

MOLINARI



TP PRIMARY SHREDDERS, TG GRANULATORS, MP REFINERS
TYRES RECYCLING



The partner for ELTs recycling

SINCE 1995, MOLINARI HAS BEEN PRODUCING REFINING MILLS TO REDUCE RUBBER CHIPS FROM 0 TO 4 MM. TO COMPLETE THE RANGE OF OUR PRODUCTS, WE HAVE DESIGNED TWO COMPLETELY NEW MACHINES: THE TP PRIMARY SHREDDER AND THE TG GRANULATOR.

THE TP IS A ROBUST AND POWERFUL PRIMARY SHREDDER THAT ALLOWS TO RAPIDLY SHRED PASSENGER AND TRUCK TIRES WITH A HOMOGENEOUS OUTPUT RESULT, WITHOUT THE USE OF OTHER MACHINES.

THE UNIQUE DESIGN OF THE REVOLUTIONARY TG GRANULATOR, ALLOWS TO SEPARATE THE WIRE OF THE TIRE, PRODUCING RUBBER CHIPS OF VARIOUS SIZES, ACCORDING TO THE CLIENT'S NEEDS.

AFTER THE SEPARATION OF THE WIRE, THE RUBBER AND THE TEXTILE GO TO THE REFINING PHASE, WHERE MOLINARI REFINERS ARE VERY WELL KNOWN FOR THEIR RELIABILITY AND PRODUCTION. THE SIZE OF THE GRANULES IS REDUCED UNDER 4MM.

BY WORKING WITH EXPERIENCED PARTNERS, WE CAN OFFER COMPLETE SYSTEMS FOR THE SEPARATION OF THE TEXTILE OR, IF THE OUTPUT IS USED AS AF, THE DOSING AND FEEDING SYSTEM FOR THE CALCINER.



*Turn-key plants:
from whole tyres
to granules*

From whole tyre to granules

Steel valorization



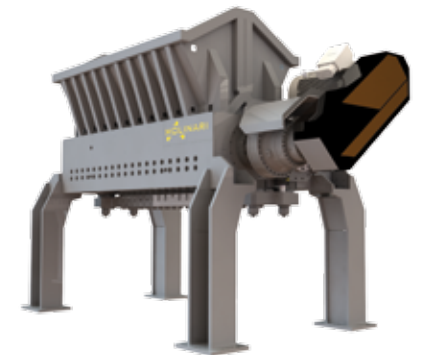
Shredding Phase TP SERIES



END OF LIFE TYRES



SHREDS



Granulation
SERIE TG

1.

PRIMARY SHREDDING
BY TP

2.

GRANULATION BY TG

3.

UNLOADING OF THE PRODUCT ONTO
A VIBRATORY SCREEN, AND SEPARATION
OF THE STEEL BY MAGNETIC OVERBELT

4.

TRANSPORT TO THE STOCKING AREA OR
TO THE NEXT PHASE OF STEEL CLEANING

5.

REFINING WITH MP SERIES MILLS

6.

TEXTILE SEPARATION

7.

CLASSIFICATION PHASE ACCORDING
TO THE CLIENT'S NEEDS

8.

STOCKING PHASE IN BIG-BAGS

THE FERROUS FRACTION REMOVED CAN BE TREATED WITH A FURTHER MOLINARI MACHINE, THAT CLEANS IT FROM THE RESIDUAL RUBBER COMPONENT (<3%), THUS ALLOWING A SIGNIFICANT EXPLOITATION OF THE HARMONIC STEEL.



STEEL



Iron treatment
SERIE HELYOS



CLEAN IRON



RUBBER + TEXTILE CHIPS



Refining
SERIE MP



GRANULES



Technical features

- ROBUST THICK STEEL FRAME ▶
- HIGH STRUCTURAL RIGIDITY ▶
- LOW SPEED OF SHREDDING ▶
- TWO INDEPENDENT SHAFTS ▶
- DOUBLE ROTOR TO AVOID CLOGGING PHENOMENA ▶
- BLADES IN ALLOY STEEL INTERCHANGEABLE AND SHARPENABLE ▶
- ADJUSTABLE FIXED BLADES ▶
- CENTRAL TRAVERSE CAN BE LOWERED FOR MAINTENANCE ▶
- ADJUSTABLE SPEED OF EVERY ROTOR ▶

TP SERIES *ELTs primary shredders*

THE TP SERIES MACHINES ARE PERFECT FOR THE VOLUMETRIC REDUCTION OF ELTS AND FOR THE PRODUCTION OF ALTERNATIVE FUELS.

THE TP SERIES MACHINES ARE THE FIRST STEP IN THE RECOVERY OF USED TYRES.

THEY CAN TREAT BOTH PASSENGER AND TRUCK TIRES UP TO 120 CM DIAMETER, AND SOME TYPES OF INDUSTRIAL AND AGRICULTURAL TIRES.

LOW-SPEED ROTATION IS THE WINNING FEATURE OF THESE SHREDDERS.

THE TWO ROTORS CAN PERFORM OPPOSITE ROTATIONS, INDEPENDENT FROM EACH OTHER. THE CUT IS POSSIBLE THANKS TO THE ACTION OF THE ROTARY BLADES ON THE FIXED BLADES INSTALLED ON THE TRAVERSE BETWEEN THE TWO ROTORS.

THE MACHINES CAN BE EQUIPPED WITH A SCREEN, WHICH ALLOWS TO OBTAIN A PRODUCT OF DEFINED DIMENSIONS, SUITABLE TO BE USED AS TDF.

THE ROTARY BLADES AND THE FIXED BLADES ARE INTERCHANGEABLE AND CAN BE RESHARPENED.



Shredding Chamber

IT CONSISTS OF A STRONG STRUCTURE THAT HOLDS TWO ROTORS WITH OPPOSITE ROTATION.

THE ROTORS ARE INDEPENDENT FROM EACH OTHER AND CAN PERFORM INVERSIONS. THE ROTATING BLADES ARE ARRANGED IN A STAGGERED DESIGN, THEY ARE INTERCHANGEABLE AND RESHARPENABLE.



Traverse

THE FIXED BLADES ARE INSTALLED ON A CENTRAL TRAVERSE, WHICH IS ADJUSTABLE AND ALLOWS TO SET THE DISTANCE BETWEEN THE ROTARY AND THE FIXED BLADES IN A FEW MINUTES, THUS ENSURING AN ALWAYS WELL DEFINED CUT FOR A QUALITY TDF.



Screen

THE FINAL SIZE OF THE SHREDS CAN BE CALIBRATED ACCORDING TO THE PRODUCTION REQUIREMENTS OF THE CLIENT. WITH FOUR SCREENS INSTALLED UNDER THE ROTORS. THIS WAY IT'S POSSIBLE TO GET A PRODUCT SUITABLE TO BE USED AS AN ALTERNATIVE FUEL (SMALL, MEDIUM OR LARGE), OR SIMPLY TO DO A VOLUMETRIC REDUCTION.

Drive

THE DRIVE IS VIA HYDRAULIC MOTORS.



SHREDDING PLANT



SMALL PNEUMATICO DI CAMION





TG SERIES

Granulator mod TG 3500

THE TG GRANULATOR WAS BORN AS AN EVOLUTION OF THE TP SERIES PRIMARY SHREDDER. THE MAIN FEATURES OF THIS MACHINE ARE ITS ROBUSTNESS AND RIGIDITY, WHICH RESULT IN A BETTER RUBBER-CUTTING PERFORMANCE.

WHAT GUIDED THE DESIGN OF THE GRANULATOR WAS THE DESIRE TO PURSUE THE ECONOMIC SUSTAINABILITY OF THE CLIENT'S COMPANY, AS FAR AS THIS CONCEPT CAN BE APPLIED TO SUCH A MACHINE.

FOR THIS REASON, WE DECIDED TO CREATE A MACHINE CAPABLE OF REUSING THE WEARING PARTS THAT ARE DISASSEMBLED FROM THE PRIMARY SHREDDERS. THIS FACTOR IS VERY INTERESTING BOTH FROM AN ECONOMIC POINT OF VIEW IN TERMS OF SAVINGS ON CONSUMABLES, AND FROM THE POINT OF VIEW OF ENVIRONMENTAL PROTECTION FOR THE PROCESSING OF RAW MATERIALS.

THE NEGATIVE RAKE OF THE BLADES COMBINED WITH THE PERIPHERAL SPEED OF THE ROTOR MAKE IT POSSIBLE TO SEPARATE THE WIRE FROM THE RUBBER.

Technical Features

THICK ELECTRO-WELDED STRUCTURE ▶

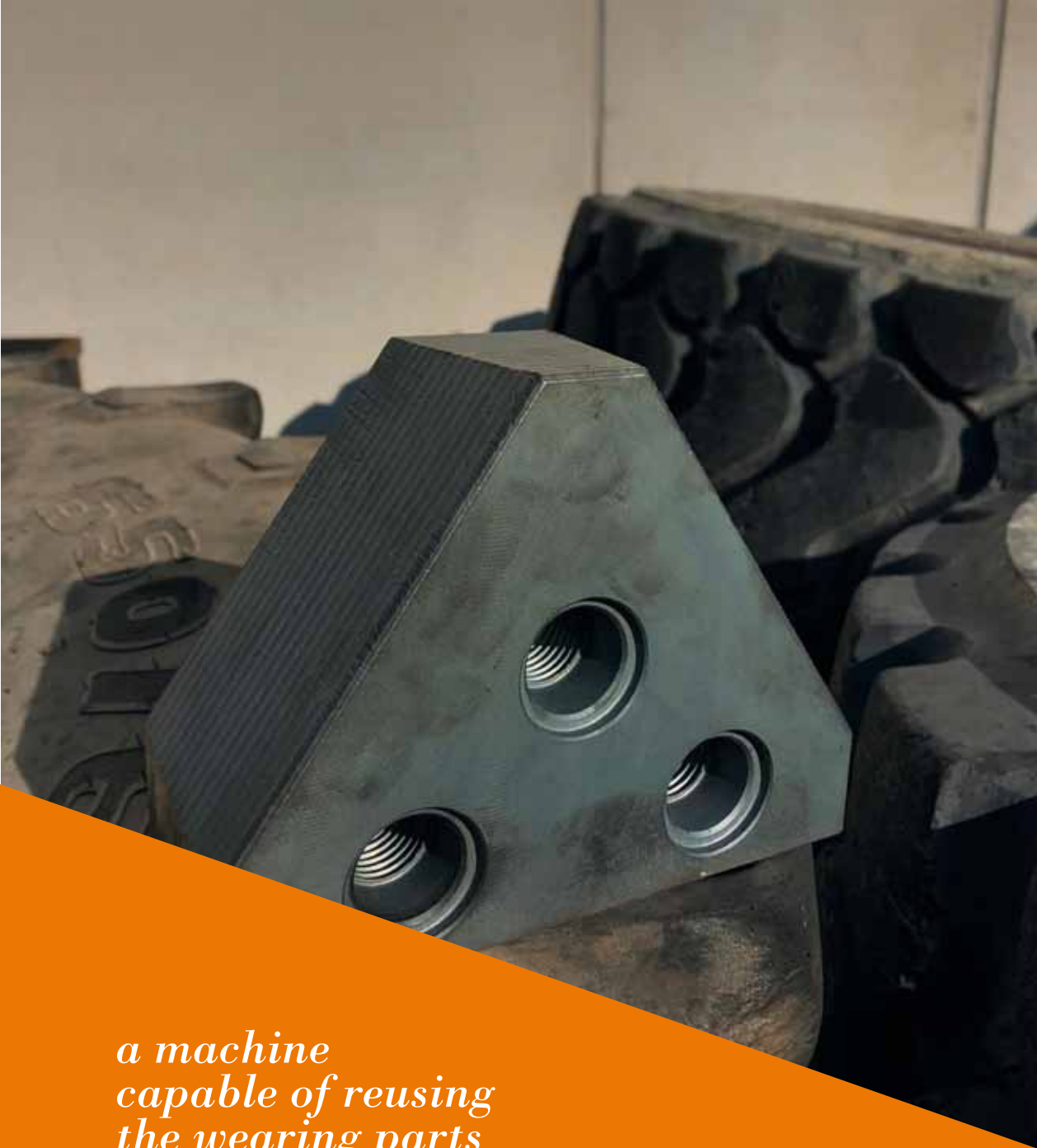
HIGH STRUCTURAL RIGIDITY ▶

ALLOY STEEL BLADES, INTERCHANGEABLE AND RESHARPENABLE ▶

ADJUSTABLE FIXED BLADES ▶

BELT TRANSMISSION ▶

**HYDRAULICALLY MOVEBLE CENTRAL TRAVERSE
FOR EASY MAINTENANCE** ▶



*a machine
capable of reusing
the wearing parts
that are disassembled
from the primary shredders*

COOLING

SPECIAL PROBES SEND THE TEMPERATURE DATA OF THE MACHINE DIRECTLY TO THE PLC, IN ORDER TO ALERT THE OPERATOR IN THE EVENT OF ABNORMAL OVERHEATING.

BODY

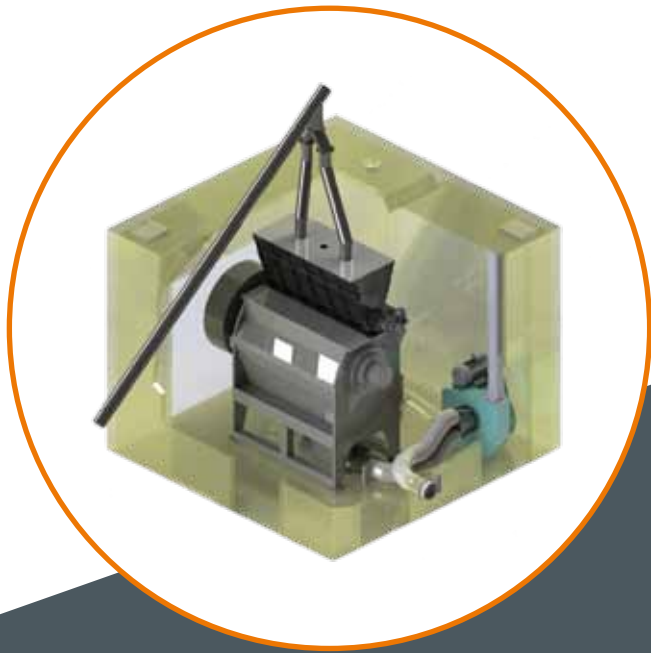
ROBUST STRUCTURE IN CARPENTRY, VERY THICK WELDED, MACHINED IN ITALY WITH CNC MACHINES. POSSIBILITY TO ADD WATER DURING THE SHREDDING TO BREAK DOWN THE DISPERSION OF THE TEXTILE-DUST IN THE ENVIRONMENT.

Strong Points

*Low energy
consumption*

*Steel-free chips, suitable
for AF and SRM*

*Exploitation of wire
liberated from shreds*



Technical Features

- THICK ELECTROWELDED STRUCTURE ▶
- HOLLOW ROTOR WITH STAGGERED BLADES, WITH CONSTANT PROFILE ON THE DIAMETER ▶
- HIGHLY ALLOYED STEEL BLADES, WHICH CAN BE SHARPENED ▶
- ROTARY BLADES MODEL MP2200 R2 CAN BE USED 4 TIMES BEFORE SHARPENING ▶
- AXIALLY ADJUSTABLE FIXED BLADES HYDRAULIC CYLINDER TO OPEN THE SCREEN HOLDER ▶
- BELT TRANSMISSION ARRANGEMENT FOR WATER COOLING OF BEARING SUPPORTS, BLADES, AND REAR CONVEYOR ▶

MP2200R: *ELT rubber refiners*

THE MOLINARI MILL IS HIGHLY POPULAR IN THE MARKET FOR ITS DURABILITY, EASY MAINTENANCE AND EXCELLENT PERFORMANCE IN THE REFINING OF RUBBER CHIPS.

THE WHOLE RANGE OF REFINERS DEDICATED TO ELTS RECYCLING IS PREARRANGED FOR THE COOLING OF THE FIXED BLADES, THE BEARING SUPPORTS AND THE REAR CONVEYOR. THE PATENTED ROTOR WITH STAGGERED BLADES ACHIEVES EXCELLENT PERFORMANCE IN TERMS OF PRODUCTIVITY AND LOW ENERGY CONSUMPTION.

THE CHARACTERISTICS OF THE MOLINARI ROTOR WITH STAGGERED BLADES ALLOW TO SIGNIFICANTLY REDUCE ENERGY COSTS.

THE LOWERING OF THE SCREEN-HOLDER SYSTEM BY MEANS OF AN HYDRAULIC CYLINDER ENABLES A RAPID AND SAFE CONTROL OF THE GRINDING CHAMBER. IT IS POSSIBLE TO WORK WITH SCREENS WITH HOLES OF A DIAMETER OF 3, 4, 5 MM OR ABOVE.

THE BLADES MADE OF HIGH-ALLOY SPECIAL STEEL CAN BE SHARPENED UP TO 6 TIMES BEFORE REPLACEMENT.



LOADING HOPPER

LOADING HOPPER SUITABLE FOR LOADING BY CONVEYOR BELT OR BY SCREW (DESIGNED BY MOLINARI).



UNLOADING HOPPER

UNLOADING HOPPER SUITABLE FOR PNEUMATIC TRANSPORT.



STRUCTURE

STRONG AND THICK STRUCTURE MACHINED IN ITALY WITH CNC MACHINES. LARGE FLYWHEEL TO INCREASE LINEARITY DURING THE OPERATION.



COOLING

PREARRANGED FOR WATER COOLING OF BEARINGSHOLDERS, FIXED BLADES, BACK SIDE OF THE BODY.



*Hollow rotor:
up to 30%
energy saving*

HOLLOW ROTOR WITH STAGGERED BLADES, PATENTED BY MOLINARI. IT PROVIDES ENERGY SAVINGS UP TO 30%.

INTERCHANGEABLE AND RESHARPENABLE BLADES. FIXED BLADES ARE AXIALLY ADJUSTABLE AND CAN BE RESHARPENED.



Technical Features

- THICK ELECTROWELDED STRUCTURE, MACHINED IN ITALY
- VERTICAL AXIS FLYWHEEL WITH SPECIAL CUTTING ANGLE BLADES
- VERTICAL AXIS STATOR WITH BLADES REGULATING SYSTEM
- AUTOMATIC LUBRICATION
- INTERCHANGEABLE AND RESHARPENABLE BLADES
- SOFT-START START-UP
- TOUCH-SCREEN CONTROL PANEL WITH OPERATION DATA READING

HELIVOS FE: *Wire cleaner*

HELIVOS FE IS A CLEANER FOR STEEL COMING FROM END OF LIFE TIRES. ITS COMPACT DESIGN ALLOWS TO IMPLEMENT IN ALREADY EXISTING PLANTS.

HELIVOS FE IS A VERTICAL-AXIS MACHINE. THE HEART OF IT CONSISTS OF TWO DISCS WITH OPPOSING PLANES WHERE THE BLADES ARE RADIALY INSTALLED. THE MATERIAL IS LOADED FROM ABOVE THROUGH AN OPENING ON THE STATOR DISC.

THE RADIAL ARRANGEMENT OF THE BLADES AND THE ROTATION SPEED OF THE ROTOR, MAKE THE MATERIAL LOADED BETWEEN THE TWO DISCS COME OUT FROM THE SIDES, PASSING THROUGH THE BLADES THAT REMOVE, BY RUBBING, THE RUBBER RESIDUES FROM STEEL WIRES.

THE OUTPUT IS A MIXTURE OF RUBBER GRANULES, TEXTILE AND CLEAN STEEL. AN EFFECTIVE MAGNETIC-SYSTEM ALLOWS TO SEPARATE THE STEEL PART FROM OTHER MATERIALS. IF NECESSARY, THE SAME MACHINE CAN BE USED ALSO AS A GRANULATOR FOR SHREDS.



UNLOADING HOPPER

UNLOADING HOPPER PREARRANGED FOR PNEUMATIC TRANSPORT



STATOR AND ROTOR

TWO DISCS WITH A DIAMETER OF 2000 MM WHICH MOUNT RADIALLY ARRANGED BLADES. CUTTING PLANES ARE MUTUALLY OPPOSITE AND PERFORM A SHEAR CUT.

THE MATERIAL IS INTRODUCED THROUGH AN OPENING LOCATED ON THE UPPER PART OF THE STATOR. THE ROTATION SPEED OF THE ROTOR IS 43 RPM. THE CENTRIFUGAL FORCE GIVEN BY THE ROTATION OF THE ROTOR ALLOWS TO UNLOAD THE MATERIAL FROM THE OUTER EDGE OF THE DISCS.



BODY

ROBUST STRUCTURE IN VERY THICK ELECTRO WELDED CARPENTRY, MACHINED IN ITALY WITH CNC MACHINES. POSSIBILITY TO ADD WATER DURING THE SHREDDING.

INPUT
STEEL FROM END LIFE TYRES



OUTPUT
STEEL, RUBBER AND TEXTILE



*Increased
profitability
thanks to the
steel exploitation*

TP / TG / MP / HELYOS Technical Features



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TP Series - Primary Shredders

ADJUSTABLE SPEED FROM 5 TO 10 RPM

TWO SHAFTS, INDEPENDENT ROTATION, ADJUSTABLE SPEED OF EVERY ROTOR

THICK ELECTROWELDED STRUCTURE, MACHINED IN ITALY

HIGHLY ALLOYED STEEL BLADES, RESHARPENABLE

ADJUSTABLE FIXED BLADES

ADJUSTABLE OUTPUT SIZE



| | TP2000 | TP2500 |
|---------------------|---------------------|---------------------|
| ROTOR LENGTH (MM) | 2000 | 2500 |
| ROTOR DIAMETER (MM) | 860 | 860 |
| DIMENSIONS (MM) | 5000 X 3300 X H3800 | 6800 X 4200 X H3800 |
| FIXED BLADES (N°) | 10 | 13 |
| ROTARY BLADES (N°) | 90 | 120 |
| POWER (KW) | 150-360 | 200-400 |
| WEIGHT (TON) | 40 | 52 |

TG Series - Rubber Granulator

BELT TRANSMISSION AND EPICYCLOIDAL GEARBOX

PERIPHERAL SPEED 100 RPM

ADJUSTABLE FIXED BLADES

| | TG3500 |
|---------------------|---------------------|
| ROTOR LENGTH (MM) | 3500 |
| ROTOR DIAMETER (MM) | 860 |
| DIMENSIONS (MM) | 7400 X 3300 X H3800 |
| FIXED BLADES (N°) | 19 |
| FIXED BLADES (N°) | 90 |
| POWER (KW) | 315 |
| WEIGHT (TON) | 5 |



MP Series - Refiner

PREARRANGED FOR COOLING

ADJUSTABLE OUTPUT SIZE

THICK ELECTROWELDED STRUCTURE, MACHINED IN ITALY

HIGHLY ALLOYED STEEL BLADES, RESHARPENABLE

BELT TRANSMISSION



| | MP1600R | MP2200R |
|---------------------|---------------------|---------------------|
| ROTOR DIAMETER (MM) | 650 | 850 |
| ROTOR LENGTH (MM) | 1600 | 2200 |
| DIMENSIONS (MM) | 2500 X 2600 X H4000 | 3200 X 3000 X H4500 |
| POWER (KW) | 132 | 250 |
| WEIGHT (TON) | 8.5 | 16 |

Helyos Fe - Steel Cleaner

LOW SPEED

ADJUSTABLE OUTPUT SIZE

THICK ELECTROWELDED STRUCTURE, MACHINED IN ITALY

HIGHLY ALLOYED STEEL BLADES, WHICH CAN BE SHARPENED

LOW ENERGY CONSUMPTION



| | HELIVOS FE |
|-----------------|---------------------|
| DIAMETER (MM) | 2000 |
| BLADES (N°) | 133 |
| DIMENSIONS (MM) | 3000 X 2000 X H3000 |
| SPEED (RPM) | 43 |
| POWER (KW) | 132 |
| WEIGHT (TON) | 28 |



your idea,
our SHREDDERS 

www.molinari-recycling.com