DIRTT’s Sustainability Story
This is your in-depth look at how DIRTT walks the sustainability talk. It’s a core pillar at DIRTT and something we live and breathe daily. Sustainable behaviors are built into our processes, from the design to installation and beyond. We help our clients have more sustainable projects and spaces for the long term.

Questions? GreenTeam@DIRTT.com
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DIRTT is revolutionizing the construction industry. And the industry needs a good revolution. The material waste, energy use, and carbon footprint of constructing buildings are just some of the things that make it an industry in deep need of a reset. Simply recycling and using less intensive materials won’t cut it. We need to change the entire approach. The result: Doing It Right This Time.

DIRTT walks our own talk. Each of us, in every part of the company, constantly searches for and implements better ways to deliver sustainable construction projects. We keep an eye on ways to minimize our own waste and energy use during production.

How we’re doing it right for our Clients’ sustainability needs

Construction is one of the most wasteful industries. Approximately 40% of all materials in the landfill come from conventional construction, renovation and demolition. Virgin materials are cut down to size and the remnants disposed of. Wire, drywall, wood, paint, carpet – all these things end up in a garbage bin. A bin you pay for. Then you pay for those bins to be transported elsewhere and dumped. This all happens whether you’re recycling or not. And if you are recycling the waste – it now has to be transported somewhere else and energy is used to turn it into something else.

What if you could minimize what goes in the bins and reduce their number?

DESIGN

DIRTT produces custom designs driven by our clients. Our regional Partner Network is there to help you at a local level and our job is to create a solution that reflects your needs and evolves in real time with your vision. We produce your completely unique and precise designs through our software platform called ICE®. Everyone can explore the design in a vivid and interactive 3D videogame experience. Simultaneously, ICE responds to your changes in the design with instant pricing, specifications and production data for manufacturing.

VIRTUAL REALITY

ICE software extends to virtual reality, creating an experience for clients where they truly understand and feel their space. Having the opportunity to walk through your future space in VR helps prevent change orders once the project is complete. This helps save time, money, materials and energy through all stages of the project.

Our virtual interactive technology mitigates the need for producing and building physical mock-ups that waste valuable time, materials and energy. Mock-ups typically do not end up as part of the finished design and are usually disposed of, so we’re also reducing waste.
MANUFACTURING

Once approved, your design feeds the production floor machines directly. The process cuts project materials to your custom sizes, mitigating material waste and reducing human error. In as few as two-weeks, your interiors are on their way to you.
INSTALLATION

The construction process on site is a relatively simple process of connecting preassembled components. The result is a move-in ready space with virtually zero material waste on the jobsite and up to one third faster than conventional hard-built construction.

The DIRTT method of construction assists other sub-trades on your project with their sustainability goals too. When 95% of your interior space is produced off-site, the jobsite itself stays clear and empty. This means everything from flooring materials to lights and HVAC can be installed faster with fewer and smaller crews. On conventional jobsites, large crews drive to and from site over a long time period, contributing to global emissions. DIRTT requires fewer tradespeople, over a shorter time period, reducing your environmental impact. Trades are able to minimize material waste because they aren’t cutting down and installing their materials around walls, doorways, millwork.

CLIENT USE

Now the sustainability story transfers from DIRTT to your organization. Once moved in, your interior environment is adaptable. It responds with you as you respond to opportunities, new demographics, new technologies and life in general. All without demolition and rebuilding. It’s a sustainability story with a powerful ROI story. Helping you to do more with less.

If you need to make a major change and can’t use your DIRTT, you can work with your local DIRTT Partner to donate it to a local non-profit. And if worse comes to worse, it is Designed for Disassembly – so you can recycle the solution through proper channels.

STAYING NIMBLE LEADS TO A LONG, HEALTHY LIFE

This may sound like a crazy business plan – we don’t want you to ever replace all your DIRTT.

The average commercial lease is five years, which means renovations are occurring regularly with conventional construction. Alternatively, DIRTT solutions offer easy flexibility and adaptability for a space, so you can negotiate better rates with your landlord to stay longer, knowing your DIRTT solution will grow with you. Repurpose your DIRTT to suit you as your needs change. Little things like moving or adding electrical outlets and TV screens. Big things like turning a large conference room into more workspace. Your space easily integrates new and legacy furniture, fixtures and technology. No matter what they invent next.

Speaking of what’s being invented next… We’ve designed all DIRTT components to be non-generational. Add new DIRTT and it will fit with your old DIRTT. Always.

On some days, like when your plumbing springs a leak, you will be very pleased you no longer have to tear apart walls, just to get at the pipes, and then gather all the trades required to patch the hole and make it look like the rest of the wall. Because you chose to build your space sustainably, with DIRTT, your interiors have accessible cavities. Fixes are easy. Time is saved. Money is well spent. Less waste generated.

The U.S. Green Building Council (USGBC), finds the construction industry accounts for 40% of worldwide energy usage, with estimations that by 2030, emissions from commercial buildings will grow by 1.8%. Between now and 2035, of the 900 billion square feet of buildings in the world, 16% of the energy consumption will be from the operation of the buildings and 84% will be from the construction of them.

We need to change the way we build, renovate and maintain buildings. DIRTT can help.
Sustainable components

**DIRTT Floor** – At less than 3-inches in height, you can run plug & play power and data at your feet while keeping it accessible for any changes. The minimization of space for your cabling may also be a sustainable benefit for those constructing new buildings.

**Plug & Play Power and Data** – Place power and data exactly where you need it and be comforted in the fact you can easily add more or move it around when needed. Everything arrives onsite at exact lengths so no wires or conduit are cut and disposed of.

**PON** – Passive Optic Networking for your data means 90% less wiring, less real estate for racks and cables, and less energy needed for cooling. The performance is better and your private information is more secure. A 1,000 feet CAT6 cable weighs 24 pounds on average. CAT 6A cables are about 49 pounds per 1,000 feet, while fiber optic cables are less than 12 pounds per 1,000 feet. Fiber optic cables use 50% less plastic than a traditional copper LAN and no copper. A PON deployment reduces floor space used for networking by approximately 69% and reduces the cooling energy cost by approximately 74% since all the splitters are passive and require no cooling.

**Power Consumption** – Passive Optical LAN is a more energy efficient solution than traditional copper switched networks. A conservative estimate shows that the POL network option uses 1941 Watts compared to 4320 W of a traditional network.

**TAOS Wall** – This is a one-sided DIRTT solid wall that clads over existing walls giving them improved performance while it makes your real estate more efficient. Run power and data, integrate furniture, fixtures and equipment in a previously low performing part of your space. By using your real estate as efficiently as possible, you can take advantage of your cubic feet and stop paying for wasted, unusable space, reducing your operational costs.

**Design for Disassembly (DfD)** – Ever tried to disassemble and reuse drywall? Or your electrical outlets? DIRTT is Designed for Disassembly, meaning that every component can be disassembled and individually managed. This allows for materials to be reused, reconfigured, and eventually recycled at end of life. Environmental consideration during the initial design process is essential to creating a sustainable solution. Reference Appendix for DfD drawings.
Original causes of construction waste

<table>
<thead>
<tr>
<th>Origins of Waste</th>
<th>Causes of Waste</th>
<th>DIRT TT Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractual</td>
<td>• Errors in contract documents</td>
<td>• ICE Software is a fully integrated tool that manages the entire process of design, instant pricing, VR and 3D views. ICE outputs precise manufacturing information for the factories, helping the entire design coordination process while reducing errors in design and manufacturing</td>
</tr>
<tr>
<td></td>
<td>• Contract documents incomplete at commencement of construction</td>
<td>• ICE software, 3D views and Virtual Reality ensure clients get the best feel of their space prior to order and build out, eliminating design changes down the road that generate waste and require new materials.</td>
</tr>
<tr>
<td>Design</td>
<td>• Design changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design and construction detail errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Unclear/unsuitable specification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Poor coordination and communication (late information, last minute client requirements, slow drawing revision and distribution)</td>
<td></td>
</tr>
<tr>
<td>Procurement</td>
<td>• Ordering errors (i.e., ordering items not in compliance with specification)</td>
<td>• DIRT TT mass manufactures custom solutions and has purchasing power to reduce costs and manage order quantities.</td>
</tr>
<tr>
<td></td>
<td>• Over allowances (i.e., difficulties to order small quantities)</td>
<td>• ICE outputs precise procurement information allowing DIRT TT to purchase only the required materials for any one job with minimal overage.</td>
</tr>
<tr>
<td></td>
<td>• Supplier errors</td>
<td>• The output from ICE is nearly instantaneous reducing the processing time and production lead-times.</td>
</tr>
<tr>
<td>Transportation</td>
<td>• Damage during transportation</td>
<td>• We have refined our packaging process to ensure there are very limited damages.</td>
</tr>
<tr>
<td></td>
<td>• Insufficient protection during unloading</td>
<td>• DIRT TT has three factories, strategically situated, to serve clients in all major North American markets. This reduces the distances between manufacturing facilities and jobsites.</td>
</tr>
<tr>
<td></td>
<td>• Inefficient methods of unloading</td>
<td>• Local vendors – DIRT TT purchases materials from vendors local to each factory, reducing the shipping distances for materials.</td>
</tr>
<tr>
<td>On-site management and planning</td>
<td>• Lack of on-site waste management plans</td>
<td>• Partnerships with our carriers allow us to work closely with them to reduce damages.</td>
</tr>
<tr>
<td></td>
<td>• Improper planning for required quantities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lack of on-site material control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lack of supervision</td>
<td></td>
</tr>
<tr>
<td>Material Storage</td>
<td>• Inappropriate site storage space leading to damage or deterioration</td>
<td>• DIRT TT factories optimizes material use, and the DIRT TT solution arrives onsite to the exact size specifications. This means materials do not have to be cut onsite, reducing waste generation and saving clients from paying hauling and dumping fees</td>
</tr>
<tr>
<td></td>
<td>• Improper storing methods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Materials stored far away from point of application</td>
<td></td>
</tr>
</tbody>
</table>

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5This table has been expanded upon from its original source: Dajadian, Shant A., and Daphene C. Koch. "Waste Management Models and Their Applications on Construction Sites." International Journal of Construction Engineering and Management, 2014, 91-98; doi:0.5923/j.ijcem.20140303.02
### Original causes of construction waste cont’d\(^5\)

<table>
<thead>
<tr>
<th>Origins of Waste</th>
<th>Causes of Waste</th>
<th>DIRTTE Mitigation</th>
</tr>
</thead>
</table>
| Material Handling| • Materials supplied in loose form  
• On-site transportation methods from storage to the point of application  
• Inadequate material handling | • Arriving installation ready, reduces the chances of losing or mishandling the solution  
• Certified teams help to further prevent inadequate materials handling |
| Site Operation   | • Accidents due to negligence  
• Equipment malfunction  
• Poor craftsmanship  
• Time pressure | • Limiting the number of trades required reduces the amount of materials onsite and the chances for damage  
• DIRTTE factories produce high quality finishes and assemblies, with nearly perfect consistency. Certified technician teams then ensure high quality installations |
| Residual         | • Waste from application processes (i.e., over-preparation of mortar)  
• Packaging | • DIRTTE utilizes recyclable packaging as much as possible and integrates reusable packaging to help minimize waste. |
| Other            | • Weather  
• Vandalism | |

\(^5\)This table has been expanded upon from its original source: Dajadian, Shant A., and Daphene C. Koch. “Waste Management Models and Their Applications on Construction Sites.” International Journal of Construction Engineering and Management, 2014, 91-98. doi:0.5923/j.icem.20140303.02
How we’re Doing It Right at the DIRTT Facilities

ENERGY EFFICIENCY

- Our factories are supported by solar energy, helping to offset the cost of electricity and environmental impact of our operations. See Appendix for data.

- All our lighting is low-energy LED. Our offices are all on motion sensors.

- Variable Frequency Drives minimize energy surges and over-consumption in our facilities. This is important because we do not make the same thing over and over. We make what you want us to make. Sometimes that means less energy is needed at one machine and more at another.

- We use cold-UV curing finishing lines for our water-based finishes. The process is completed in minutes instead of the hours needed in conventional oven scenarios. The energy use during those minutes is less intense than the heat required for curing ovens.

- ICE® software allows us to keep our own square footage to a minimum because it drives our material purchasing, minimizing storage space within our facilities. We are able to implement Lean Manufacturing methods, such as Just-in-Time production thanks to the software platform. This means our energy use and base building needs are minimized.

- DIRTT actively explores additional opportunities for alternative energy options.

MATERIALS

While the method of building with DIRTT provides you with a very strong sustainability program of reduce, reuse and waste reduction, we haven’t forgotten about the materials we use in the process.

We choose only high-performing materials to match our ten-year warranty. All materials in our assemblies meet stringent structural and environmental criteria to ensure human health and well-being during manufacturing and post-installation. We constantly explore and source new innovations for healthier and more environmentally conscious materials. 95-97% of our materials are manufactured and purchased in North America. DIRTT retains full control over our material sources and vendors. Try to find that on a conventional job site!

**Aluminum**: DIRTT uses aluminum to create our wall frames. It is a strong, light weight, aesthetically pleasing material, that supports the precision our Clients require. It’s light-weight character means we are able to cut our energy use and carbon footprint during shipping. We source aluminum with high recycled content whenever possible and are pleased to say we are have seen the recycled content continue to increase. For specific values, reference the Appendix.
**Corning® Willow® Glass:** Ultra-thin, light and unexpectedly durable. We developed a proprietary process for printing directly on the glass and adhering it to our MDF tiles. Willow Glass’ extreme clarity makes images and colors in your DIRTT space pop. It’s also a writable and easily cleanable surface. Regular glass is very heavy and must be shipped on end, taking up valuable space in the shipping container. With lightweight Willow Glass, we ship flat-stack for lower transportation energy and emissions.

**Glass:** Through our ICE software, DIRTT offers clients the option to source and purchase glass locally as Customer-Owned Material (COM) for projects, reducing the transportation distance to the factory.

**Fabric – Carnegie Xorel®:** DIRTT and Carnegie Xorel® combine to bring you the best in sustainable, durable, high-performance interior spaces. Biobased Xorel® is the world’s first and only Cradle to Cradle Certified™ Gold interior textile. IFR Xorel® is Cradle to Cradle Certified™ Silver.

**Medium density fiberboard (MDF):** DIRTT uses MDF for solid wall tiles due to its machining flexibility and the final finish quality. Our MDF is 90-100% pre-consumer recycled content (post-industrial). We also offer no-added-formaldehyde (NAF) and Forest Stewardship Council® (FSC-C006900) MDF options.

**Powder coat:** Powder-coating used on aluminum extrusions contains no solvents and is free of pollutants such as VOCs. It requires only one coat and uses approximately 50% less energy compared to conventional methods, such as metal paint, which requires a primer and two finish coats.

**Sound attenuating insulation:** DIRTT’s wall insulation is 80% post-consumer recycled cotton denim. Insulation scraps during the DIRTT manufacturing process are collected and returned for reuse in new products, creating a zero-waste stream. Reference Appendix for additional data.

By choosing cotton denim over fiberglass, we eliminate skin irritation and the danger of fibers getting into the lungs of our production teams and our clients’ facilities teams.

**Thermofoil:** Thermofoil is a durable and attractive 3D laminate material, used as a surface finish for tiles and millwork. It is seamlessly thermoformed to a surface, eliminating unsightly lines and sharp corners while creating an infection prevention finish, great for healthcare applications.

**Timber:** All DIRTT timber is sourced from sustainably managed and harvested forests only (FSC or PEFC).

Using glulam and cross-laminated timber, DIRTT blends the tradition of European craftsmanship with the speed, customization and flexibility of DIRTT’s modern manufacturing. The structures deliver more efficient real estate usage with freestanding, multi-level solutions for structures or high-ceiling spaces. They assemble quickly, with minimal labor, and re-assembled multiple times with little wear and tear. Pre-manufactured wood construction results in less waste material, less energy and is considered more carbon neutral than many other materials, such as steel, contributing to its sustainable nature.
**Water-based paint:** DIRTT is a leader in using water-based, zero-VOC finishes. Our Chromacoat paint is a highly durable, one-coat process. The nine-minute trip through our Italian Giardina finishing line means minimal over-spray and cold UV curing. Painted tiles are packaged right away and are ready to ship. No wasted real estate. No off-gassing.

**Water-based stain and lacquer:** Our beautiful stains and clear lacquers are water-based with ultra-low VOCs. The stain is applied by hand (very low energy use!). Since each tree is unique, each veneer accepts stain colors differently. A machine isn’t able to differentiate – it takes a trained eye and skill. The lacquer applied over the stain is done on the same type of cold-cure UV finishing line as our Chromacoat paint. Low energy use. Fast. Small real estate footprint compared to conventional curing ovens.

**Wood Veneer:** We are FSC Chain-of-Custody certified. DIRTT chooses veneer from suppliers of sustainably grown and cut forests. We insist on the highest quality and least quantity of hardwood for cladding MDF tiles and wrapping aluminum substrates. This is the only place in North America where you can get the strength and durability of aluminum extrusions wrapped in beautiful, real wood. Minimal hardwood for sustainability, with maximum visual impact. (Hardwood, which grows slower than softwood, only accounts for 20% of the world’s timber.)

**NET ZERO WASTE + RECYCLING**

Off-site, manufactured construction offers the best and most controlled opportunities for stopping and diverting waste. At DIRTT, we don’t stop there.

**Green Team:** All DIRTTbags are trained and updated on our waste diversion programs. DIRTT’s dedicated Green Team regularly assesses our recycling, materials, waste production and energy use, to identify where improvements are possible. They analyze and implement ways to further reduce offcuts, rationalize material use and create behavioral changes.

**Earth Champions:** Our Earth Champion team, composed of individuals that demonstrate a commitment to recycling, helps to guide coworkers on recycling and train new and old employees on a daily basis. Not only does this help us create a shift towards more sustainable behaviours, but it further opens communication channels between our Green Team and factory floor. The result is an extended sustainability team that works more effectively towards our net zero waste goal.

**Reusable Packaging:** We send our sustainability mindset to the job-site by utilizing reusable packaging. We use robust spacers we call Cookies to stack wall frames. This eliminates the use of 235,000 pounds of lumber every year. Our plug & play power connectors are protected with molded plastic dust caps. All our shipments include a pre-addressed and pre-paid box so cookies and dust caps can be sent back, piggy-backing on other shipments, for DIRTT for reuse.

To help encourage on-site crews to participate in the return program, we send e-gift cards to those who send back Cookies and Caps by the pound.
Back at DIRTT, we consistently work with our recyclers and community members to improve existing programs and learn about new opportunities and technologies. One example contributing to our goal for net-zero-waste is our partnership with Sewing Seeds International, a Calgary based non-profit organization. We donate all fabric offcuts from our manufacturing process to Sewing Seeds. They take the fabric overseas to developing communities where they teach individuals how to sew. During these classes, they are able to use DIRTT’s fabric as a teaching tool, allowing the individuals to develop a skill that can generate income for their families.

**LEAN MANUFACTURING**

DIRTT practices lean manufacturing principles at our factories. We follow a path of continuous improvement and adjust our procured materials to reduce off-cut waste and associated costs. Our ICE software provides manufacturing information that is fed to our factories and procurement to ensure that we are always manufacturing just what our Client needs, no more and no less. All of DIRTT’s factories are in pre-existing buildings, diminishing the negative environmental impacts associated with new construction.

**DISTRIBUTED MANUFACTURING + FREIGHT CONSOLIDATION**

The ingrained rules of production inside the ICE platform allow DIRTT to use distributed manufacturing. Facilities are strategically located throughout North America, bringing us closer to our key markets, while supporting our local economies. Mitigating risk, reducing travel and shipping distances, while limiting the associated environmental impacts are thanks to our ability to produce using distributed manufacturing.

DIRTT’s shipping team works with certified SmartWay Transport Partnership companies. They use fuel efficient trucks, reducing emissions from distribution. Our shipping team works to consolidate LTL’s (less than full load), economy, and freight run shipments to minimize the number of unfilled delivery trucks. This underlines the importance of retained control over where your materials come from and how our DIRTT assemblies get to their final destinations. With conventional construction, there is no single entity among the numerous trades encouraging a consolidated and efficient approach to distribution.
Transparency

DIRTT is the first and (so far) only prefab manufacturer and construction company that is moving the industry towards greater transparency.

DIRTT partnered with Climate Earth to complete a full Life Cycle Assessment (LCA) of our assemblies, from extraction of raw materials to product end of life. See Appendix for the LCA boundaries. The LCA provided the required information to scientifically measure the environmental impacts of our assemblies and publicly disclosed this information by publishing and verifying 15 Environmental Product Declarations (EPDs). We now use this information to educate designers and clients about our materials. See Appendix for an example of our Savannah glass-aluminum wall EPD.

During this time, we also completed several Health Product Declarations (HPDs) to further increase our transparency on select material choices for you to build with. Data from the LCA, EPDs, and HPDs act as an important indicator for where the company stands in terms of sustainability goals, and areas for further improvement.

Green Building Rating Systems

Worldwide, the building sector contributes 30% of global annual greenhouse gas emissions resulting mostly from their construction, renovation and demolition.

The creation of Green Building Rating Systems (GBRS) aims at mitigating these impacts through sustainable design, while creating healthier environments for occupants. DIRTT goes above and beyond what most GBRS require by offering a more holistic approach to sustainable interiors.

Our commitment to selecting healthy and sustainable materials ensures that we contribute to requirements for material selection, recycled content and air quality. We have numerous assemblies that have been certified as SCS Indoor Advantage Gold, which recognizes them for their low-emitting properties. These certificates are available upon request. For a list of certified assemblies and a sample, reference the Appendix.

DIRTT recognizes numerous GBRS, such as LEED, WELL Building Standard® and the Living Building Challenge, all of which DIRTT solutions can contribute to.

For a full list of credits and GBRS DIRTT can contribute to, email GreenTeam@DIRTT.net.
Culture of sustainability

DIRTT’s unique culture is the foundation that we are built upon. We foster a culture of empowerment. Employees are encouraged to find sustainable solutions and make decisions to ensure each client has an outstanding experience. We pride ourselves in our open and collaborative work environment, creating a space that allows for creativity and innovation.

DIRTT has numerous programs encouraging employees to integrate sustainability into everyday behavior at work and at home. We provide financial incentives to help reduce carbon emissions produced by our employees. We do this by supporting telecommuting, subsidizing the purchase of hybrid vehicles, and encouraging the use of carpools, public transportation and cycling to work.

Our in-house chefs provide hot, healthy lunches daily, ensuring everyone is well fed and reducing the need to travel offsite for lunch. It’s hard to believe that it saves nearly 549,975km (340,984 mi) of driving each year. Additionally, we have an extensive compost program for all our food scraps and paper towels. This prevents large amounts of carbon dioxide and methane emissions from being released at landfills. For exact values, reference the Appendix. Our kitchens are equipped with reusable cutlery, cups and plates, and when needed, our disposable items are all certified compostable.

DIRTT supports a paperless culture by using all electronic marketing tools without printed materials, further diminishing environmental impacts. We use our electronic newsletters and communications to educate employees on various sustainability programs and share tips on how to be a sustainable DIRTTbag.

Conclusion

Construction is globally the biggest consumer of raw materials. Buildings, and particularly the construction of them, are responsible for 35% of greenhouse gas emissions in Canada.4

It’s time to build better. And like most good things in life... it’s what’s inside that counts most.

Our mission is to create personalized, high performance spaces that are environmentally sustainable during their construction and over a long and productive lifecycle. This approach happens to coincide with providing a powerful return on your investment.

Because we aren’t Doing It Okay This Time. We’re Doing It Right This Time so you can too.
References

1 World Economic Forum “Future of Construction”
   http://www3.weforum.org/docs/WEF_Shaping_the_Future_of_Construction_full_report_..pdf


Appendix

Design for Disassembly
DIRTT solutions have been designed for disassembly, which drives the ability to have a flexible and adaptable solution.

Alternative Energy
DIRTT has invested in alternative energy to help offset the environmental impacts associated with manufacturing. We generate over 93,000 Kwh per month of alternative energy in Phoenix, and over 93,000 kwh per month in Calgary. We have completely changed all our lighting to LED. In our Calgary Woodshop, this allowed us to reduce our energy consumption related to lights by 50%.

Aluminum Recycled Content
We aim to purchase aluminum with a high recycled content whenever possible.

2017 Recycled Content Calculations

<table>
<thead>
<tr>
<th></th>
<th>PRE-CONSUMER %</th>
<th>POST-CONSUMER %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CALGARY</td>
<td>40%</td>
<td>11%</td>
</tr>
<tr>
<td>PHOENIX</td>
<td>42%</td>
<td>10%</td>
</tr>
<tr>
<td>SAVANNAH</td>
<td>38%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Cookies
DIRTT works to reduce waste generation. One effective method is through our closed loop program with our insulation supplier. DIRTT sends back over 5,000kg per year of insulation offcuts to our supplier, all of which is manufactured into new batches of insulation.

Introducing the Cookie, a packaging component, has helped us eliminated wooden 2x4’s from being used in shipping. The light weight, small, reusable packaging component helps save space during transportation, lightens the load and saves money. We estimated this has helped us save 235,000 pounds of wood from being used each year, the equivalent of approximately seven 30-meter-tall trees at one meter in diameter. Through our Cookie return program, we have had over 95,500 Cookies returned for reuse.
Life Cycle Assessment

The above graphic demonstrates the boundaries set for DIRTT's Life Cycle Assessment that was carried out in 2014. This demonstrates a full scope approach.

Environmental Product Declarations

Our Environmental Product Declarations help us measure the impacts of our wall solutions and provide us with information on where and how we can further improve. To the right is DIRTT’s EPD for a glass-aluminum wall from our Savannah, GA factory.

Snapshot of Savannah Glass Aluminium Wall EPD

| Summary of Life Cycle Impacts and Inventory per m²-30 yr, meeting IBC requirements for interior walls |
|-------------------------------------------------|-------------------------------------------------|
| Climate Change                                  | 85 kg CO₂-eq                                   |
| Acidification                                   | 0.68 kg SO₂-eq                                 |
| Eutrophication                                  | 0.26 kg N-eq                                   |
| Ozone Depletion                                 | 1.1 E-5 kg CFC-11-eq                           |
| Photochemical Smog                              | 7.9 kg O₃-eq                                   |
| Ecotoxicity                                      | 2900 CTUe                                      |
| Human Health-Air                                | 0.087 kg PM₂.₅-eq                              |
| Primary Energy Consumption                      | 1100 MJ non-renewable                          |
|                                      | 0.22 MJ renewable                              |
| Primary Energy Consumption                      | 0.010 kg hazardous                             |
|                                      | 26 kg non-hazardial                            |
| Primary Energy Consumption                      | 81 kg non-renewable                            |
|                                      | 10 kg renewable                                |
| Fresh Water Consumption                         | 3.8E+5 L                                      |
| Land Use                                        | 37 m²-yr                                      |

*Personnel impacts related to electricity use in employee lunch rooms were included.
SCS Indoor Advantage Gold
With our commitment to sustainability and creating healthier interiors, we have certified numerous assemblies through SCS Indoor Advantage Gold®. These certificates confirm the low-emitting properties of the assemblies in relation to indoor air quality, ensuring our clients have a sustainable and healthy interior solution for their space.

Rain Water Harvesting
We recognize the importance of sustainability not only from a business view, but also from a global scale. We are committed to sustainability because at DIRTT, we recognize it is the right thing to do and we want to ensure future generations have the means to be successful. We work to minimize our water use wherever possible, but we also recognize the opportunities to do more. We have investigated a Rain Water Harvesting system that would help us offset our water consumption in our Calgary factory. If implemented, our research shows we have the opportunity to offset our reliance of potable water throughout the year as per the graph to the right.

Composting
As part of our commitment to leadership and waste mitigation, we implemented a compost program to divert all our food waste and organic material from the landfill. This prevents approximately 36.75 metric tons of methane from entering the atmosphere yearly. Methane is 25 times more efficient at absorbing heat over 100 years compared to carbon dioxide.
Conventional Construction versus DIRTT

The following graphics compare the process involved for a conventional construction build out to a DIRTT build out. Notice changes in the size of crew required, the time needed for various trades and the overall time line of the project installation. Prefabricated solutions allow trades to operate in an empty and open space, cutting the project time line and reduce the number of tradespeople needed. DIRTT is helping clients get into their space faster with a sustainable solution that will adapt with them overtime.

Conventional Construction Process on a 16 Week Build Out

![Conventional Construction Process Diagram](image1)

Comparative Prefabricated Solution Process Reduced to 13 Week Build Out

![Prefabricated Solution Process Diagram](image2)
DIRTT’s Sustainability Story