



Screening and Processing



Drying System



Wood Yard



Conveying solutions in the cement industry



Maintenance and Service



Waste to Fuel



Waste to Flame



Waste to Electricity



Biomass Fuel Handling



Pneumatic Conveying

INDUSTRIAL PROJECT AND SERVICE

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ISPM-Service is a portuguese company born in 2015 with an environmental and innovative concept, guided by values that encourage sustainable development in an industrialized Era, where the generation of energy from waste is not only a way to ensure the future of the planet, but also a mean to profit. ISPM is a flexible, enthusiastic, socially responsible organization and adaptable to the changes. Our business is characterized mainly for a joint effort with our business partners. Together we design, produce, and assemble equipment and turn-key projects in various areas. Our technical assistants are motivated and highly qualified professionals. Overcoming challenges and searching for the generation and implementation of technological, innovative, and out-of-the-box business solutions, are on our day-to-day basis and part of our longterm vision for **ISPM-Service**. We are a visionary company, we work today for tomorrow as the beginning of the future.

**THE FUTURE'S
SOLUTION
TODAY**

Paulo Teixeira

ISPM has been named Official Reseller Of:

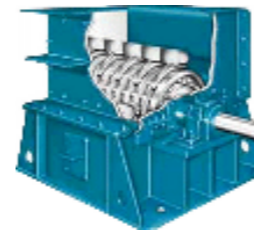
*BMH Technology in Portugal and France;
Jeffrey Rader, Stela and Aumund in Portugal;
Demuth in Portugal, Spain and France.*





Screening and Processing

Our Screening & Processing equipment is used for bark, construction and demolition waste, RDF and other materials that must be fractionated, separated and cleaned of rocks, metal and sand.



Chip - Sizers

No other rechipper maintains the same tight top-size control as TerraSource Global's Jeffrey Rader Chip-Sizer. This no-knife rechipper uses a soft touch to reduce wood chips with minimal fines. Its high efficiency diminishes the need for additional screening, leading to a more cost-effective operation.



Raderwave Fines Screen

The unique sinusoidal (or wave-like) action of the Raderwave's Flexi-Dek™ screen mat allows fines to pass through and good fiber to move on. The result is over 90% fines removal while retaining as much as 90% of the valuable fiber.



Overthick Processing Systems

The processing of the "over-thick" fraction begins with the chip flow coming off the end of the thickness screen.



Chip-Sizer™

For cost-effective reduction of oversized wood chips for the pulp & paper industry.

Features/Advantages

Unique, Patented Design

The Jeffrey Rader Chip-Sizer, the first true no-knife rechipper, was pioneered in 1996 as a result of industry concern over the high maintenance cost of conventional rechippers.

At first look, the Chip-Sizer looks like a typical wood hog. While the operating principal is similar to a wood hog, the Chip-Sizer incorporates several special features and components.

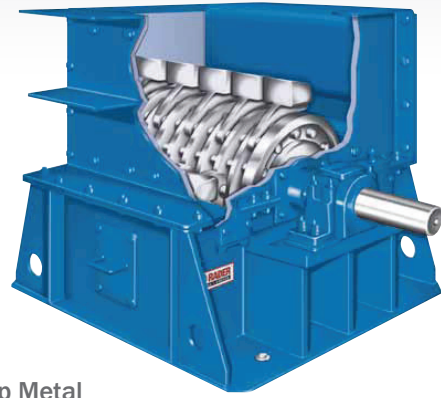
For example, the Chip-Sizer's hammers allow the unit to operate at speeds much slower than hammermills. They also offer a "soft touch" to the chips to minimize the creation of pins and fines. This, along with other patented components, permits the Jeffrey Rader Chip-Sizer to reduce oversized chips at unheard of efficiencies.

Technical Advances Minimize Downtime

- Large feed opening eliminates infeed plugging.
- Access door permits fast, easy servicing.
- Chipping hammers reduce downtime – there are no knives that require sharpening.
- Metal trap minimizes damage from tramp metal.
- Replaceable wear-resistant liners extend service life.

Cost-Effective Operation

- Low capital cost provides a rapid ROI.
- High recovery rates, typically 85-95%, increase profits.
- Efficient screen bar design produces a high percentage of accepts. Generally, the finished product goes directly to the accepts belt, thus eliminating a cyclone and increasing screen capacity.
- High-performance, double-row spherical bearings accommodate extra loads and produce smoother operation.
- Operational adaptability.



Tramp Metal

The inherent configuration and heavy-duty nature of hammermills means the Chip-Sizer has no knives to be destroyed by tramp metal. And, the Chip-Sizer's feed and discharge openings are large enough to prevent plugging.

Easy Maintenance

Routine maintenance consists of greasing the bearings and checking drive belt tension per the guidelines in the maintenance manual. It is also recommended to check the wear on the chipping hammers and screen bars 2 to 3 times annually.

High-Value Results in Processing Hardwood and Softwood

Results from numerous installations processing hardwood and softwood show that the percentage of oversize chips processed to acceptable chips is typically in the range of 85-95%. This value is so high that many producers are eliminating screening after the Chip-Sizer and feeding directly to the "accepts" belt.

A system using the Chip-Sizer therefore does not usually need a screen to recirculate overs. It also does not require an air handling system, since oversize chips are dropped vertically off a belt into the machine and discharged onto another belt.

Experience has shown that surge loads of up to double the machine's rated capacity can be accommodated without plugging.

CE CE compliance now available.

Chip-Sizer™

Chip-Sizer™

Features/Advantages (continued from other side)

Fast Payback

High recovery rates and reduced maintenance costs have generated significant improvements in profits for companies operating Jeffrey Rader Chip-Sizers. Furthermore, the lower capital costs yield very attractive returns on investment.



The Chip-Sizer tolerates knots, transitions, bark, bolts, pieces of machinery, rocks, and dirt.

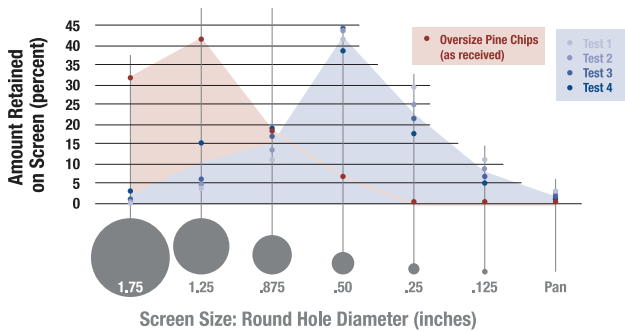
existing rechippers were converted to Chip-Sizers, investment returns have typically been within the year.

Industry Acceptance

The Jeffrey Rader Chip-Sizer is the first of its kind in the chip market. With over 200 Chip-Sizers in the field today, this is the sizer that has proven it gives the highest recovery rates of “cookable” chips of any rechipper. Acceptance has been rapid and widespread, with numerous chip producers and multi-national pulp & paper companies installing our Chip-Sizer machines.

ROI analyses have been done for many installations. Most payback periods have been less than one year with times as short as 3 to 6 months for new plants or those that do not have a conventional rechipper. Even in plants where

recovery rates of “cookable” chips of any rechipper. Acceptance has been rapid and widespread, with numerous chip producers and multi-national pulp & paper companies installing our Chip-Sizer machines.

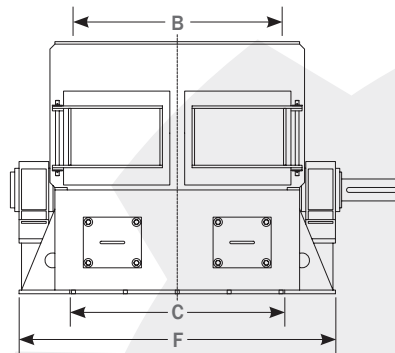
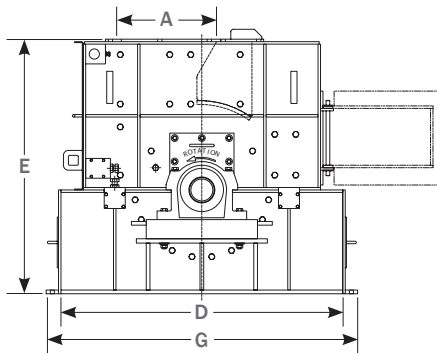


This chart shows customer-provided chips **in red** (oversized) and the resizing results **in Tests 1-4** (each representing a different configuration of our Chip-Sizer).

The Jeffrey Rader Chip-Sizer brought oversize chips into specification while minimizing pins and fines.

You can request a **Chip-Sizer lab test on your material**. Fill out our online form or contact your sales representative. The Jeffrey Rader test lab offers a variety of set-up options along with a classifying screen so you know what you are purchasing before you buy!

Dimensions and Weights



Models 30CS & 34CS have removable rear door.

Models 40CS, 45CS & 56CS have hinged rear door.

APPROXIMATE LAYOUT DIMENSIONS* AND SHIPPING WEIGHTS

MODEL NO.	NOMINAL CAPACITY TPH	HP	FEED OPENING		DISCHARGE OPENING		OVERALL HEIGHT E	OVERALL WIDTH F	OVERALL LENGTH G	OVERALL WEIGHT LBS (KG)
			A	B	C	D				
30CS	3 - 8	50	8" (203)	21" (533)	27" (686)	35" (889)	36" (914)	42" (1067)	40" (1016)	3,250 (1,472)
34CS	7 - 12	75	16" (406)	33" (838)	34" (864)	35" (889)	36" (914)	55" (1397)	40" (1016)	4,000 (1,814)
40CS	10 - 22	100	18" (457)	39" (991)	42" (1067)	53" (1346)	46" (1168)	55" (1397)	60" (1524)	7,800 (3,538)
45CS	22 - 40	150	16" (406)	42" (1067)	44" (1118)	57" (1448)	52" (1320)	64" (1626)	63" (1600)	10,000 (4,536)
56CS	40 - 64	300	22" (559)	54" (1372)	56" (1422)	77" (1956)	64" (1626)	83" (2108)	83" (2108)	18,500 (8,392)

*Certified drawings will be furnished for installation. Installation supervision is available.

RaderWave™ Fines Screen

Removes the maximum amount of troublesome fines while saving valuable fiber.

Features/Advantages

A Technological Advance in Fines Removal

The RaderWave Fines Screen provides maximum fines removal while saving valuable fiber, even under fluctuation conditions. The unique sinusoidal (or wave-like) action of the RaderWave's Flexi-Dek™ screen mat allows fines to pass through and good fiber to move on. Plugging or binding is effectively eliminated, even with wet, sticky or snow-laden chips.

The result is over 90% fines removal while retaining as much as 90% of valuable fiber.

A Unique Operating Principle

The RaderWave screen concept was born of experience and extensive research and development. A patent is pending on the uniqueness of its operation.

The RaderWave design consists of a series of parallel shafts located beneath a flexible perforated screen deck. When the shafts rotate, a wave-like motion is created on the screen media. As chips travel across the screen, the bed is accelerated vertically so that pins and chips are agitated, clearing the way for fines to migrate through the perforations for a cleaner end product. Acceptable fiber is continuously carried forward and passed over the end.

Extraordinary Levels of Fines Removal and Pin Chip Retention

Results gathered from on-line mill testing of the RaderWave at full production rates show extraordinary levels of fines removal and pin chip retention. Harsh winter conditions had little impact on screen efficiencies.

All mill operation conditions vary and so will screen efficiency. A mill can expect efficiency levels comparable to what is reported in the test data, and far better than what can be achieved by any other method.

A Screen That Cleans Itself Keeps Your Operation Running Smoothly

The constant flexing action of the Flexi-Dek screen mat helps prevent adhesion of wet or sticky



particles. In addition, the alternating wave motion slightly varies the perforation geometry, either accepting or rejecting near-size particles. When combined with the forces of high acceleration, blinding is eliminated. This self-cleaning feature is particularly beneficial in harsh climates where screen blinding or plugging has always been a problem.

Designed for Ease of Installation, Reliable Operation and Low Maintenance

- A low-horsepower, variable-speed drive and motorized jacking system allows wave frequency and screen inclinations to be adjusted "on the run."
- A heavy-duty, high-torque cogged belt drive ensures reliability and eliminates the need for bothersome oil baths.
- The Flexi-Dek is a noncorrosive, high-density, high-strength material, formulated for maximum flexibility and long wear life.
- Flexi-Dek replacement is easily accomplished in two hours or less, which means very little downtime.
- Dust-tight construction provides for a clean work area.

RaderWave™ Fines Screen



RaderWave™ Fines Screen

Common Mill Problems ...

Jeffrey Rader Solutions

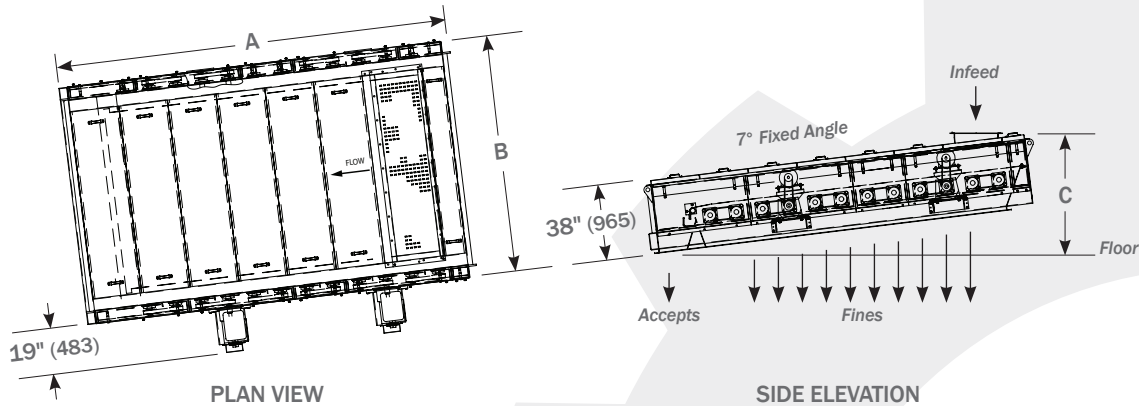
Mill is experiencing blinding and plugging of their gyratory screen deck during winter months.

In many cases, a conventional fines screen will become ineffective during the winter when chips are wet and frozen. In extreme conditions, it's not unusual for a mill to bypass a gyratory screen entirely. A RaderWave Fines Screen will allow the mill to continue screening fines efficiently during these periods.

Mill wants to retain pin and thin chips and feels it is losing valuable fiber with their present fines removal system.

While some screens do a good job of fines removal, they often operate at the expense of fiber loss. Retaining pulpable fiber can pay big dividends, especially when a mill's wood costs are high. A RaderWave Fines Screen operates with a high degree of fines and grit removal efficiency with excellent good fiber retention.

Dimensions and Weights



APPROXIMATE LAYOUT DIMENSIONS* AND SHIPPING WEIGHTS						FT. IN. (MM)
ROLL	MOTOR	A	B	C		LBS (KG)
6 x 8	5 HP	12' 0" (3685)	8' 2" (2489)	5' 10" (1778)		10,000 (4536)
8 X 12	2 - 7.5 HP	16' 3" (4953)	10' 2" (3099)	6' 5" (1956)		14,000 (6350)
10 X 20	3 - 10 HP	24' 6" (7468)	12' 2" (3708)	7' 6" (2286)		18,000 (8165)

* Certified drawings will be furnished for installation. Installation supervision is available.

DynaYield™ II Chip Conditioner

High-performance chip fissuring with
minimum pins and fines generation.



Features/Advantages

Better Uniformity, 98% Uptime

Jeffrey Rader brand DynaYield Chip Conditioners are designed to gently fissure over-thick wood chips to assure proper pulping liquor penetration for optimum cooking and yield, with the least fines and pins generation of any thickness reduction machine.

The DynaYield Chip Conditioner primarily consists of two rolls with specially-designed, textured stainless steel segments providing the surface for conditioning, fissuring, and treating the oversized and over-thick wood chips.

The 90-degree segments are held in place with special Grade-8 fasteners. Removable covers over roll segments allow for easy access for segment maintenance. The two rolls, one fixed and the other dynamic, are each driven by an AGMA Class II shaft-mounted reducer and rotate toward each other. An easily removed drive housing encloses the motor and reducer for safety.

The desired nip setting is obtained by mechanical stops between the fixed roll bearing housing and the dynamic roll bearing housing. Two independent

hydraulic cylinders mounted at the ends of the frame control the dynamic roll movement and applied force.

Low Pins and Fines Generation

With normal oversize wood, the conditioner typically generates less than 1% fines and 2% pins, versus chip slicers generating between 2% to 8% fines and up to 15% pins (based on -3 mm RH fines and -2 mm slot pins).

Reduced Maintenance Costs

Due to reduction in wear parts in contact with material, and due to low speed action of the conditioning process, the wear is significantly less than in other forms of overs processing.



DynaYield™ II Chip Conditioner

DynaYield™ II Chip Conditioner

Features/Advantages (continued from other side)

Centralized Lubrication

Centralized lubrication stations are included for greasing motors, reducer, bearings, and dynamic roll slide base.

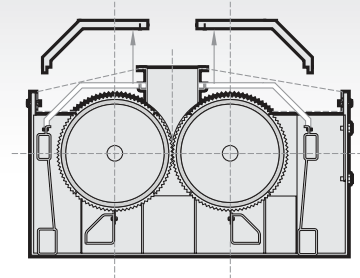
Hydraulic Roll Positioner Power Unit (HPU)

The power unit consists of a flooded suction pumping system with accumulator mounted on a 20 U.S. gallon skid-mounted reservoir.

An air/oil heat exchanger and tank heater provide temperature control in hot and cold ambient environments.

A solenoid valve supplies directional control to the cylinders on the conditioner.

Additional controls provided include high temperature control switch and low fluid level switch. All control enclosures are NEMA 4 to provide all-weather protection.

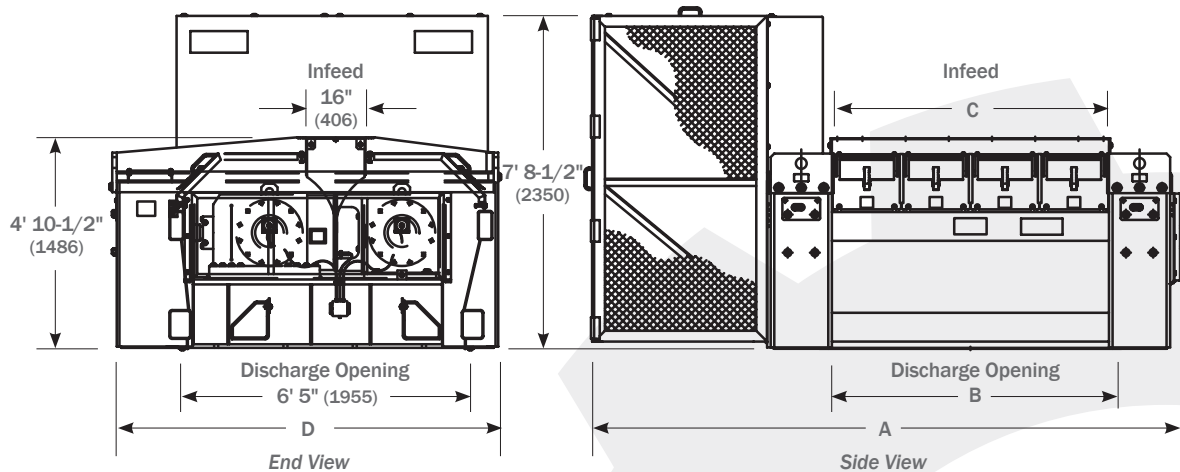


Control Console

A control console operates the DynaYield Chip Conditioner unit and Hydraulic Roll Positioner Power Unit. It is enclosed in a NEMA 4 enclosure, can be remotely mounted, and has the ability to be tied into the customer's PLC.

There is a speed switch on each roll for zero-speed detection. Proximity sensors give indication to operators that nip between rolls is ready for wood processing/operation.

Dimensions and Weights



MODEL NO.	MOTORS**	MOTOR REQUIREMENTS, APPROXIMATE LAYOUT DIMENSIONS,* AND SHIPPING WEIGHTS				FT-IN (MM)	
		A	B	C	D	LBS (KG)	
40	2 @ 75 HP, 1 @ 7.5 HP	10' 10-3/4" (3321)	4' 7" (1397)	3' 11" (1194)	8' 3" (2515)	40,000 (18,144)	
60	2 @ 100 HP, 1 @ 7.5 HP	13' 7-3/4" (4159)	6' 7" (2007)	5' 11" (1803)	8' 10" (2692)	54,000 (24,494)	
80	2 @ 150 HP, 1 @ 7.5 HP	15' 11-1/4" (4858)	8' 5" (2565)	7' 10" (2388)	9' 1-5/8" (2784)	65,000 (29,484)	

*Certified drawings will be furnished for installation. Installation supervision is available. **1800 RPM electric motors as indicated to be supplied by customer. (HPU comes equipped with one 1.5 kW NEMA 4 heater.)

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