

MATERIAL TOPIC

Sustainable Products

Investing in clean technologies, and creating products with sustainability attributes that are reliable, repairable, recyclable and reduce our overall environmental impact, help to mitigate our business risks and build stakeholder trust as we strive to create shared value for people and the planet.



How We Are Managing It

Innovation is embedded in TTI's cultural DNA. We have been designing energy efficient products for decades, starting with battery technology as early as 1994. In subsequent years, we have also developed products that generate low-carbon emissions and reduced noise while in use, as well as LED lights.

Research, Development and Design

With environmental impact being a key consideration of our product design principles, various teams across the Group have been collaborating to create a Sustainable Design Guide for our products. The Guide utilizes information from life cycle assessments that have been conducted on our key product categories since 2018 as

well as GHG footprint analyses. It will allow us to develop more products that meet EHS objectives while aligning with the principles of circular economy.

A range of checklists are also being continuously developed to provide guidance on the principles of sustainability and circular economy. These will help our associates make the right decisions when it comes to the choice of raw materials and the use of resources and substances of concern in the concept and manufacturing phases.

Our design process considers reliability, durability, repairability, refurbishing and recycling aspects that are further explored in the section on Circular Economy on p.72 [📄](#).

KEY INITIATIVES AND PROGRESS IN 2021

Our business units continue to integrate environmental attributes into all aspects of design, impacting our sourcing, planning, manufacturing and post sales management. Initiatives in 2021 included:

- Incorporating recycled materials where possible in plastic, cardboard and metal components
- Striving to reduce the size and the number of parts and components in products
- Ensuring all key product categories undergo life cycle assessment
- Eliminating silk screen printing for logos on tools to save materials and costs
- Removing unwanted magnet trays in DIY drills to save materials
- Reducing the size and weight of tools without compromising on performance to reduce transportation emissions and material consumption

GOALS

- Promote circular business models by increasing service, repair, maintenance and refurbishment services
- Increase investment in clean technologies
- Develop products that improve living and working environments

TARGETS

- Increase the number of tools being remanufactured, repaired and/or refurbished
- Increase the number of tools and batteries recycled
- Increase product efficiency
- Increase the number of products that reduce noise pollution
- Reduce/eradicate outdated technologies (petrol, pneumatic, hydraulic-powered products)

Product Development Framework (4Ds)



Product Design Principles (3Ps)



RESPONSIBLE MATERIAL USAGE

Safety
Resource, Material and Chemical Management



EFFICIENCY & DURABILITY

Manufacturing and Product Use
Distribution



CIRCULAR ECONOMY

Life Cycle Extension
Repairability
Material Recovery

Clean Technology Products

Our investment in sustainable design features is showcased in our range of cleantech products. The products fall under the following categories.

Energy-efficient Products

One of our latest products featuring advanced technology is our line of brushless tools. Brushless motors are more efficient than brushed motors as they reduce mechanical energy loss due to friction. Brushless motors provide a longer product lifespan than carbon brushes. These motors also have advanced features that produce more power in compact sizes, resulting in smaller tools and increased run times with more efficient energy production.

1 POWERSTATE BRUSHLESS MOTOR

- MILWAUKEE designed and built brushless motor




M18 FUEL

2 REDLINK PLUS INTELLIGENCE

- Most advanced electronic system on the market for maximum performance
- Total system communication with overload protection increases tool life

3 REDLITHIUM BATTERY PACK FITS M18 TOOLS

- Most durable pack on the market
- Over 2X more recharges than leading competitor
- Fuel gauge displays remaining charge
- Operates below -18°C/ 0°F



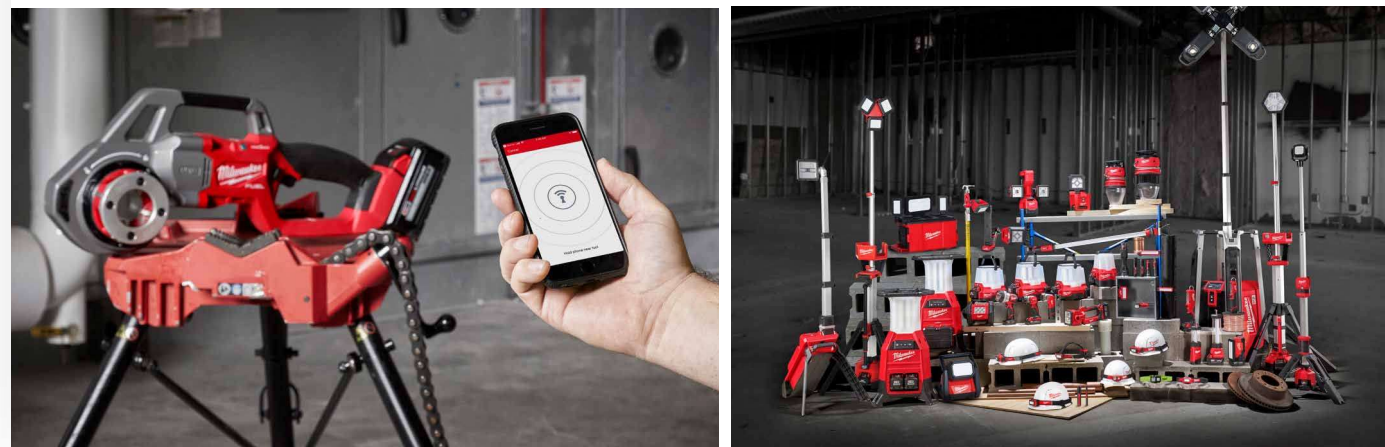

Smart, Digital Solutions

Our ONEKEY collaborative tool and platform is offering digitalized tools and equipment. By engineering smart tech in the best tools, the system provides tool tracking and security, enabling workers to dial in precision settings, view utilization data,

and be alerted before equipment needs repair. This initiative streamlines inventory management with a digital catalog, enabling more efficient management of tool usage and maintenance to promote product longevity and overall productivity.

LED Lights

TTI has also been focused on developing a line of LED lights as they are more efficient, have a longer life span and consume less power while providing brighter lighting for end-users than regular lights.



Batteries and Battery Systems

Another cleantech initiative is our battery technology. The key feature of this technology is removability and compatibility, allowing batteries and tools from a previous generation to be used with newer products. As a result, the same battery pack can be used with all the tools of each network, including:

- 251 tools for the MILWAUKEE M18 system
- 139 tools for the MILWAUKEE M12 system

- 13 tools for the MILWAUKEE MX FUEL system
- Over 260 products for the RYOBI 18V ONE+ system
- Over 75 products in the RYOBI 40V System

TTI's battery technology provides efficient storage and fade-free power. Our multi-use battery pack continues to improve in performance and efficiency due to consistent upgrades. Many of our batteries also have additional functions such as a

display showing the remaining charge available, and the ability to withstand sub-zero temperatures.

In addition, this technology provides a portable power supply, replacing generators and gas-powered generators in particular. Being cordless, this solution enhances product safety by eliminating the potential of tripping on tangled or knotted cords and other dangers posed by cut or unplugged cords at work sites. It can be used anywhere, there is no more noise at job sites and neighbourhood and no more fumes.

TTI Cordless Battery Systems





Reduced Noise Pollution

In the Outdoor Products business segment, we have developed innovative noise-reducing technology that tackles the inherent problems of noisy outdoor petrol-powered products. Awareness of this harmful issue is growing as local governments are increasingly enacting legislation restricting the use of loud and pollutive petrol powered outdoor equipment.

Since 2019, the RYOBI product and engineering teams have been focused on developing innovative, high performance products that deliver all the performance without the noise. Debuting in cordless blowers, the RYOBI WHISPER SERIES line of products was developed to provide users with an alternative to traditional noisy

petrol-powered products. Since inception, the product line has expanded into multiple categories where a reduction in noise benefits the end-user.

The WHISPER Product Line has now grown to over 19 products, including lawn mowers, blowers, string trimmers, fans, saws, pressure washers, snowblowers, and tillers. This WHISPER family is the only line of products on the market today, specifically engineered to deliver best in class performance without the noise. A team of dedicated engineers optimize product performance while focusing on tonality, pitch, and dB output. The team utilizes advanced noise dampening foam, strategic motor placement, and innovative advanced concepts to remove sound from traditionally loud products.

In 2021, RYOBI launched a core product in the WHISPER system, the 40V HP Brushless WHISPER SERIES Blower. This new tool is the industry's most powerful cordless handheld blower, delivering an impressive 730 CFM and 190 MPH airflow. In addition to the power, this blower features innovative noise reduction technology, operating at only 57 decibels, so users can clear leaves at any time of day.



Up to 85%
QUIETER THAN GAS

Reduced Emissions

To manage our scope 3 emissions, our strategy is to further expand our efforts in reducing the GHG emissions and carbon footprint of our products and in particular the emissions generated from products while in use.

TTI has continued to transform outdoor power equipment from petrol to battery-powered. Our strategy is to improve the performance of outdoor products while eliminating carbon emissions and reducing noise. Our outdoor power equipment products emits less carbon emissions and other type of GHG emissions while in use and provides a better use experience for our customers.

In 2021, usage of consumer electric string trimmers, blowers, walk-behind and riding mowers* sold in the USA resulted in total savings of 86,633 metric tonnes of CO₂e*, which is equivalent to driving a large passenger vehicle 218,217,932 km. This is equivalent to driving the iconic US Highway Route 66 60,599 times.†

CO₂e
Savings of
86,633 tCO₂e
IS EQUIVALENT TO DRIVING
US ROUTE 66: 60,599 TIMES†

* Assumptions:
 • Average CO₂e gram per year is from US EPA Database of certification data
 • Usage is based on an internal estimate/consensus
 • Average current during use is based on an internal estimate
 • Nominal voltage for 10S lithium/6*4S lead acid
 • Charger efficiency from CEC 24 hour charge test
 • Industry average for CO₂ generated per kWh
 †ecoinvent LCA database v3.7.1 (2020.12.17). Transport, passenger car, large size, petrol, EURO 5 (GLO) market for I APOS, S.

SPOTLIGHT

Cordless vs Gas Powered Products

Consumer power equipment

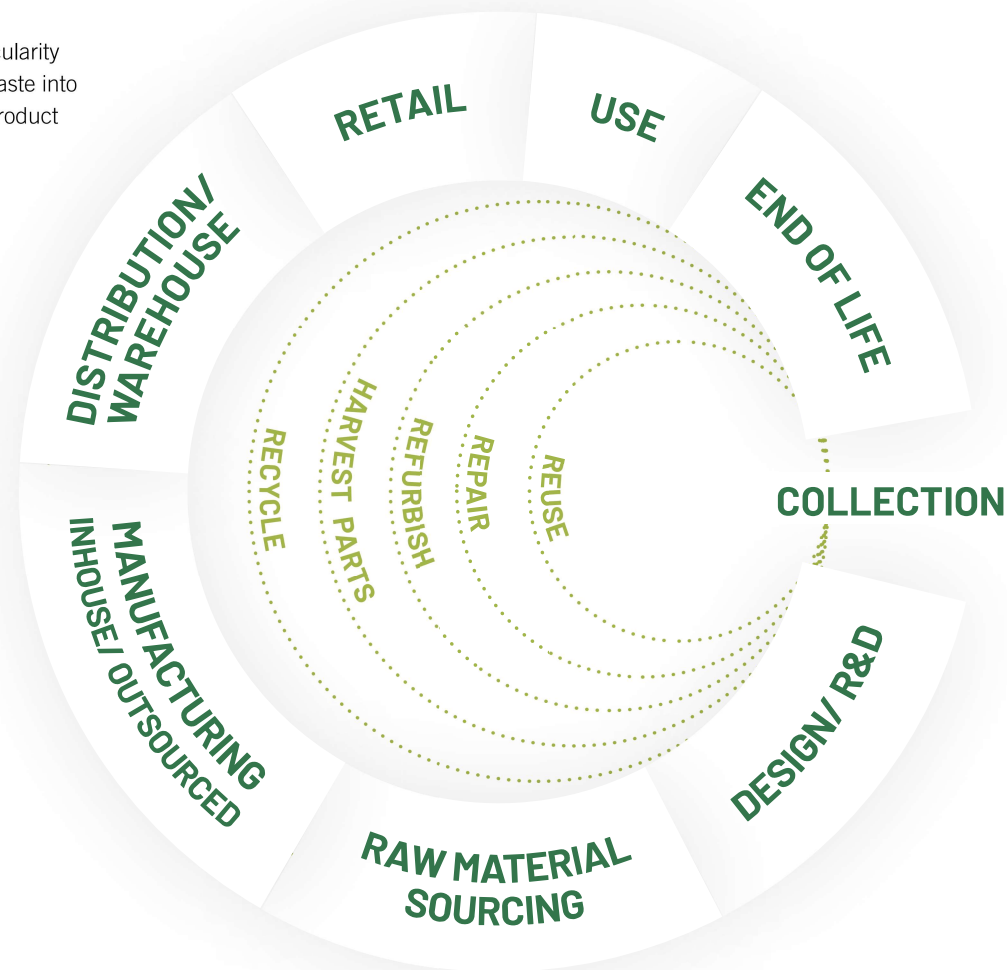
Another line of our products that emit less GHG emissions while in use, include the RYOBI cordless lawn mowers and outdoor power tools. We performed an analysis on our cordless lawn mowers conducted by an independent expert. The results showed that there is a reduction of 8% in the GHG emission footprint of the cordless lawn mower when looking purely at the products, namely as a result of their materials, manufacturing and assembly. However, an indicative scenario of 500 uses of the two products yielded different results. Testing showed that after 500 uses, the RYOBI Cordless Lawn mower had a significantly reduced GHG emission footprint, approximately 166% or 2.6 times lower than the gas-powered lawn mower equivalent.

-166%
A SIGNIFICANTLY LOWER
CARBON EMISSIONS
FOOTPRINT



Circular Economy

Our teams strive to integrate circularity models in our business to turn waste into valuable inputs throughout our product life cycle.



Our product design processes also take into account circular economy features. Circular economy is a systems solution framework based on three key principles: eliminating waste and pollution to reduce GHG emissions across the value chain, circulating products and materials to retain their embodied value and regenerating nature. This framework decouples economic activity from the consumption of finite resources by embedding resilience into its design.

At TTI, we understand that the opportunities for retaining and capturing value in our upstream and downstream operations are equally or even more significant than simply creating value from transforming raw materials and sub-assemblies into sellable products. By pursuing a direction that is steeped in circular models and designs, TTI will be able to maintain and push our cordless leadership.

While reducing resource consumption through repairing, reusing and refurbishing is our priority, we also pursue efforts aimed at harvesting parts, recycling and promoting

circularity in our operations and along our value chain. Our operations together with our research, development and design teams are striving to integrate circularity models in our design and choice of materials to turn waste into valuable inputs in our product life cycle.

As of 2021, a total of 2,448 repair and servicing centers that are owned by TTI or operated by third parties have been established across all our markets, thereby enhancing the following circularity initiatives:

Repairing

We ensure a high level of reparability in our tools, which can be repaired at local service centers.

> 900,000

TOOLS REPAIRED IN 2021

Reusing

We continuously assess products and components for possible reuse in the value chain.

Refurbishing

Our reconditioning program extends the longevity of our products without affecting quality. This is accomplished by prioritizing the reparability and refurbishment of what we put to market. Some of our refurbished products were sold through our 39 Direct Tool Factory Outlets in the USA, with a one-year warranty. To prepare refurbished products for consumer use, careful assessment of all components, including batteries and chargers, is carried out to check for mechanical issues. Manufacturer-trained technicians then complete repair work using replacement parts from TTI's factory. Testing is also conducted to verify that all standards are met. 80% of the original product can be reused.


> 400,000

TOOLS REFURBISHED IN 2021

Harvesting Parts

We retain value from returned, discarded products and utilize these parts for repairing and servicing products when possible, without compromising the quality of our products.

Recycling

We implement recycling initiatives within our own ecosystem to form a closed-loop system where possible. An example of this is our battery recycling global partnerships described on p.64-65 .

565 tonnes

BATTERIES RECYCLED IN 2021

