Circularity is Business

Schneider Electric – Mid-term Conference in DecomTools

Gaurav Sharma Director, Circular Business Models – Group Strategy & Sustainability

9th Feb 2021

Life Is On Schneider Electric

Schneider Electric equipment in a Wind Farm

1 Main Power Circuit

2 Control of the Turbine

3 Auxiliary circuits

4 MV Collection

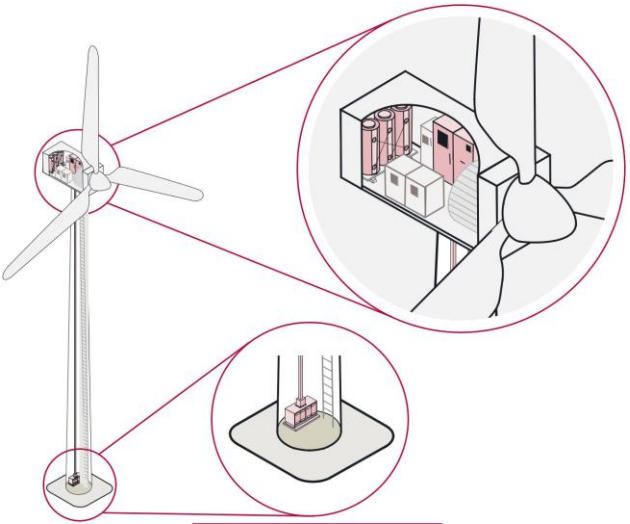
EcoStruxure for Wind Power

5 Connection to the grid

6 Centralized supervision

1 — Main power circuit

Maximum efficiency to improve your energy harvest



- **Customized coordinated solutions for continuity of supply and reliability of operations**
- **Harmonics mitigation for optimized power quality**

- Wind-specific products provide **added reliability** for your main power circuit
- LV switchgear adapted to your architecture

Contactor | LV Circuit Breaker | Energy Monitoring | Busway | Cable support systems | LV/MV Transformer | Ring main unit | Reactive power correction



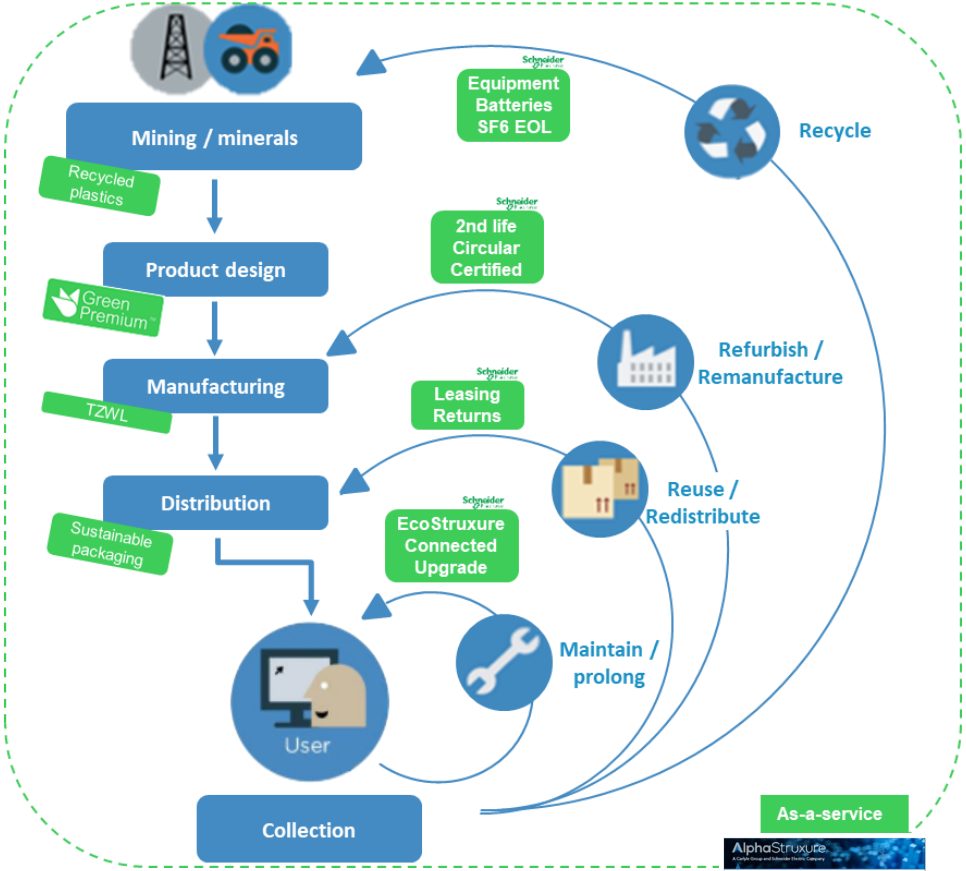





Seizing the ‘Circular Business Models’ opportunity

Upstream initiatives & targets

- ✓ Double recycled plastics in products by 2025
- ✓ 80% product revenues with Green Premium
- ✓ 200 ‘Waste-to-resource’ sites
- ✓ 100% packaging from sustainable sources
- ✓ Circular innovations at each site



Downstream initiatives & targets

- ✓ 420K metric tons of primary resources avoided
- ✓ ‘Circular’ services growth
- ✓ Lifecycle offers: lifespan extension, 2nd & 3rd life, responsible end-of-life
  Circular Certified
- ✓ +46% YoY Assets under Management (3.8M in total)

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Upstream examples

Green Premium™

MasterPact MTZ

Connected circuit breaker to achieve high energy efficiency and durability

Superior environmental performance with Green Premium

Product is RoHS and REACh compliant

- Transparent environmental information
- Life Cycle Assessment, compliant with ISO14025
- End of Life instructions

Resource

Contributing to improved energy efficiency

The MasterPact MTZ has energy monitoring capabilities which are an essential part of an efficient architecture such as EcoStruxure

Well-Being

Substances of very high concern free

Peace of mind is granted by the absence of SVHC which are potentially harmful and toxic for both humans and the environment.

Circular

Upgradeability & durability

Modernization can be performed without disrupting electricity services. Improved digital monitoring services can allow preventive maintenance, improving the performance over lifetime.

Overall, the Masterpact MTZ can help you achieve a Green Building certification, for instance LEED™ points are awarded in the Building Product Disclosure and Optimization section:

- Environmental Product Declaration
- Material Ingredients
- Advance energy management

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PEP ecopassport – ISO 14025 Life Cycle Assessment (LCA) based information

80% of product turnover covered by a Product Environmental Profile (PEP)

SCHN-00227-V01.01-EN - PEP ECOPASSPORT® - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

Product Environmental Profile

Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

PEP eco PASS PORT®

Schneider Electric

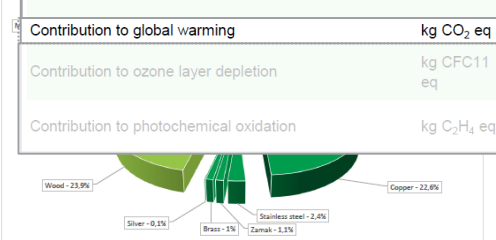
ENVPEP1706010_V1 - SCHN-00227-V01.01-EN 06/2017

Bill of Materials

SCHN-00227-V01.01-EN - PEP ECOPASSPORT® - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

General information

Representative product	Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit
Description of the product	The Masterpact MTZ1 16 H1 three pole draw out circuit breaker is designed to guarantee the protection of a low voltage electrical distribution system with assigned voltage up to 690VAC and rated current of 1800A. The breaker can be remotely operated using closing XF release and opening MX release.



Substance assessment

Products of this range are designed in conformity with the requirements of the RoHS directive (European Directive 2011/65/EU of 8 June 2011) and do not contain, or only contain in the authorised proportions, lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls - PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive

As the products of the range are designed in accordance with the RoHS Directive (European Directive 2002/95/EC of 27 January 2003), they can be incorporated without any restriction in an assembly or an installation subject to this Directive.

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website
http://www2.schneider-electric.com/sites/corporate/en/products-services/green-premium/green-premium.page

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Environmental Impacts

SCHN-00227-V01.01-EN - PEP ECOPASSPORT® - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

Compulsory indicators		Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit - LV847240					
Impact indicators	**Unit**	**Total**	**Manufacturing**	**Distribution**	**Installation**	**Use**	**End of Life**
Contribution to mineral resources depletion	kg Sb eq	9,36E-02	8,43E-02	0*	0*	9,30E-03	0*
Contribution to the soil and water acidification	kg SO_2 eq	7,28E+00	4,93E-01	2,63E-02	4,98E-03	6,75E+00	1,03E-02
Contribution to water eutrophication	kg PO_4^{3-} eq	1,89E+00	9,94E-02	6,05E-03	1,17E-03	1,78E+00	2,67E-03
Contribution to global warming	kg CO_2 eq	6,45E+03	2,19E+02	5,86E+00	1,59E+00	6,22E+03	4,50E+00
Contribution to ozone layer depletion	kg CFC11 eq	1,49E-04	9,64E-05	0*	1,22E-07	5,27E-05	2,29E-07
Contribution to photochemical oxidation	kg C_2H_4 eq	8,53E-01	5,31E-02	1,87E-03	5,27E-04	7,97E-01	1,09E-03
Contribution to air pollution	m³	7,43E+05	9,75E+04	2,40E+02	1,76E+02	6,45E+05	3,63E+02
Contribution to water pollution	m³	3,35E+05	2,19E+04	9,63E+02	1,88E+02	3,11E+05	4,16E+02
Resources use	**Unit**	**Total**	**Manufacturing**	**Distribution**	**Installation**	**Use**	**End of Life**
Use of secondary material	kg	3,98E+00	3,98E+00	0*	0*	0*	0*
Total use of renewable primary energy resources	MJ	5,60E+03	4,35E+02	0*	0*	5,17E+03	0*
Total use of non-renewable primary energy resources	MJ	1,00E+05	3,55E+03	7,84E+01	2,40E+01	9,65E+04	4,93E+01
Use of renewable primary energy excluding renewable primary energy used as raw material	MJ	5,25E+03	8,36E+01	0*	0*	5,17E+03	0*
Use of renewable primary energy resources used as raw material	MJ	3,52E+02	3,52E+02	0*	0*	0*	0*
Use of non renewable primary energy excluding non renewable primary energy used as raw material	MJ	1,00E+05	3,41E+03	7,84E+01	2,40E+01	9,65E+04	4,93E+01
Use of non renewable primary energy resources used as raw material	MJ	1,57E+02	1,49E+02	0*	0*	8,41E+00	0*
Use of non renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*
Use of renewable secondary fuels	MJ	0,00E+00	0*	0*	0*	0*	0*

ENVPEP1706010_V1 - SCHN-00227-V01.01-EN 06/2017

Circularity Profile providing End of Life Instructions (EoLIs)

Localisation of components & recyclability rate

ENVEOLI1706010_V1 - End of Life Instructions - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

Product End of Life Instructions

Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

Schneider Electric

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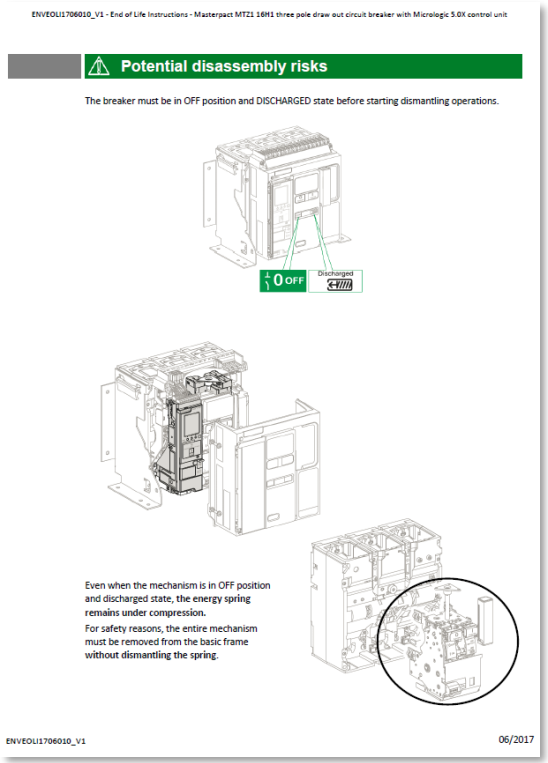

ENVEOLI1706010_V1 - End of Life Instructions - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

Potential disassembly risks

The breaker must be in OFF position and DISCHARGED state before starting dismantling operations.

Even when the mechanism is in OFF position and discharged state, the energy spring remains under compression.

For safety reasons, the entire mechanism must be removed from the basic frame without dismantling the spring.

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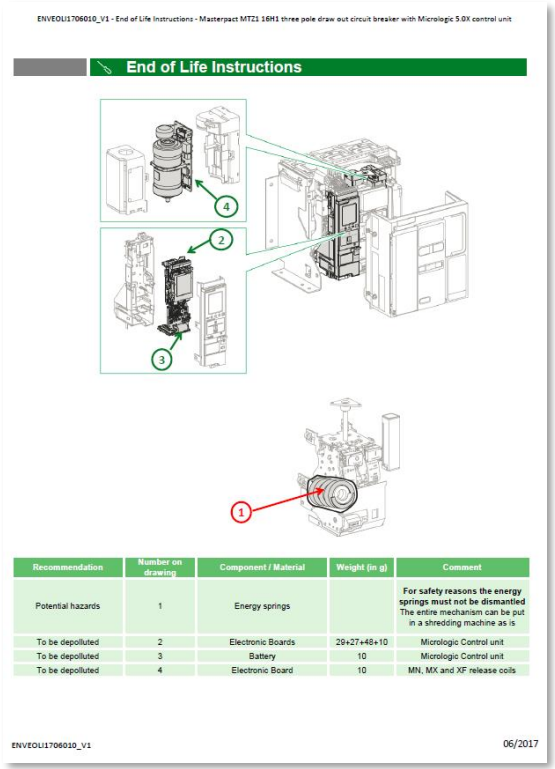


ENVEOLI1706010_V1 - End of Life Instructions - Masterpact MTZ1 16H1 three pole draw out circuit breaker with Micrologic 5.0X control unit

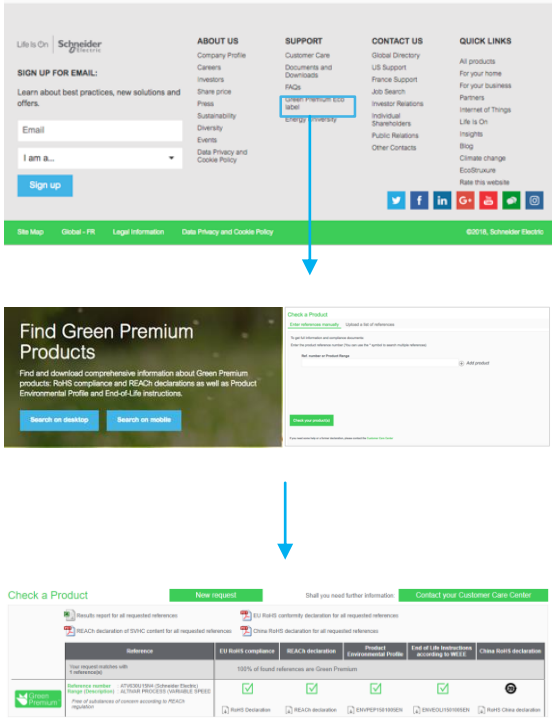
End of Life Instructions

Recommendation	Number on drawing	Component / Material	Weight (in g)	Comment
Potential hazards	1	Energy springs		For safety reasons the energy springs must not be dismantled The entire mechanism can be put in a shredding machine as is
To be depolluted	2	Electronic Boards	29+27+48+10	Micrologic Control unit
To be depolluted	3	Battery	10	Micrologic Control unit
To be depolluted	4	Electronic Board	10	MN, MX and XF release coils

ENVEOLI1706010_V1 06/2017

Freely accessible through our online platforms…

Check-a-Product



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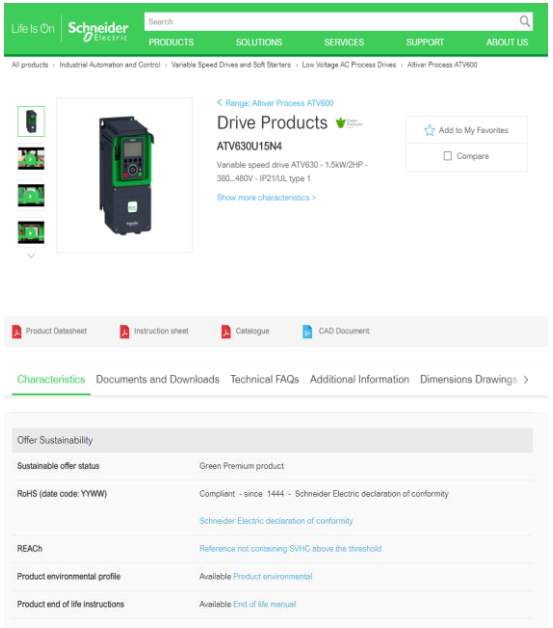
On-line Catalog



https://www.schneider-electric.com/en/work/support/green-premium/

Downstream examples

Practical and scalable examples of our Circular business models

Extending life
Modernisation

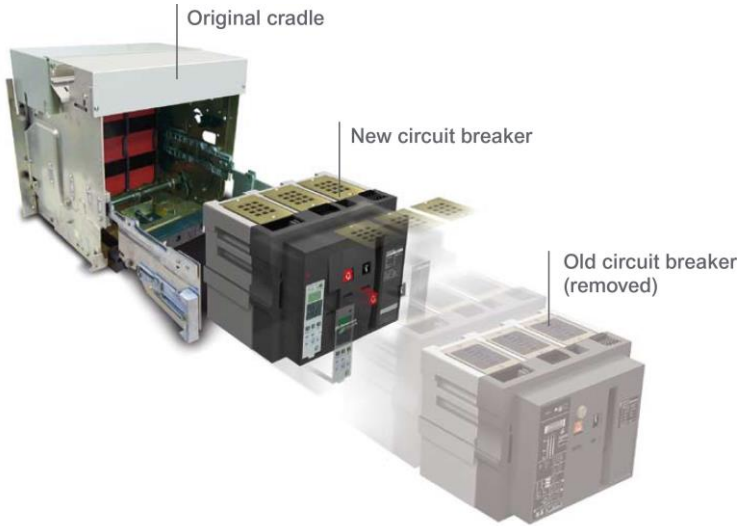
Giving a 2nd life
Refurbishment

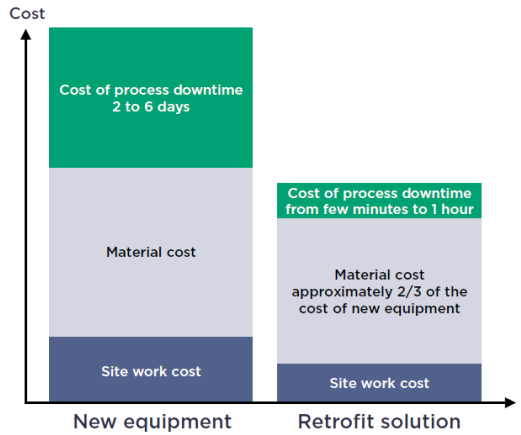
Handling end-of-life
Collection & Recycling

Product Environmental Profile

End of Life Instructions

Extending lifespan by Modernisation (Retrofit)



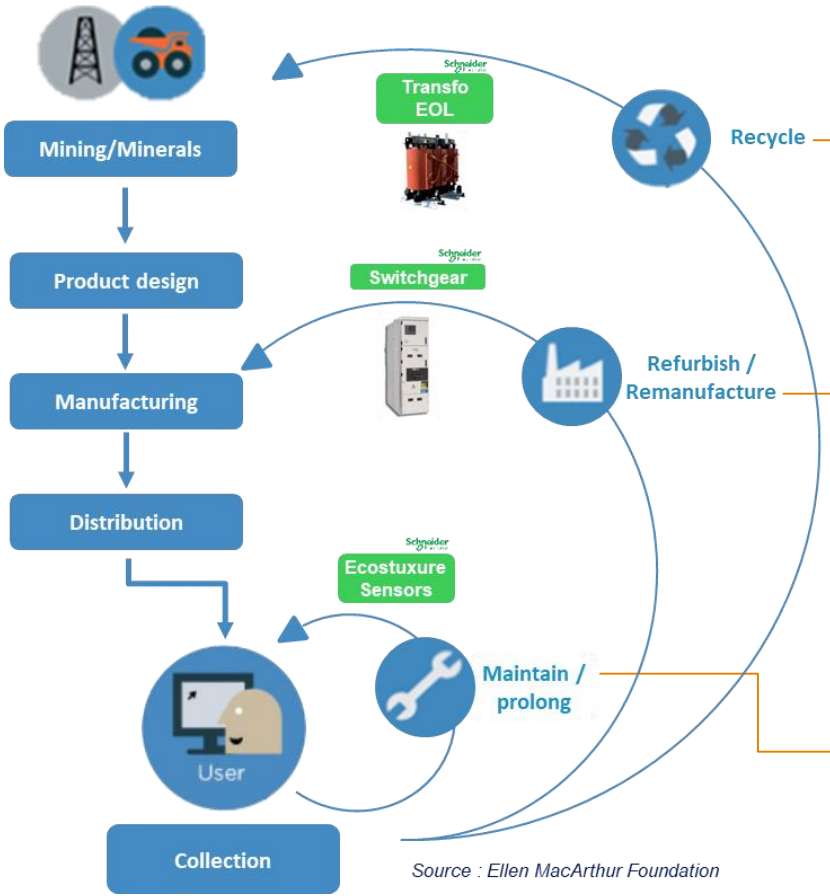


Energy depletion	Global warming	Water depletion
773 904 MJ	40 tonnes CO_2	389 m^3
x 135 oil barrels	x 8 cars traveling around the world	x 7 years water consumption of an average European consumer

Environmental benefits of a typical primary distribution retrofit solution (calculated using Product Environmental Profiles)

Circular economy winning offer

https://www.youtube.com/watch?v=4nntMcbZ86E



Source : Ellen MacArthur Foundation

Schneider Electric → End-user benefits

5 oil transformers de-polluted → No pollution risk / peace of mind

13 refurbished switchgear (of 36 total) & 5 dry transformers → Savings on:

- Total cost
- Metals (26 tonnes)
- CO_2 (170 tonnes)

Humidity & consumption monitoring → ~5-10% reduction in down-time

In summary, PEP & EoLIs: practical applications

What it provides

- Product environmental impacts and material composition (including some circular economy attributes such as recycled content, recyclability rate…)

What users could achieve

1. **Benchmark** with other products following same rules
2. Consolidate such environmental attributes for a **full** system/solution (retrofit example)
3. Adapt ecoDesign on full lifecycle, ex: **which is 'greener'**? Al or Low CO_2 Al or Copper?
4. Environmental benefits calculation: **refurbished vs new** products
5. Enabling to **reduce** emitted CO_2 (could be **costs** on this in the future)
6. Identify 'green' **claims / revenues** (fuel into EU Green Deal and new CEAP)

Circularity – the winning strategy for all stakeholders

Our Customers

Reduction in Total Cost of Ownership

Our Planet

Moving the date, saving resources

Governments

Local jobs creation

Our Company

Lifecycle relationship with customers

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Gaurav Sharma Director, Circular Business Models – Group Strategy & Sustainability

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