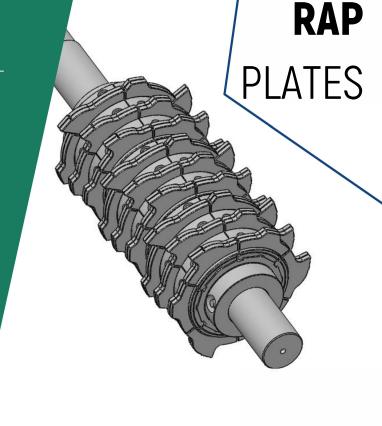
#### **CAMSAMERICA**<sup>TM</sup>

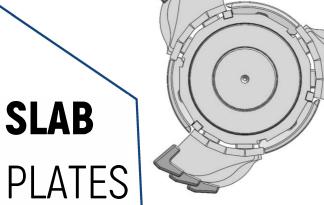
#### SHREDDER PLATES

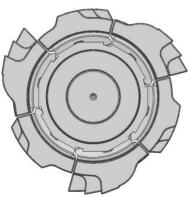
Professional asphalt recycling is not an easy task, but CAMSAMERICA™ made it simple.

Chose your own shafts configurations and switch between them with minimum effort, depending on the kind of material you are going to process.

Whether it is the finest RAP or the biggest slab, we designed the perfect mix of plates.



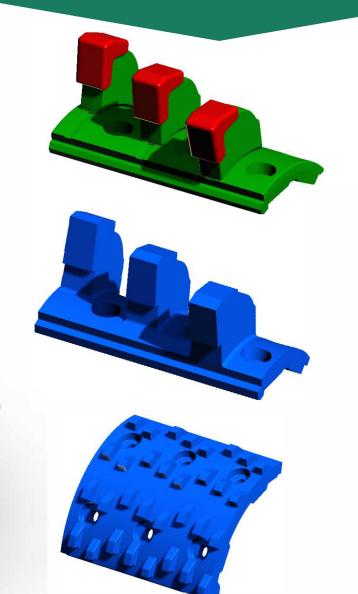




CAMSAMERICA

# **CAMSAMERICA**<sup>TM</sup>

# SHREDDER PLATES



**MILLED ASPHALT** 

**ASPHALT SLABS** 

**SECONDARY SHREDDER** 

# CAMSAMERICA™ SHREDDER PLATES

SHAPE	APPLICATION
	Milled asphalt
	Milled asphalt
	Asphalt slabs
	Asphalt slabs
	Milled asphalt Asphalt slabs



# BUILT-IN SOFTWARE

Complete control of the mobile plant

Customizable functions

Components testing

Performance control

Remote service and GPS features

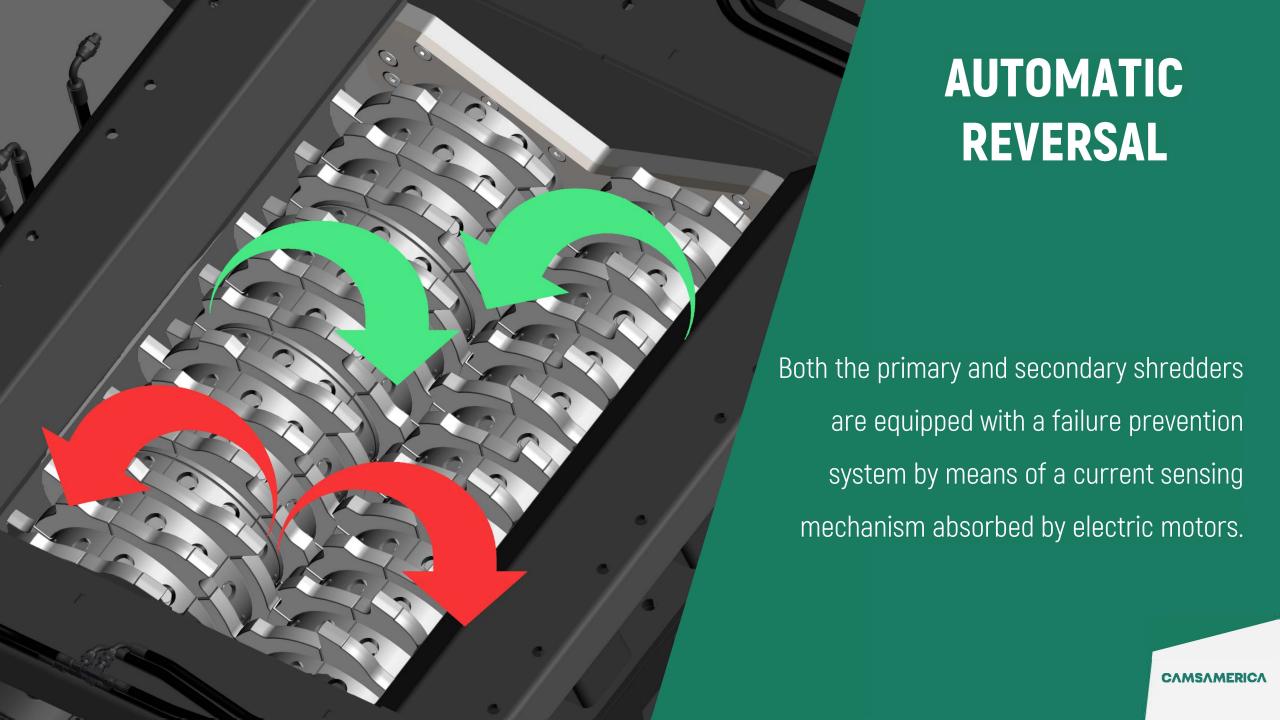
Weighing system

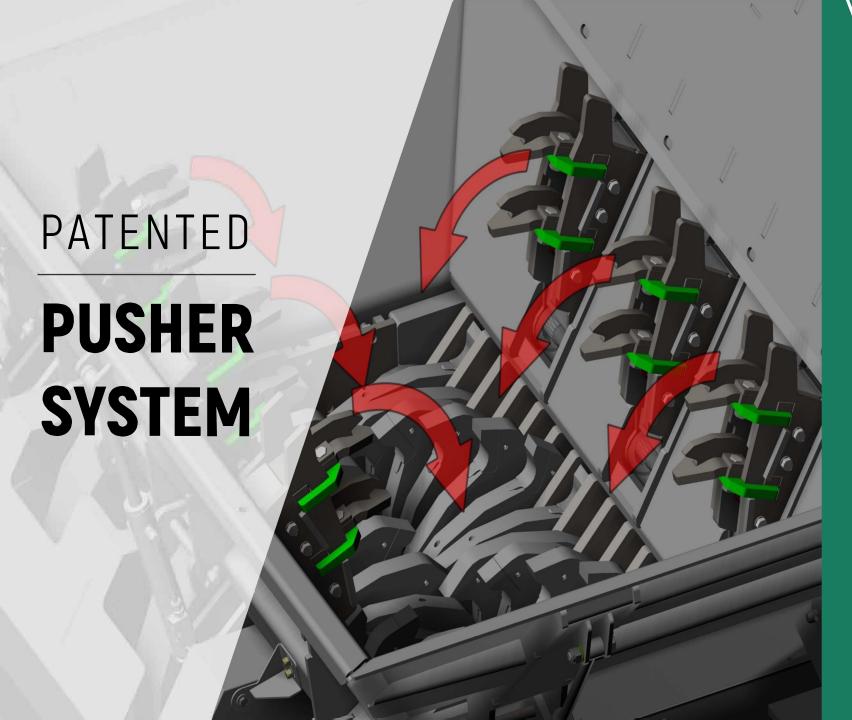
Intuitive troubleshooting guide



# **A**UTOMATIC SHREDDING **A**DJUSTMENT

- A sensor system detects the level of material on the main belt of the plant.
- Depending on the amount of material, the flow of material through the primary shredder is adjusted to the optimal quantity.
- Maximum operating efficiency, automated.







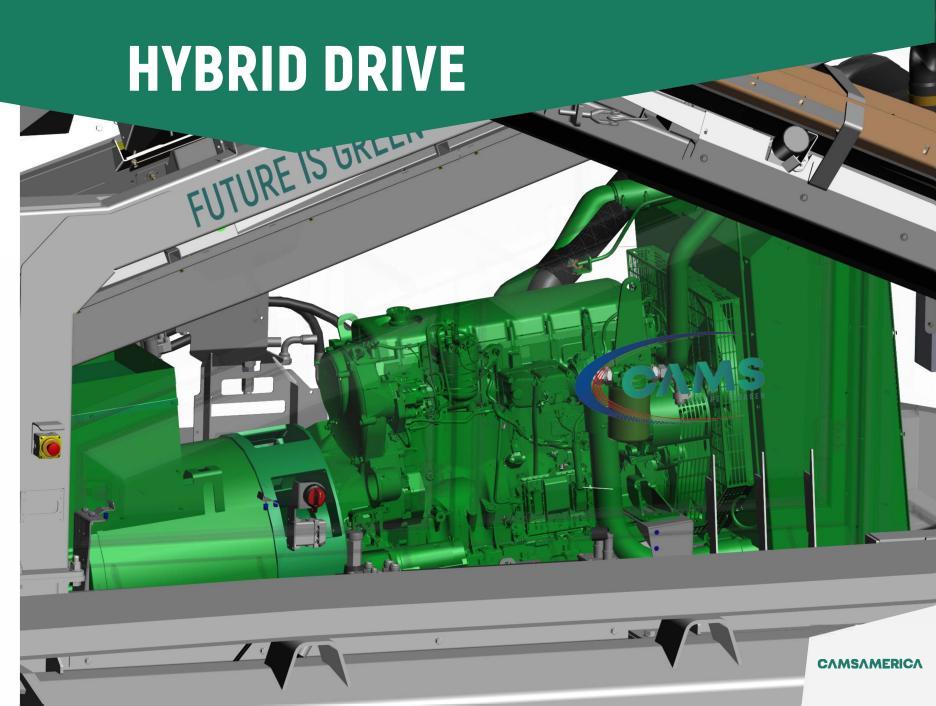
#### **HOW ABOUT SLABS?**

Pusher System patented by CAMSAMERICA™ 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.

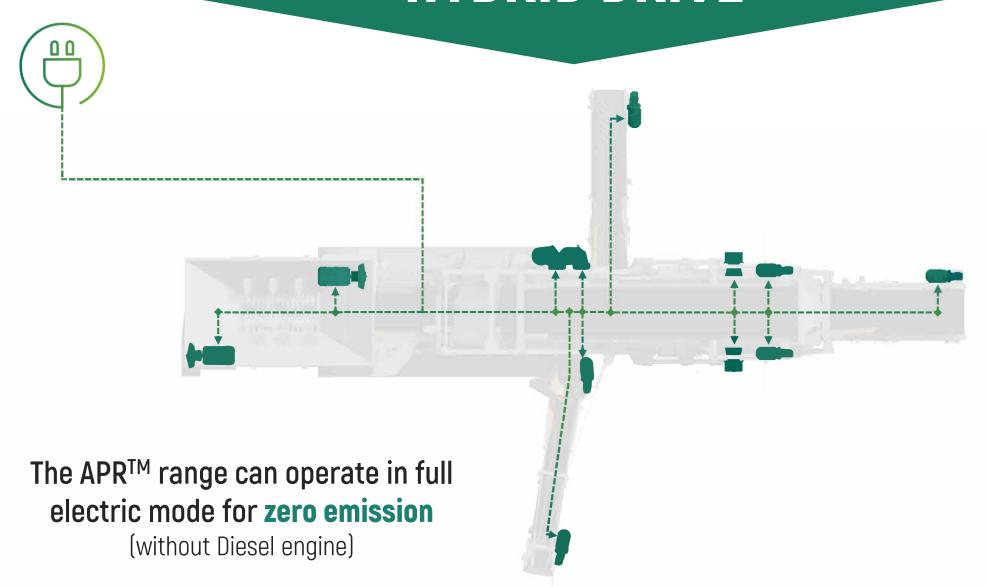


All CAMSAMERICA™ mobile machines are equipped with powerful and fuel efficient **diesel-electric** drives.

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

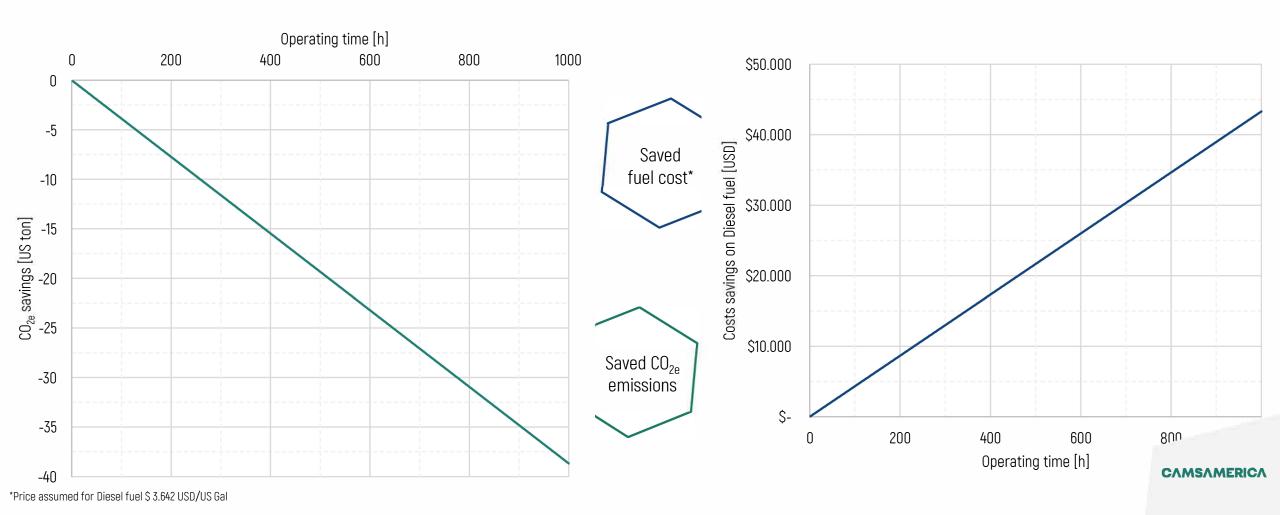


# **HYBRID DRIVE**



# CAMSAMERICATM FUEL SAVINGS

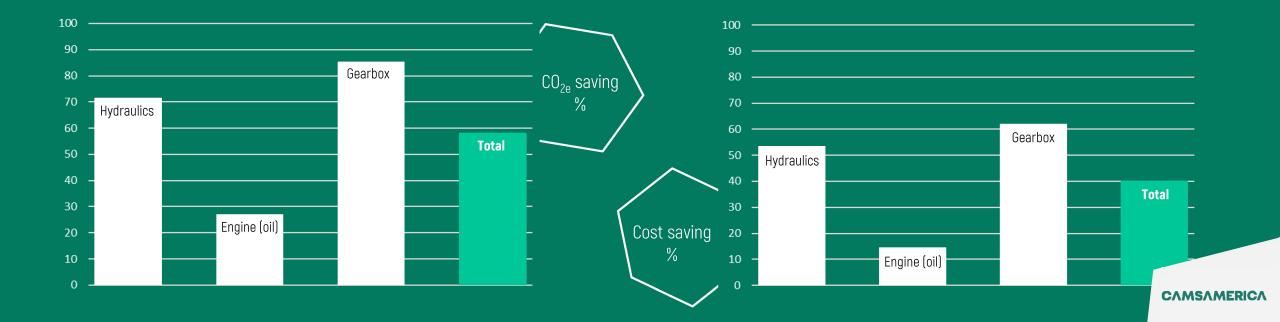
The **full electric** feature of the APR<sup>M</sup> 1000-2s, saves approximately **77 lbs CO<sub>2e</sub>/h** [35kg CO<sub>2e</sub>/h]



#### **BIO LUBRICANT OIL**

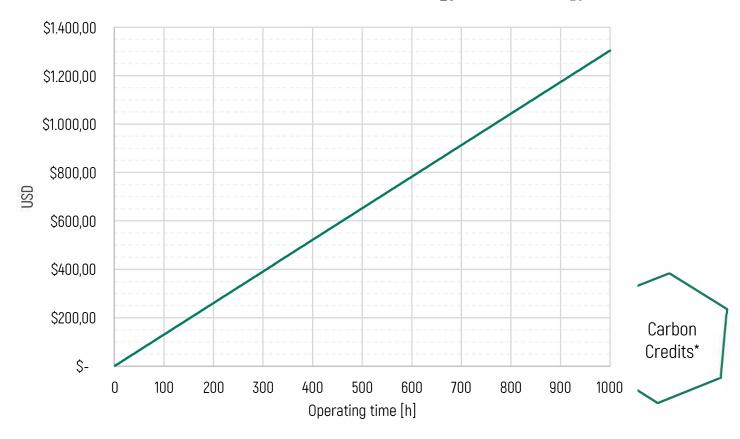
### HOURLY RATES COMPARISON CAMS™ APR™ RANGE

Lubrication point	CI	O <sub>2e</sub> (lbs/h)	CO <sub>2e</sub> sa	ving	Cos	sts (USD/h)	Cost saving	
Lubi ication point	Mineral oil	Bio oil	lbs/h	%	Mineral oil	Bio oil	USD/h	%
Hydraulics	0.24	0.07	0.17	71.7	0.34	0.16	0.19	53.6
Engine (oil)	0.25	0.26	0.09	27.2	0.41	0.35	0.06	14.6
Gearbox	0.31	0.04	0.27	85.4	0.27	0.10	0.16	62.1
Total	0.90	0.37	0.53	58.3	1.02	0.61	0.41	40.3



#### **CARBON CREDITS**

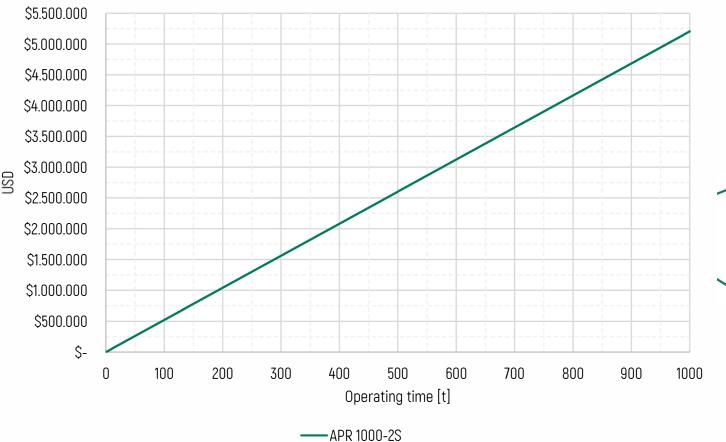
The **full electric** feature of the APR<sup>M</sup> range, together with its bio oil equipment, saves approximately 130 lbs of  $\mathbf{CO_{2e}/h}$  [59kg  $\mathbf{CO_{2e}/h}$ ]



### **TOTAL SAVINGS**

Total savings [USD/h]

APR™ 1000-2S
5,160
1.30
0.41
43.32
\$ 5,204.32





Costs saved

by APR™

<sup>\*</sup>Price assumed for Carbon Credits is \$ 20 USD/US ton CO<sub>2e</sub>

<sup>\*\*</sup>Price assumed for Diesel oil \$ 3.642 USD/US Gal

