

*Production • Profit • Performance*

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**JOLIET**

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*Joliet Offshore Ventures*

## *Introduction*

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With a true world economy approaching, companies around the globe are reviewing and reanalyzing their business practices. Nowhere is this more evident than in the steel-making industry. Now days, as less an ego-booster and more of a scorecard, profit is taking a more important role in decision making. Joliet Offshore Ventures has the most efficient, cost-effective system for one of the key components in the art of steel making.

The scrap processing companies in the Europe and the United States have come a long way in the last 20 years. Automobile shredders and/or steel scrap shredders are the state-of-the-art scrap processing systems in Europe and the U.S. These systems utilize a method that produces premium grade scrap iron from marginal, contaminated raw material.

In the U.S. today, there are some 200-odd shredders recycling eight to 12 million tons of automobile and miscellaneous steel scrap materials. From the small 2000-horsepower shredder used on automobiles, miscellaneous tin and appliances to the 6000-horsepower "super shredders," that process automobiles, mixed unprepared #2 and #1 steel scrap and baled miscellaneous tin, the technology is available for an individual scrap yard and an electric arc steel furnace.

Joliet Offshore Ventures and its principals have the history and expertise to supply a complete state-of-the-art shredding system engineered to the individual needs of the scrap processor or a steel mill or a foundry. We have the design capabilities and, through our associates, the engineering expertise to help you grow the most cost-effective steel shredding plant in the world. The attached pictures and text tell the story of unprocessed raw material, shredders and finished premium-grade shredded iron for your steel-making facility or scrap yard.

Joliet Offshore Ventures has chosen to go offshore to fabricate and manufacture the finest scrap processing equipment for the Asian markets. We also are in operation to enter management contracts for design and implementation of shredding facilities at your location. Joliet Offshore Ventures would also entertain proposals for joint-venture operations from purchasing inexpensive, unprepared material anywhere in the world, to processing this material in a Joliet Offshore Ventures-designed system, and the shipment of premium shredded scrap at a more reasonable cost than directly-purchased finished product through a trading company or scrap broker in the U.S. or Europe. We offer maximum control over your own destiny and material cost.



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## *System Function and Description*

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An efficient cost-effective, shredding system usually consists of the following equipment.

- Infeed conveyor: A steel flite conveyor 96 inches wide using Caterpillar track component parts, usually powered by a hydraulic motor or gear drive. PLC controls transfer raw material to the feed chute of the shredder at a controlled feed rate.



- Feed chute and feed rolls: A metered feed rate by hydraulically-controlled feed rolls forces raw material into the shredder. Coupled with the flow of material from the infeed conveyor a steady rate of production through the shredder is achieved under the watchful eye of an operator governed by the load on the main shredder drive.

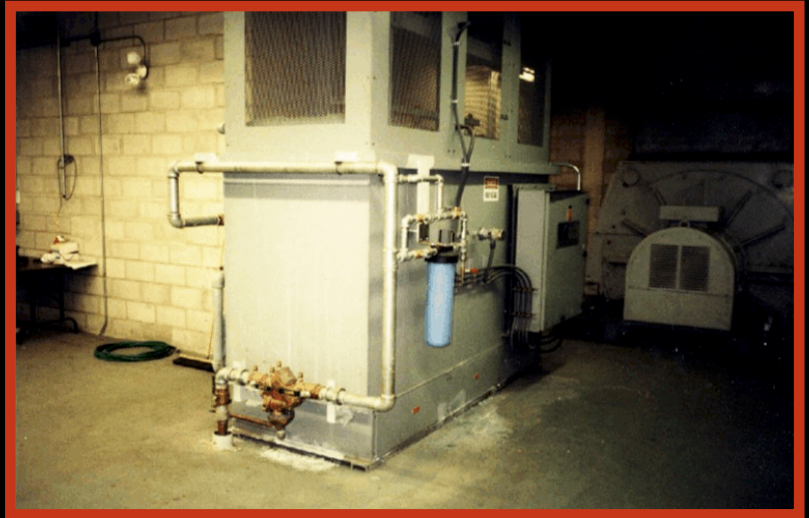
- Hammermill shredder: There are basically three size shredders that comprise about 90 percent of all the shredders in the world; the 80104, 98104, 120104 or some variation according to manufacturer. The first set of two or three numbers, i.e. 98 in 98104, is the diameter of the hammer circle of the rotor (hammer swing) in inches. The 104 is the number of inches of the width of the mouth of the shredder (shredder feed opening). The 80104 (74104) is powered by a wound rotor motor of 1500 to 3500 horsepower, giving a productive capacity of 2500 to 7500 tons per month of productive output. The 98104 (96104) with a horsepower range of 4000-6000, will produce 5000 to 12000 tons per month. The 120104 is the “super shredder.” It is driven by a 6000-7000 horsepower motor producing 12000 to 30000 tons per month. There are many variations from scrap yard to scrap yard to steel mill or foundry in the utilization of a particular size shredder. The smaller 80104 usually processes whole automobiles and scrap tin, while the 120104 has the inertia to shred 6,000 to 8,000-pound bales, multiple flattened cars and unprepared heavy scrap. In their various raw material forms, more scrap can be imported to the shredder over greater distances, thus more economically.

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## *System Function and Description (Continued)*

- **Shredder Drive:** Most shredders are driven by a wound rotor motor with a liquid rheostat controller to limit overloads and in-rush current. All shredder motors are high-torque special duty motors to withstand shock loads and over-current demand. Where local power companies will allow the use of an induction motor, it is the preferred power if coupled with a reduced voltage starter. In cases where sufficient high-voltage power is unavailable, shredders may be coupled to diesel or natural gas engines through a V-belt compound.



- **Material handling Equipment:** Rubber belt conveyors transfer shredded iron, nonferrous metal and non-metallic mix of material to a magnetic separation system. Steel is picked up by an electro-drum magnet to be transferred to a cascade air cleaner (a giant vacuum cleaner) where light non-metallic material is sucked into a cyclone recovery system. In the greater-producing machines, there may be a series of drum magnets, each succeeding separation cleaning the steel as it passes from one magnet to the other. Nonferrous metals and non-metallic material is transferred to a separate recovery area to be processed into a pure stream of nonferrous metal and disposable non-metallic residue. The 97 percent ferrous content stream of shredded material may go through a manual picking station where copper residue and other nonferrous attached to steel will be hand separated. The finally-separated and cleaned steel shredded scrap is transferred to a stock pile by means of a radial stacker.

- **Nonferrous recovery** is accomplished by means of an “eddy-current” separation which repels the metallic content out of the raw-metallic stream. Usually this is a stand-alone system where recovery is accumulated over a period of time to be processed all at once.

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## *System Function and Description (Continued)*

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• There are several sub-systems that affect the operation of the shredder in maintaining the equipment, cleaning the shredded product and controlling air quality. A water-injection system into the shredder controls dust and makes for better air separation at the cascade system. It also limits the severity of explosions in the mill caused by dust and vaporized hydrocarbons (motor fuels, motor oils, paint thinner and other volatiles



unnoticed in scrap). In areas with stringent environmental requirements, there are venturi scrubbers and dust and smoke suppressant appliances for the shredding application.

Joliet Offshore Ventures will endeavor to design the best shredding system keyed to the needs of any client. We are ever-mindful of safety for workers and a cleaner environment. A shredder is the ultimate recycling tool. By melting scrap in a steel-making furnace, you save precious natural resources; a ton of coke, a ton of iron ore and a ton of limestone. The scrap doesn't fill up over landfills and clutter our communities. Shredded iron acts as a cushion in the melting pot of the steel furnace and fills the void between steel plate and steel beam scrap. The use of shredded steel scrap is a win-win situation.

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## *Budgetary Considerations*

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Cost of shredding in a typical U.S. shredder

- Electrical Power: 35 to 50 KWH per metric ton of finished shredded iron.
  - \$3.00USD per ton for wear parts (hammers, graters, pins, liners)
  - \$5.00USD per ton labor (cranes, loaders, operator)
  - \$3.00USD maintenance (welding, lubrication, mechanical)
- Cost of construction and installation in U.S.
  - Foundations: 1200 to 1400 yards of concrete
  - Erection and installation: 5000 man hours.
  - Electrical supply: \$75,000 to \$125,000USD.
  - Site work (site specific)
  - Paving (finish-product storage): \$600,000USD
  - Engineering: Variable
  - Commissioning: Variable
- Cost of equipment for shredding and material-handling in a U.S. operation
  - Shredder and down-stream material handling equipment: \$1.5 to \$3.5 million USD.
  - Drive components and electrical equipment: \$500,000 to \$700,000USD.
  - Maintenance equipment: \$50,000USD.
  - Cranes, loaders, welders, etc.: \$1.5 million USD.

Note: Variables in above equipment costs; component fabrication in client's home country, substituting for some used or rebuilt components and mobile equipment.



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*Experience • Dedication • Guaranteed Results*

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Let Joliet Overseas Ventures participate in your shredding operation. We can furnish equipment and drawings for fabrications. We will be responsible for equipment and engineering wherever equipment is procured. We will oversee construction and installation. We will train personnel. We will manage facility on contract basis. We will broker raw material for transport to host country, "cheaper unprepared raw material, cheaper material cost of new steel."

Under some conditions, we might even consider entering into a joint venture agreement for a period of time.

We can save you money, and you will not buy a better system anywhere suited specifically to your needs.



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## *Joint Venture Possibilities*

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- **Shredder operation at melting facilities; steel mill, foundry, stand-alone recycling scrap yard.**
- **Engineering and fabrication of shredding systems in host country.**
- **Marketing and brokerage of importation of raw material for shredding in unprepared state.**

The logo for JOLIET is rendered in a bold, red, italicized sans-serif font. The letters are thick and closely spaced, with a slight slant to the right. The 'O' is particularly stylized, with a horizontal bar across its middle. The overall appearance is dynamic and industrial.

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