Solutions for Recycling of Waste Tires

Waste Tire Recycling Equipment
Crumb Rubber Processing
Equipment Financing
Consulting Services
Introduction of Welantech International
Welantech International of Taiwan is a leading supplier of rubber and plastic processing equipment with offices in Taiwan, China, and Austria. The company has more than 25 years experience in supplying its customers with high quality solutions in the petrochemical, chemical, plastics, rubber, and other related industries!

Benefits of working with Welantech
Welantech International has great experience in providing the best possible solutions to its customers. We will always offer our customers the most suitable quality at the most suitable price, in order to guarantee the shortest return on investment (ROI) for our customers!

Welantech is also a strong partner who has a deep interest in the prosperity and future development of its customers. At Welantech we do not see customers as customers, but rather as partners for a long term cooperation and joint development!

Some of our long-term customers:
Introduction of Waste Tire Recycling
In general, processed waste tires refer to applications of chipped tires or crumb rubber. Crumb rubber, also referred to as ground rubber, is a wire-free fine rubber particle made by size reduction from scrap tires. Various size reduction techniques can be used to achieve a wide range of particle sizes down to 600 microns or less. Chipped tires also result in wire-free shredded tire particles of relatively large particle size compared to crumb rubber. Compared to the applications of whole tires, crumb rubber has larger and broader potential markets.

Rubber Modified Asphalt
As one major application of crumb rubber, rubber modified asphalt could have the largest market for waste tire recycling. Moreover, this application results in an important improvement for road construction technology. Rubber modified asphalt has been known to improve the rheological properties at low and high temperatures and provide a life up to three times longer than conventional asphalt. Even though rubber modified asphalt may cost more than regular asphalt, the advantages may justify the added cost. Recent studies have shown that chemically-modified crumb rubber asphalt can overcome several problems with rubber modified asphalt and improve the required properties for road construction (see picture).

Picture (left):
After 8 years the improved quality of CR Modified Asphalt becomes visible. The left side of the picture shows regular asphalt, while the right side shows CRM Asphalt.
Tire Recycling System - TRS800

Specifications
Capacity: 800-1000Kg/h
Floor Space Requirement: 30m(L)x18m(W)x6m(H)
Labor Requirement: 3-4 operators per shift
Operation: up to 24 hours

Processing Capacity
120~160 units of passenger car tires/hr
15~20 units of steel truck tires/hr

Finished Products
Crumb Rubber: 650~800 Kg/hr from steel truck tires
450~600 Kg/hr from other types of scrap tires
Steel Wire: 160~240 Kg/hr is processed from steel truck tires
80~120 Kg/hr is from other types of scrap tires
Nylon: 20~300 Kg/hr (difference is caused by contents of tires)
Tire Recycling System - TRS1200

Specifications
Capacity: 1600-2000Kg/h
Floor Space Requirement: 30m(L)x22m(W)x6m(H)
Labor Requirement: 5-6 operators per shift
Operation: up to 24 hours

Processing Capacity
125~300 units of passenger car tires/hr
30~40 units of steel truck tires/hr

Finished Products
Crumb Rubber: 1200~1600 Kg/hr from steel truck tires
800~1200 Kg/hr from other types of scrap tires
Steel Wire: 300~500 Kg/hr is processed from steel truck tires
150~200 Kg/hr is from other types of scrap tires
Nylon: 20~500 Kg/hr (difference is caused by contents of tires)
Description
The Precise Steel Separator is used to reduce the rubber contamination of the steel to less than 0.1-0.2% (from 2-8%).

Only necessary if very pure steel is needed from the process!

Product Yield

<table>
<thead>
<tr>
<th></th>
<th>Truck Tires</th>
<th>Car Tires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crumb Rubber</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Steel</td>
<td>27%</td>
<td>15%</td>
</tr>
<tr>
<td>Nylon</td>
<td>3%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Super Micro Grinder

Specifications
This optional equipment allows the crumb rubber to be further processed into rubber powder.
Floor Space Requirement: 3.8m(L)x2m(W)x4m(H)
Water Cooling System: 1.1m(L)x1m(W)x1.6m(H)

Processing Capacity
Final Particle Size 20 mesh: 200 Kg/hr
Final Particle Size 30 mesh: 120 Kg/hr
Final Particle Size 40 mesh: 80 Kg/hr

Conversion of Mesh to millimeter

<table>
<thead>
<tr>
<th>Mesh</th>
<th>mm</th>
<th>Mesh</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.50</td>
<td>5.66</td>
<td>4.00</td>
<td>4.76</td>
</tr>
<tr>
<td>5.00</td>
<td>4.00</td>
<td>6.00</td>
<td>3.36</td>
</tr>
<tr>
<td>7.00</td>
<td>2.83</td>
<td>8.00</td>
<td>2.38</td>
</tr>
<tr>
<td>10.0</td>
<td>2.00</td>
<td>20.0</td>
<td>0.84</td>
</tr>
<tr>
<td>30.0</td>
<td>0.59</td>
<td>40.0</td>
<td>0.42</td>
</tr>
</tbody>
</table>
Value Added Products
Welantech International also offers solutions for the processing of recycled crumb rubber into rubber sheets, which can be used for various applications including:

- Flooring
- Roofing
- Acoustic panels (sound insulation)
- Playground surfaces
- Sport Mats
- Impact protection
- Etc.

Welantech’s Solution
Our solution is able to utilize up to 75% recycled rubber, while the remaining 25% needs to be virgin rubber (EVA), or LDPE as binding material. This allows the recycling company to produce value added products, which have a wider marketability than crumb rubber itself!

The advantages of using Welantech’s solution are:

- No rubber degradation
- No smell
- Up to 80% of recycled rubber material
- 100% recyclable
- Thermo-formable
- Wide range of application

Technology Used
Welantech International utilizes a new type of rubber extruder and calendar rolls, which allow easy extrusion without high temperatures, thus preserving the rubber characteristics.

Technical Parameters:
Product Width: up to 2000mm
Product Length: up to customer’s requirements
Product Thickness: 0.5-5mm
Extrusion Capacity: up to 1200kg/h
Rubber Floor Tiles
Rubber floor tiles can easily be utilized for playgrounds, sport fields, and many other applications.

Process Description
The crumb rubber is fed into the press in batches. The electrically heat controlled press will form the crumb rubber to fit the mold at approximately 150°C. Each batch takes 5-6 minutes to finish! Different master batches can be added in order to achieve the desired color!

Available Capacities
Currently Welantech International is able to offer two capacities for the presses:
- 50kg/h single press (1 mold per machine)
- 200kg/h multi press (4 molds per machine)

Multiple presses can be combined to reach higher capacities and to produce different forms at the same time. For example, in order to reach a processing capacity of 1,000kg/h, the customer has the option to install 5x multi presses (with 4 molds each), or 20x single presses. This means that the customer has the option to produce either 5 different products, or 20 different products at the same time!

Raw Material Utilization
The press can utilize up to 97% recycled rubber crumbs, while the remaining 3% should be binding material (i.e. Poly Urethane, EVA, etc.). The final formulation will be based on customer's required end products, as different materials have different characteristics, and can be used for different applications (i.e. soft material for fall protection on sport fields, waterproof for insulation, etc.).
Welantech’s Leasing Option

Welantech International is cooperating with reputable banks to offer leasing options on its equipments for selected markets and countries. These options are available through Welantech’s good relationship with leading financial institutions.

Available Countries
Currently Welantech International is cooperating with financial institutions for the following countries/markets:

- Austria
- Poland
- Hungary
- Czech Republic
- Slovenia
- Slovakia
- Croatia
- Romania
- Bulgaria
- Italy
- Germany
- Ukraine
- Bosnia and Herzegovina
- Serbia and Montenegro
- Latvia
- Russia
- Turkey

Leasing is made available by(*):

* All leasing offers are extended directly by the banks. Approval or disapproval, as well as leasing conditions cannot be influenced by Welantech International. Leasing application does not automatically qualify for leasing approval, and evaluation by the potential client will be carried out through the banks. UniCredit Logo and Raiffeisen Logo are trademarks of the respective companies.
Welantech Consulting Service

Welantech’s Consulting Service
Welantech can offer consulting services to the Buyer for the management of the Buyer’s plant, factory, or business as described in the management proposal. Welantech will offer its services in order to assist the Buyer in business decisions, and with the management of the Buyer’s daily operations.

The standard term for consulting services is up to two years after plant start-up. This allows the Buyer enough time to successfully start operation of the recycling business and to get familiar with the plant’s operation as well as the tire recycling industry!

This allows the Buyer to start this exciting business with the knowledge that an experienced partner is always there to give the right advice!

Services include
Welantech International will assist the Buyer with:

1. Plant construction
2. Plant operation
3. Personnel selection
4. Further processing of rubber
5. Sale of final product
WELANTECH INTERNATIONAL GMBH
Mariahilferstrasse 121a /6T
1060 Vienna
Austria
Tel: +43 (1) 595-6246
Fax: +43 (1) 595-6246 x43

WELANTECH INTERNATIONAL CO., LTD.
10th Floor, No. 40, Sec 1 Hsin Nan Road
Tao Yuan 33858
Taiwan
Tel: +886 (3) 322-3208
Fax: +886 (3) 322-3218

www.welantech.com
recycling@welantech.com