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New West Gypsum Recycling

- Founded in Vancouver, Canada
- Family-owned business
- Over 37 years of drywall (gypsum) recycling experience
- Over 20 years of international experience
- Global capacity is now 800,000 tonnes per year - over 6,000,000 tonnes recycled to date
- Patented process, proprietary equipment
- Eight facilities in operation (5 in Europe and 3 in North America)
- Primary customers are drywall manufacturers in Europe and North America

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Plant Locations

- Bristol - UK
- Oslo – Norway
- Antwerp - Belgium
- Paris - France
- Cologne – Germany
- Vancouver - Canada
- Calgary – Canada
- Toronto - Canada



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New West Gypsum Recycling

- Drywall recycling – separates paper from the gypsum core and the gypsum is used to manufacture new drywall
- Operates like a transfer station accepting drywall scraps for a tipping fee (primary source of revenue)
- Does not offer bin services in competition with waste companies
- New West is a processor not a waste management company
- Fabricates own equipment meeting world technical and safety standards, but does not sell equipment
- Provides a turnkey solution developing agreements with scrap suppliers and supply agreements with users
- Business operations meet local requirements – not one size fits all

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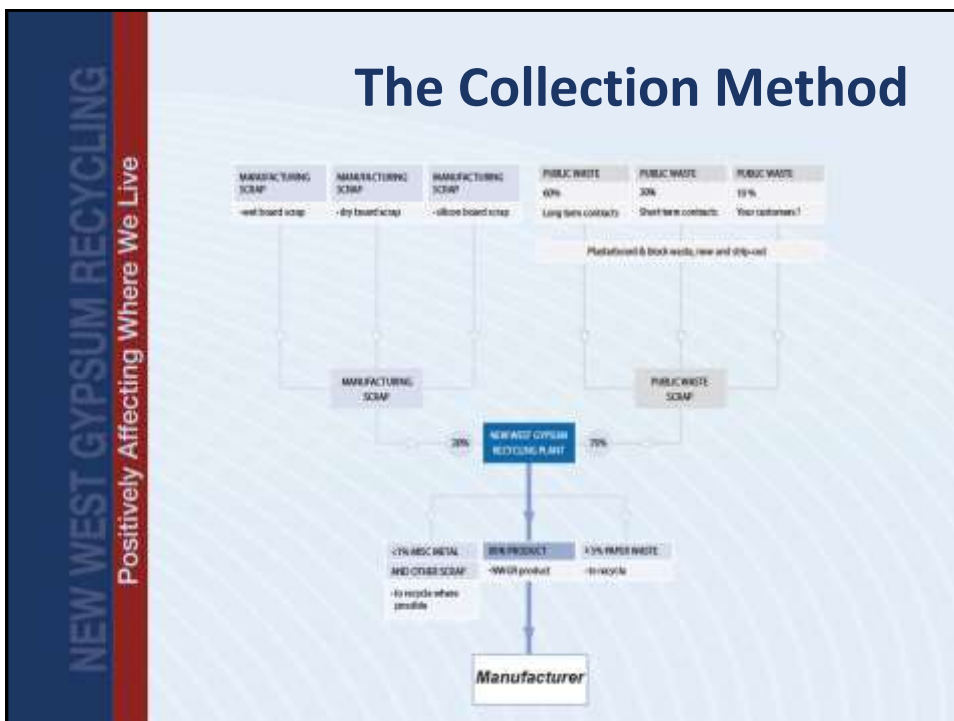
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Future Sources of Gypsum

- Gypsum rock
 - Source – fewer mines and more distant (e.g. Middle East)
 - Cost - Commodity & transport cost are increasing
 - Quality - varies – purity and non gypsum constituents (e.g., clay)
- Synthetic (DSG, FGD)
 - Source – fewer coal fired generating stations, less gypsum
 - Cost – low but increasing
 - Quality – high gypsum purity and low level of non gypsum constituents
- Recycling
 - Source – increased recovery and closed loop recycling
 - Cost – increasing but at lesser rate than other sources
 - Quality – continual improvement

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DRIVERS - Sources of Recyclable Gypsum

- Landfill Bans
 - British Columbia - METRO Vancouver total ban, Massachusetts partial ban
- Legislation:
 - Europe – EWC 17-08-02 – narrow definition of waste
 - Germany – useful use - Alignment
 - Ontario regulations 102/94 & 103/94
- Disposal Options
 - Costs: mixed C&D vs Source separation only
- Cost and availability of gypsum supply in the market

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Let's Talk About Processing



The image shows a yellow CAT wheel loader positioned next to a large blue industrial container. The loader's bucket is raised, and it appears to be in the process of moving material from the container. The scene is set outdoors on a paved surface.

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Recycling Process



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Recycling Process Considerations

- Gypsum Scrap Source
 - Contamination has a significant impact on process (e.g., metal, ceramics)
 - Special care must be taken due to potential asbestos contamination in deconstruction material
- Processing equipment
 - Ability of the equipment to process wet waste and products with facings other than paper
- Bulky product
 - Storage issues – in most regions processing and storage must remain indoors

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Recycling Outputs

- Supply and Demand Management
 - Matching inflows and outflows of material
- Knowledge
 - Experience handling different types of gypsum waste makes a difference
- Product Quality and Quality Control
 - Meeting customer specifications for product and maintaining rigorous QC process and testing regimen

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Drywall Manufacturing Effects on Recycling

- Gypsum Source
 - Gypsum purity and types of contaminants (e.g. clay) have a significant impact on process and % of recycle use
- Processing equipment
 - Calcining equipment varies among plants – some better than others for recycling
- Recycle Quality
 - Process impact of paper content and other constituents in recycled gypsum added during the board making process
 - Particle size (related to board plant grinding capability)

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Downcycling: Never Gypsum Again



- Other Industrial Use
- Land Application
- Useful use/Daily
- landfill cover

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Economic Issues

- Tipping Fee
 - Tipping fees vary depending upon market
 - Landfill ban versus availability of low-cost landfill options
 - Actions of the waste haulers
 - Competition for recycled gypsum among users
- Freight cost
 - Low value to weight ratio for gypsum product – restricting geography to local use
 - Recycling facility location – near generators and/or near user
 - Logistics issues have a major impact on recycling operation
- Operating costs
 - Tipping fees required to cover overhead and operating costs similar to a waste transfer station
 - Can vary greatly depending upon operating location
- Recycle Product Revenue
 - Lower than cost for virgin material which is already a low-cost commodity
- Critical Mass
 - Significant tonnage required to cover fixed and operating costs

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What should we do to achieve recycling success?

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Government:

- Introduce effective policy measures to promote recycling activities, highest or best use, and the circular economy, including market development programs
- Facilitate the development and promotion of standards, methods and quality criteria relating to recycled gypsum
- Equitably and consistently enforce regulations
- Provide incentives for recycling practices and in particular for improving collection systems and showcasing Best Available Technology (BAT)
- Environmental Focus vs Industry Lobby
- Decrease the risks of using recycled materials (de-risk)
- **Never accept 'less than green'**

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Industry-Drywall Manufacturers:

- Recognize gypsum waste as a resource: urban mining
- Design products enabling high-quality recycling of materials and substituting additives enabling cleaner material cycles
- Share responsibility for and the stewardship of the waste arising from products
- Develop green procurement policies, in particular to support new recycling facilities
- **Never go for 'less than green'**

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Industry-Drywall Customers:

- Recognize gypsum waste as a resource: urban mining
- Collaborate with their waste management company to facilitate recycling activities on construction sites
- Embrace a company culture that actively promotes a circular economy
- Be a leader and promote the preservation of resources by undertaking recycling activities on construction sites
- Establish green procurement policies and support manufacturers that use recycled market waste
- **Never go for 'less than green'**

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Waste Management Companies:

- Recognize gypsum waste as a resource: urban mining
- Avoid mixing and contaminating waste materials
- Collaborate with other stakeholders in the value chain
- Provide an efficient and effective collection infrastructure
- Facilitate the collaboration between companies whereby the wastes or by-products of one become a resource for another
- Facilitate the recapture of resources by preventing leakage
- **Never go for 'less than green'**

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You:

we all know what to do - we just
have to do it!

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