

PATH360 OUR QUALIFYING CRITERIA

REQUIREMENTS FOR CASTROL PRODUCTS
AND SERVICES TO BE INCLUDED AS PART
OF THE PATH360 FAMILY

SECOND EDITION

This document describes our qualifying criteria for products and services to be included in the PATH360 family. These criteria were developed to help focus on the contributions Castrol can make and will help us to assess our sustainability progress. This second edition incorporates the recommendations made as part of an independent review conducted by Ricardo Energy & Environment.

The criteria in this document will be kept under review and revised when Castrol considers it necessary due to changing circumstances and at least annually.

Published May 2022





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INTRODUCTION





THE WORLD IS ON AN UNSUSTAINABLE PATH. ACTION IS NEEDED.

Today, a quarter of the world's energy is lost to friction, corrosion and wear¹.

At Castrol, we're stepping up our 120 year fight against it, and continuing to develop products and services that help our commercial customers save energy, waste and water.

BUT WE'RE NOT STOPPING THERE

We've developed a 360° roadmap for our business that:

- Embraces circular thinking – looking at the life-cycle of every product we make to see how it can be improved, extended, reused or recycled.
- We are investing in and developing products and services that support the world's transition to renewable energy and sustainable technologies – like lubricants for wind turbines and fluids for e-mobility.

WE HAVE THREE FOCUS AREAS:

Saving waste

We're continuing to help our commercial customers with their sustainability goals related to energy, waste and water, as well as aiming to halve our plastic footprint by 2030².

Reducing carbon

We're aiming to halve the net carbon intensity per litre of our products by 2030³.

Improving people's lives

Working to improve people's lives around the world, including through our carbon neutral programmes⁴.

WE'RE ALREADY ON OUR WAY:

- Our redesigned plastic packaging has so far been rolled out to 7 countries.
- In 2021, 29% of the volume we sold was carbon neutral⁴.
- And in 2021, 48% of Castrol's sales were from products which qualified to be part of the PATH360 family (in accordance with 2021 qualifying criteria).

At Castrol we see this as just the beginning. We want to do more.

It's by working together with customers, communities and partners where we believe we can truly make a difference.

This is our holistic path to help create a more sustainable future.

This is Castrol's PATH360.

¹Influence of tribology on global energy consumption, costs and emissions Kenneth Holmberg & Ali Erdemir

²To promote the responsible design and management of plastic packaging along its life-cycle, Castrol defines its plastic footprint as the amount of virgin plastic included in our packaging per litre that isn't recycled. Our aim to halve it is from our 2019 baseline. For more information visit www.castrol.com/PATH360/Definitions

³vs Castrol's net carbon intensity per litre of our products sold in 2019. For more information visit www.castrol.com/PATH360/Definitions

⁴For more information visit www.castrol.com/cneutral



ASSURANCE STATEMENT FROM RICARDO ENERGY & ENVIRONMENT

Introduction

Ricardo Energy & Environment was commissioned by Castrol to review their product sustainability assessment (PSA) methodology, PATH360. This independent third-party assessment review included a benchmarking review of best practices of PSAs to provide recommendations that will enable Castrol to achieve its sustainability targets going forward. A sample of products that have been subject to PATH360 were reviewed as practical examples to understand the application of the qualification process. Ricardo Energy & Environment did not audit how the PATH360 assessment criteria had been applied to specific products.

Independence and competence

Ricardo Energy & Environment is one of the world's leading sustainability consultancies, with over 1,000 internationally respected experts in the fields of climate change, energy, air quality, resource efficiency, transport, and economics. It has been involved in ground-breaking technical and policy development across the environmental spectrum for the last 40 years and continues to play a lead role as advisor to governments and major corporations.

Conclusion

Ricardo Energy & Environment has been able to conclude on the basis of the review completed, that Castrol has established a credible process for identifying and deploying sustainability assessment criteria and robustly assessing products against them.

Castrol are actively investigating ways to incorporate the recommendations raised within the review including assessing products against multiple criteria to provide a more holistic view of their sustainability performance and including categorisation for products depending on their overall sustainability performance. These developments should further improve the robustness of the methodology and support Castrol in achieving its sustainability targets.

Limitations and exclusions

Ricardo Energy & Environment assessed the reasonability and appropriateness of the methodology used to define the PSA used by Castrol for benchmarking products. As such, this assurance statement is not an audit report and does not assure specific PATH360 products themselves.

Validity of statement

This statement is valid for the product sustainability assessment review for Castrol's PSA from April 2022, to March 2023.

Ricardo Energy & Environment accepts no liability whatsoever to any third party for any loss or damage arising from any interpretation or reliance upon this assessment.

Ricardo Energy & Environment, April 2022

Grace Parker
Senior Consultant,
Sustainability, Energy and
Carbon Management
T: 07548 841932
E: grace.parker@ricardo.com

Nathan Morgan
Analyst Consultant,
Sustainable Infrastructure
and Operations
T: +44 (0)1235 753 549
E: nathan.morgan@ricardo.com

IMPROVING THE ENVIRONMENTAL PROFILE OF OUR OFFERS





**CASTROL'S APPROACH
TO SUSTAINABILITY IS
TO TAKE A 360 VIEW, TO
SEEK TO MAXIMISE OUR
CONTRIBUTION TO A MORE
SUSTAINABLE FUTURE,
AND OUR PRODUCTS AND
OFFERS ARE CORE TO THAT.**

Our goal is to become the lubricant, service and maintenance sustainability partner of choice for our customers. Improving the environmental profile of our range and improving its contribution in use, through performance, is key to achieving that.

Since 2014, we have been conducting product carbon life-cycle assessments for an increasing number of products within our portfolio. We use the GHG Protocol's Product Standard¹ to quantify the life-cycle carbon emissions associated with a product from raw material extraction, transport, production emissions, packaging, use and fate at end of use.

To develop the PATH360 strategy, in 2020 Castrol worked with ERM to conduct its first assessment of its greenhouse gas inventory in line with the GHG Protocol's corporate value chain standard² covering scopes 1, 2 and 3. Together this work has enabled us to identify carbon reduction enablers across the product life-cycle, what we can do and where we need to work with our partners to influence change. In 2021 we made our operations (scope 1 and 2 emissions³) carbon neutral and expanded our carbon neutral offer to cover 29% of volume

sold⁴. In doing so, we have assessed the carbon footprints⁵ of more than 1000 product variants representing 5000+ individual products and offset 1.37m tonnes carbon.

To improve the environmental profile of our offer we have developed these Castrol PATH360 qualifying criteria to help us identify which of our products we consider to be "more sustainable" or "have a better environmental profile".

In order to qualify as part of the PATH360 family a product or service must meet at least one of the qualifying criteria described in this document. Many products will qualify under more than one qualifying criteria – for example a product may meet a qualifying performance standard (e.g. fuel economy) and also be carbon neutral in accordance with PAS2060. It would therefore qualify as part of the PATH360 family under two categories – CUSTOMER SOLUTIONS and CARBON NEUTRAL. In this case the product is counted once for the purposes of reporting the percentage of our sales that come from PATH360 products and services but we are also able to track sales by qualifying criteria (e.g. CUSTOMER SOLUTIONS) and their associated sub-categories (e.g. fuel efficiency). See table on next page.

¹For more information visit Product Standard | Greenhouse Gas Protocol (ghgprotocol.org)

²For more information visit <https://ghgprotocol.org/corporate-standard>

³https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporting-Standard_041613_2.pdf page 5

⁴For more information visit www.castrol.com/cneutral

⁵In accordance with the GHG Protocol's product lifecycle accounting and reporting standard



CATEGORY	SUB-CATEGORY	SIMPLIFIED QUALIFYING CRITERIA	EXAMPLE CRITERIA
CUSTOMER SOLUTIONS	ENERGY	Improves fuel efficiency	OEM specification for fuel economy or proven independent of specification or lower viscosity than average
	WASTE	Longer life, less waste	
		Reduces waste	
	WATER	Water saver	Demonstrably saves commercial customer water
		Reduces water contamination	Improved biodegradation or reduced bioaccumulation or toxicity
	HEALTH & ENVIRONMENT	Reduced toxicological or ecotoxicological impact	
	CUSTOMER CARBON OFFSET OFFERS		
ADVANCING THE TRANSITION	SUPPORTING THE GENERATION OF RENEWABLE POWER		Developed specifically to serve the renewable energy generation sector
	SUPPORTING THE ADOPTION OF E-MOBILITY SOLUTIONS		Developed specifically for electric vehicles
LOWER CARBON DESIGN			-10% carbon emissions in a cradle-to-gate or gate-to-grave aspect of the total LCA footprint.
CARBON NEUTRAL	CARBON NEUTRAL	Carbon neutral	PAS2060 compliant

In their review of Castrol's PATH360 Qualifying Criteria 2021 Ricardo Energy & Environment recommended that Castrol consider adopting more "levels" of qualification to its assessment in order to identify the "most sustainable" parts of the PATH360 family. Castrol welcome this recommendation and are reviewing how it might be applied.

Our 6 PATH360 guiding principles are designed to help us improve the environmental profile of our ranges and meet our 2030 Castrol aims.

We have put "Think Circular" as our first guiding principle because we believe that circular economy thinking can help us to improve the environmental profile for example by reducing the life-cycle carbon emissions of our products. We include our second principle "Lower Carbon Design" in our decision-making processes and together with our third principle of "Carbon Neutral" we will advance our aim of halving the net carbon intensity of our products. Our fourth principle of "Customer Solutions" describes how we aim to continue to pioneer efficient performance to help our customers towards their sustainability goals. Our fifth principle "advance the transition" reflects that we are also developing products and services for newer growing sectors like e-mobility, wind and solar. These fourth and fifth principles align our focus on saving waste.

All of which is underpinned by our focus area and guiding principle of "Improving People's Lives". We seek to build in positive outcomes for people around the world as we work. This starts within our business and extends out into activities ranging from our choice of offsets to support our carbon neutral offers, to tools aiming to improve mechanic knowledge, helping to support more sustainable livelihoods and a focus on customer inclusion.

For more information visit www.castrol.com/PATH360



TO DELIVER THIS WE HAVE DEVELOPED
THREE FOCUS AREAS AND SIX GUIDING PRINCIPLES
FOR OUR PATH360 WORK

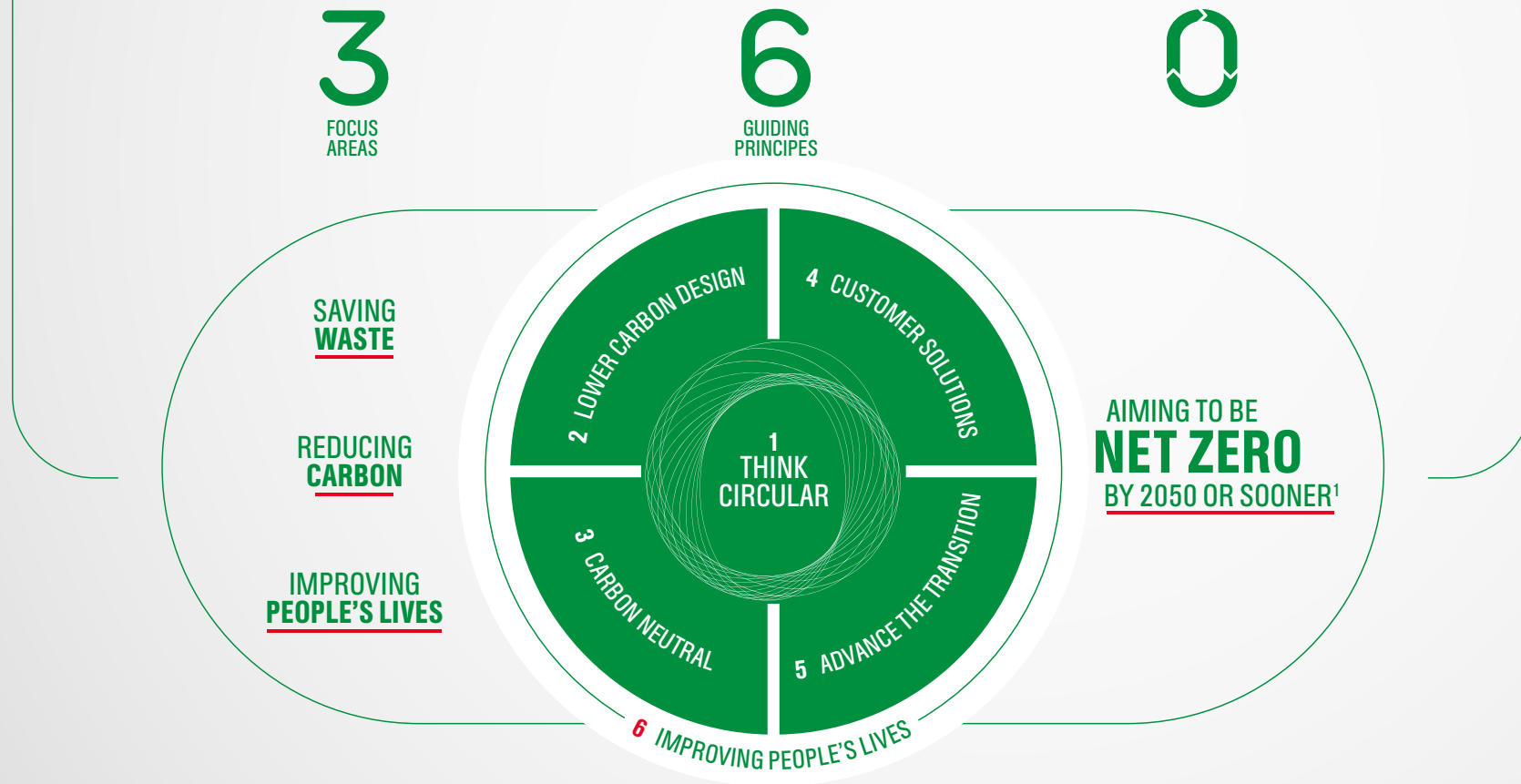
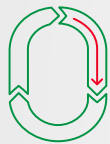


Figure 1: Our PATH360 framework

¹As part of bp's ambition to be net zero by 2050 or sooner and to help the world get to net zero



HERE IS MORE INFORMATION ON OUR SIX GUIDING PRINCIPLES



1. **THINK CIRCULAR**

We look at the life-cycle carbon emissions of our products from “cradle to grave” and are using circular economy thinking to help us improve them. Turn to page 16 to find out more.



2. **LOWER CARBON DESIGN**

We consider life-cycle carbon emissions as part of our product development process to deliver high performance lower life-cycle carbon solutions.



3. **CARBON NEUTRAL**

To make a carbon neutral offer we follow the PAS 2060 standard to calculate the life-cycle carbon emissions (or carbon footprint) of the product, develop a carbon reduction plan, purchase and retire sufficient carbon offset credits to compensate for residual emissions. Carbon offsetting is a rapid way to compensate for a product’s carbon footprint¹ while we work to bring it down.



4. **CUSTOMER SOLUTIONS**

We know that the biggest difference we can make is by working together with our customers and partners and helping them towards their sustainability goals. Our products can help our commercial customers save energy, waste or water and we are focused on high performance solutions to maximise this contribution.



5. **ADVANCE THE TRANSITION**

We are investing in and developing products and services that support the world’s transition to renewable energy and sustainable technologies – like lubricants for wind turbines and fluids for e-mobility.



6. **IMPROVE LIVES**

And we build in positive outcomes for people around the world as we work. Our activities range from aiming to improve mechanic education, helping to support more sustainable livelihoods and a focus on customer inclusion.

¹ GHG Protocol's product lifecycle accounting and reporting standard

OUR QUALIFYING CRITERIA





OUR QUALIFYING CRITERIA

This document describes our qualifying criteria for products and services to be included in the PATH360 family. These criteria were developed to help us focus on the contributions Castrol can make and will help us to assess our sustainability progress. This second edition incorporates some of the recommendations made as part of an independent review conducted by Ricardo Energy & Environment.

The criteria in this document will be kept under review and revised when Castrol considers it necessary due to changing circumstances and at least annually.

Castrol has established a governance process for reviewing the qualifying criteria. This includes technical experts from across the business reviewing the proposed basis for any new criteria and making recommendations for endorsement by Castrol's leadership team. In 2022 Ricardo performed an independent review of our 2021 qualifying criteria, many of their recommendations have been incorporated into this update.

There are currently four categories of qualifying criteria which mirror our PATH360 guiding principles. A product or service can qualify to be part of the PATH360 family if it meets the qualifying criteria under one (or more of the categories). They are:

- 1 CUSTOMER SOLUTIONS
- 2 ADVANCING THE TRANSITION
- 3 LOWER CARBON DESIGN
- 4 CARBON NEUTRAL

Castrol has mapped its product portfolio against the qualifying criteria under each category to understand which products qualify as part of the PATH360 family and how they perform as a proportion of total sales.

The categories and associated qualifying criteria are also used as part of Castrol's new product development process to guide more sustainable product development and to help us track our investment in this space.

In their review Ricardo Energy and Environment recommended sharing the decision tree Castrol uses to include products within the PATH360 family.

DOES THE PRODUCT MEET ONE OR MORE OF THE QUALIFYING CRITERIA?	
YES	NO
Included as part of the PATH360 family under the corresponding category (ies)	Not included in the PATH360 family. Development opportunities considered



1

CUSTOMER SOLUTIONS



CUSTOMER SOLUTIONS

PRODUCTS AND SERVICES



To achieve the Paris climate goals¹, the world will need improvements in end use energy efficiency. In one estimate, these improvements can provide almost 40% of the necessary GHG reductions.

Castrol products and services help their users to save energy by reducing friction and reduce waste by protecting from corrosion and wear. Increasingly we are developing offers to support customer water saving and protection goals.

Products and services included in the PATH360 family under the “Customer solutions” criteria are those that we consider can demonstrably deliver better outcomes than competitor or industry benchmarks and thereby can contribute towards their user’s² sustainability objectives.

ENERGY EFFICIENCY IS CRITICAL TO ACHIEVING THE PARIS CLIMATE GOALS

IN TOTAL, ~23% (119 EJ) OF THE WORLD’S TOTAL ENERGY CONSUMPTION ORIGINATES FROM TRIBOLOGICAL² CONTACTS

This 23% is split as 20% (103 EJ) is used to overcome friction and 3% (16 EJ) is used to remanufacture worn parts and spare equipment due to wear and wear-related failures³.

¹Energy efficiency includes enhanced technology performance as well as shifts in end-use sectors from more energy-intensive to less energy-intensive products (including through fuel shifts) Energy Technology Perspectives 2020 (windows.net) pg73

²Tribology is the study of friction, wear, lubrication, and the design of bearings; the science of interacting surfaces in relative motion

³Influence of tribology on global energy consumption, costs and emissions Kenneth Holmberg & Ali Erdemir 2017



CUSTOMER SOLUTIONS

ENERGY

AUTOMOTIVE – FUEL ECONOMY LATEST OEM OR INDUSTRY SPECIFICATION

Castrol's automotive lubricants portfolio covers cars, bikes and trucks and within each application the performance is wide ranging to cover the needs of our customers around the world, from older industry specifications to newer high performing products carrying the latest OEM and industry specifications¹.

- To qualify as a PATH360 product for fuel efficiency, a product must carry what Castrol considers to be a leading fuel efficiency requirement in its specification. This means the product has had to pass a stringent fuel efficiency performance requirement set either by an OEM or an industry body.
Only those products where the fuel efficiency requirement is deemed premium/top tier are included.
- Products which have specific fuel efficiency performance claims, independent of specifications, are also included, i.e. product has been evaluated in a non-industry or OEM test to prove the fuel efficiency benefit. For example [CASTROL MAGNATEC STOP-START | CASTROL INDIA.](#)

LOWER VISCOSITY GRADES COMPARED TO MARKET AVERAGES

A second aspect of fuel efficiency is the viscosity of the products. Lower viscosity products, regardless of the specification that they carry, can have an inherent fuel efficiency benefit vs thicker manufacturers' viscosity grades. The lower viscosity grades are often specified by the vehicle manufacturers in order to help meet vehicle efficiency and emissions performance requirements. This is typically led through designing the engine to meet these standards which subsequently requires a thinner oil to operate correctly for performance and durability in all required conditions.

- Products which have a viscosity grade equal to or lower than 0W-20 can qualify as PATH360 regardless of the specification the product holds. 0W-20 and thinner products are used to enable fuel efficiency benefits by car manufacturers and are leading the lower viscosity transition around the globe. If, for a given market, a thicker viscosity grade is deemed to be amongst the thinnest sold and therefore leading the low viscosity transition for that market, these may also qualify as PATH360 by exception following a review of the local engine oil portfolio.

We estimate that in 2021 our lower viscosity lubricants saved our passenger car customers 280 million litres of fuel compared to what would have been used by vehicles using a global industry average portfolio of lubricants².

**REDUCING THE FUEL
CONSUMPTION THROUGH
LOWERING THE ENGINE
OIL VISCOSITY BY ONLY 1%
WOULD YIELD CALCULATED
SAVINGS OF 1.7 MILLION
TONNES OF CO₂-EMISSIONS**

based on the total 170 million tonnes of CO₂-emissions generated by German road traffic annually³.

¹These are continually updated by the industry and OEM's and Castrol will assess these in line with the review of this document

²Due to the Castrol passenger car portfolio sold in 2021 being made up of a larger proportion of lower viscosity lubricants based on a set of assumptions. Fuel efficiency determined via the Industry M111FE test. For more information visit www.castrol.com/PATH360/Saving-fuel

³Tribology in Germany: Interdisciplinary technology for the reduction of CO₂-emissions and the conservation of resources 2019



CUSTOMER SOLUTIONS

GUIDING PRINCIPLE – THINK CIRCULAR

We're harnessing circular economy thinking to reduce the life-cycle environmental profile of our products and services – looking at how we can improve both our inputs and our processes, but also how our products can help customers too.

Where using circular economy principles delivers sufficient benefit to customer or lower life-cycle carbon emissions, the product may qualify as part of the PATH360 family under that (customer solutions or lower carbon) category. We give some examples of how this is working in practice in the next pages.

REDUCE

Working to reduce raw material demand across the value chain – long life products, reduce packaging, digital solutions

REPLACE

Investigating alternative raw materials and techniques (e.g. alternative ingredients or digital services)

REUSE

Designing with the end in mind, considering the system as a whole and working to reduce raw material demand

RECYCLE

Using recycled materials to lower product environmental profile and keep materials in use

RELATIONSHIPS

Partnering, sharing, lobbying and providing technical support

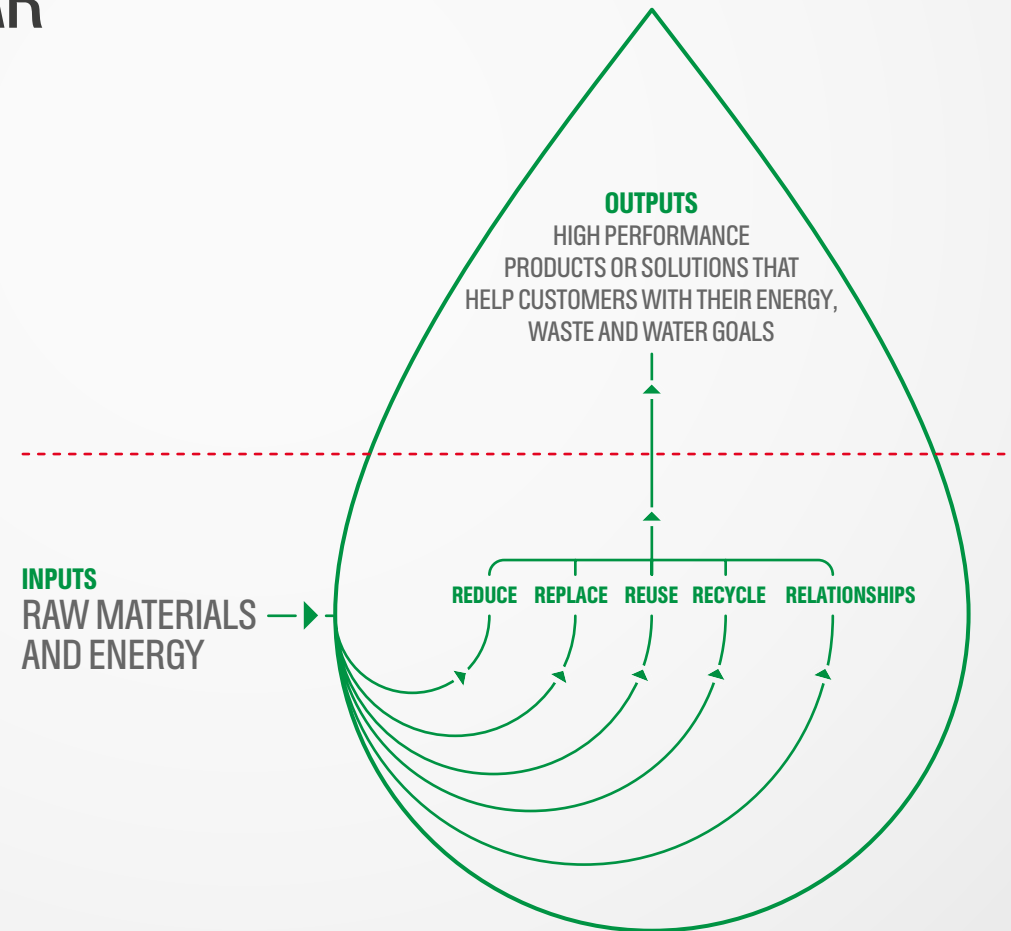


Figure 1: Our Think Circular approach



CUSTOMER SOLUTIONS

WATER

Water is a precious resource and a valuable commodity. According to the UN, water scarcity affects more than 40% of the world's population and is projected to rise¹. According to the IPCC "roughly half the world's population currently experience severe water scarcity for at least some part of the year due to climatic and non-climatic drivers".

Castrol commercial customers are setting water targets related to consumption and to reducing contamination. Castrol is developing offers and solutions to help with these goals.

To qualify as PATH360 under the water category, products and services must either

- help customers save water, or
- reduce water contamination

WATER SAVING

By considering the environment in which products are used they can be designed to work together in order to help customers reduce overall water demand.

- Products designed to work as systems and/or designed to be re-used within customer processes thereby reducing customer water demand. When sold together these products can qualify as PATH360 in the water category.

REDUCING WATER CONTAMINATION

Our customers meet operational and regulatory requirements for marine applications and reduce leakages and spills. Depending on the products, this is achieved via superior levels of biodegradation, significantly reduced levels of bioaccumulation and toxicity than a conventional mineral based oil or mineral oil-based grease.

- Products with improved biodegradation, reduced bioaccumulation or toxicity (in line with requirements of EU Ecolabel or OSPAR Convention on the Protection of the Marine Environment of the Northeast Atlantic) can qualify as part of the PATH360 family.

Techniclean XBC range reimagines the process by recycling the cleaner

Our Techniclean family of solvent and water-based cleaners enables precision cleaning of metal-worked parts in a wide range of cleaning systems. While other industrial cleaners can only be discarded, cleaners such as Techniclean XBC range can be cycled back to the coolant system without causing performance issues. This reduces waste volume, as Techniclean is constantly being reused. It also enables lower water consumption, and lower operating costs, thanks to the reduction in waste processing and clean water usage. When the cleanliness of components after process cleaning is paramount, but you also need to reduce water consumption, machining and cleaning process costs, Techniclean helps make it happen.

> Watch the Case Study video

¹ For more information visit <https://www.un.org/sustainabledevelopment/water-and-sanitation/>



CUSTOMER SOLUTIONS

WASTE

Many Castrol customers have set stretching waste targets such as minimising waste to landfill, responsible use of resources and packaging targets all linked to waste.

To qualify as PATH360 under the waste category products and services must demonstrably help their users reduce waste arisings: For example by

- Extending the useful life of machines.
- Reducing the waste generated by our product and packaging at end of use.

REDUCE

Extended drain formulations are designed to prolong useful life and help reduce waste. Our automotive engine lubricant portfolio covers cars, bikes and trucks and within each application the performance is wide ranging to cover the needs of our customers around the world, from older industry specifications to newer high performing products carrying the latest OEM and industry specifications.

- To qualify as part of the PATH360 family under the waste criteria “extended drain”, a product will need to carry an extended drain interval specification or been proven to extend oil drains independent of specification. This means the product has had to pass a stringent extended performance test or an in-field assessment above and beyond what is typical for that application.

For example CASTROL VECTON | CASTROL UK & IRELAND Fully synthetic (SAE 10W-40) and part synthetic (SAE 10W-30) diesel engine oils which have been tested for extended drains up to 120,000 km¹.

¹Approved by MAN for up to 120,000 km and Mercedes Benz, Volvo, and Renault for up to 100,000 km in accordance with their specifications. Actual oil drain depends on engine type, operating conditions, service history, OBD and fuel quality. Always consult your manufacturer's handbook

²Influence of tribology on global energy consumption, costs and emissions Kenneth Holmberg & Ali Erdemir

³For more information visit [Case Studies | Industrial | CASTROL UK & IRELAND](#)

Extending useful life

Corrosion and wear cause machine life to be reduced. Globally 16EJ of energy is used to remanufacture worn parts and spare equipment due to wear and wear related failures².

- Products qualify as PATH360 in the “extending useful life” category if they can demonstrate that they have superior protection characteristics when compared to the industry standard.

REUSE

By understanding the quality of residual material at end of use and the environment it is working in we can find ways that materials can be re-used thereby reducing total waste arisings and raw material demand.

- Products designed to work as systems thereby reducing customer waste arisings. When sold together these products can qualify as PATH360 in the waste category.

e.g. our Techniclean XBC product range sold as compatible cleaner to our XBB coolants is to be considered as a system enabling waste reduction.

Through our partnership approach and advanced metalworking fluids offer, Renault saved 1 million litres of water and 1 million litres of waste in their automotive engine plant³.



CUSTOMER SOLUTIONS

HEALTH AND ENVIRONMENTAL IMPACT

Improving lives is one of our six guiding principles. The environmental and health profile of our products and offers is governed by legislation and/or managed through our own product risk assessments.

The toxicological and ecotoxicological properties of relevant Castrol products are assessed to determine its health and environmental impacts. The minimisation and mitigation of these impacts primarily include alternative selection of raw materials and substituting these where applicable. Where alternatives are not available measures can be taken to eliminate these raw materials or where low risk appropriate measures are put in place to manage the use of products.

- Where a product can demonstrate that a raw material has been removed or substituted to mitigate the impact (ahead of legislation) it may qualify as part of the PATH360 family.

Castrol BioTac OG is an environmentally responsible open gear lubricant formulated to reduce the impact on the marine environment – either where the lubricant is deliberately placed in contact with the marine environment such as rack and pinion gearing on the legs of jack-up drilling rigs, or where there is a risk of spill or leakage from anchor winches or other deck machinery.

Our engineers matched the performance characteristics of the best available traditional lubricants with new additive technologies to create BioTac OG. The thickener structure is highly resistant to water washing and provides outstanding corrosion protection and its high load carrying performance reduces wear on pinion teeth and guides.

BioTac OG has proven environmental credentials, it is OSPAR compliant with no substitutable components and all components are either Green (PLONOR¹) or Yellow in Norway. It exceeds US EPA toxicity requirements² and passes US EPA static sheen test.

¹PLONOR – Pose Little or No Risk to the Environment (OSPAR definition)

²As specified in the NPDES permit GMG29000 for subsea production control fluids
For more information visit [biotac_mp_protection_performance.pdf \(castrol.com\)](#)



CUSTOMER SOLUTIONS

CUSTOMER CARBON OFFSET OFFERS

Castrol commercial customers are setting carbon targets but reducing carbon emissions can take time. Castrol aims to help its customers towards their sustainability goals and recognises that carbon offsetting can be a rapid way to contribute to the climate challenge while working to reduce emissions. When Castrol develops carbon offset backed offers to support its commercial customers towards their sustainability goals these offers can be included within the PATH360 family.

Castrol works with bp's Low Carbon Trading team and bp Target Neutral to buy and retire carbon credits from a portfolio of carbon offsetting (reduction and avoidance) projects around the world.

These offsetting projects are independently verified against approved international standards such as the Verified Carbon Standard (VERRA), the Gold Standard and the United Nations Clean Development Mechanism (CDM). They are purchased and retired in line with the International Carbon Reduction & Offset Alliance (ICROA) code of best practise. The carbon credits are based on the following principles: Emissions reductions are real, measurable, permanent and unique. They are additional, in that they would not have been achieved without carbon finance and have been independently verified.

In addition to reducing or avoiding carbon emissions globally, carbon offset projects can also deliver a range of other benefits for those communities in which the projects are based. These benefits are reflected through the United Nations Sustainable Development Goals (SDG's). The Goals recognise that ending poverty must go hand-in-hand with strategies that build economic growth and addresses a range of social needs including education, health, social protection, and job opportunities, while tackling the climate challenge and environmental protection.

Our [carbon offset project portfolio](#) | [bp Target Neutral](#).



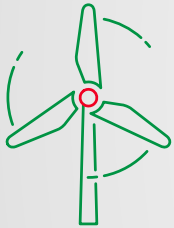
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ADVANCING THE TRANSITION



ADVANCING THE TRANSITION

PRODUCTS AND SERVICES THAT “ADVANCE THE TRANSITION TO A MORE SUSTAINABLE FUTURE”



“Achieving net-zero CO₂ emissions requires a range of measures and a range of technological transitions. There are immediate opportunities in energy efficiency, in particular in industrial processes, space heating and cooling, and the fuel economy of vehicles, and energy from renewable sources, in particular wind and solar photovoltaic (PV). Over the next two decades, in some scenarios energy efficiency and renewables contribute between them around 70% of cumulative CO₂ emissions savings.”¹

We play a role here by producing products that help support the rapid adoption of hybrid and electric vehicles and supporting efficient power generation through our wind offers. On top of that we’re also delivering new, digital, systems and processes to help our customers and partners achieve greater efficiency throughout their operations.

- All products and services developed for these new growing sectors will qualify as part of the PATH360 family.

SUPPORTING THE GENERATION OF RENEWABLE POWER

40% of unplanned downtime on windfarms is caused by gearbox failure. This can mean losses of up to \$200,000 per event and drastic increases to a wind fleet’s levelised cost of energy².

Maximising the efficiency of every gearbox depends on the control of friction. Gearbox friction generates excessive heat, putting thermal stress on system components to cause wear and pitting. This shortens the life of component parts and reduces gear box performance, leading to unscheduled downtime and additional replacement/labour costs.

Castrol Optigear Synthetic X320 is our premium oil for wind turbine gears, and is proven to reduce friction by up to 30 per cent, reduces gearbox stress in all conditions and our additive boost package extends the useful life further, removing at least one main gearbox oil change during the life of each turbine.

¹Energy efficiency includes enhanced technology performance as well as shifts in end-use sectors from more energy-intensive to less energy-intensive products (including through fuel shifts) Energy Technology Perspectives 2020 (windows.net) pg73

²For more information visit [Optigear Wind: Gear Oil | Technology | CASTROL UK & IRELAND](#)



ADVANCING THE TRANSITION

PRODUCTS AND SERVICES THAT “ADVANCE THE TRANSITION TO A MORE SUSTAINABLE FUTURE”

SUPPORTING THE ADOPTION OF E-MOBILITY SOLUTIONS

As part of Castrol's strategy we are supporting newer, growing sectors including e-mobility. Electric vehicles (EVs) play a fundamental role in the future of the automotive industry.

- All products and services developed to serve e-mobility qualify as part of the PATH360 family.

Supporting the e-mobility transition

Castrol has recently launched Castrol ON, a new brand for its range of advanced fluids for EVs. The range includes e-Transmission Fluids, e-thermal fluids and e-Greases. Advanced e-Transmission Fluids help extend the life of the drivetrain system and enable EVs to go further on a single charge. E-thermal fluids help keep batteries cooler, even in extreme conditions, and enable them to tolerate sustained ultra-fast charging (>150kw), while e-Greases enable EVs to perform more efficiently by minimising temperature spikes, and enhancing durability of components whilst lowering weight. Today, 2 out of 3 of the world's major car manufacturers use Castrol ON EV Fluids as part of their factory fill¹.

Castrol ON: leading the charge

Castrol's e-Fluids range has been developed in close collaboration with industry partners including the Jaguar Racing Formula E Team. Castrol ON's motorsport collaborations mean that e-Fluid technologies can be pushed and tested to the limit on the track before they reach the road.

The new Castrol on e-fluid range

e-Thermal Fluids

Castrol ON battery e-thermal fluids improve thermal management, keeping batteries cooler and at more stable temperatures, even in extreme conditions. This enables ultra-fast charging and helps to extend the life of the battery.

e-Transmission Fluids

Castrol ON e-Transmission Fluids deliver enhanced protection of the drivetrain and improve efficiency, helping EVs go further on a single charge and working to extend the life of the drivetrain system.

e-Greases

Castrol ON e-Greases play a vital role in maintaining optimum efficiency and extending the life of components.

To find out more about Castrol ON visit:

www.castrol.co.uk/e-Fluids

¹Based on LMCA data for top 20 selling OEMs (new car sales) in 2019. Used as part of OEM factory fill.

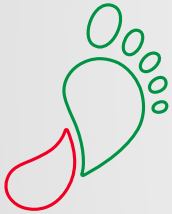


3

LOWER CARBON DESIGN



LOWER CARBON DESIGN



Since 2014, we have been conducting product life-cycle assessments for an increasing number of products within our portfolio. These assessments now cover almost 29% of our product sales by volume. We use the GHG Protocol's Product Standard¹ to quantify the life-cycle carbon emissions associated with a product from raw material extraction, transport, production emissions, packaging, use and ultimate fate at end of use.

We are working to reduce the life-cycle carbon emissions of our offers by improving our operational efficiency, encouraging our supply chain to decarbonise, collaborating to source lower carbon raw materials and working to influence in use losses and fate at end of use. We want to deliver high performance products with lower life-cycle carbon profile.

LIFE-CYCLE CARBON

- To qualify for PATH360 lower carbon, the product's carbon emissions on either an upstream, (cradle to gate), downstream (gate to grave) basis (in accordance with the GHG Protocol's product lifecycle accounting and reporting standard), or both, must be at least 10% lower than previous baseline.

This qualifying criteria has been reviewed and amended this year in line with the recommendations made by Ricardo Energy & Environment's independent review of Castrol's PATH360 qualifying criteria. The revision reflects the areas of product carbon footprint over which Castrol has most influence and recognises that the earlier, more stretching criteria had the potential unintended consequence of discouraging action.

¹Product Standard | Greenhouse Gas Protocol (ghgprotocol.org)



4

CARBON
NEUTRAL



CARBON NEUTRAL



Castrol products contribute to saving energy and driving efficiency in use, but there are carbon emissions associated with their life-cycle.

Reducing product life-cycle carbon emissions will take time and requires action all along the value chain. Carbon offsetting is a rapid way for us to contribute to the climate challenge while we work to reduce emissions.

In 2014 Castrol launched the world's first carbon neutral engine oil "Professional". Since then Castrol has expanded its offer so that in 2020 ~29% of total volume sold was carbon neutral.

To make a product carbon neutral we follow the PAS 2060 standard specification to calculate the life-cycle carbon profile of the product or service, develop a carbon reduction plan, purchase and retire sufficient carbon offset credits to compensate. This is third party assured.

All carbon neutral products can be included as part of the PATH360 family.

Offset backed customer offers

Many of Castrol's customers are aiming to reduce and/or compensate for the carbon emissions associated with their businesses, products and services. To help accelerate this Castrol also plans to develop offers that enable customers to become carbon neutral.

For more information visit www.castrol.com/cneutral

An example of this is Castrol's PATH360 Dealer offer where Castrol helps the customer calculate their business's operational carbon emissions for example using Castrol's carbon management portal, create and commit to a carbon emissions reduction plan and then offset the residual carbon emissions. Castrol is also helping these customers offset the emissions from fuel used in vehicles (owned or sold). Offset backed offers like this will qualify as part of the PATH360 family under the 'customer solutions' category see page 20 for more detail.



SUMMARY & EXAMPLE REQUIREMENTS



SUMMARY & EXAMPLE REQUIREMENTS (MAY 2022)

PATH360 QUALIFYING CRITERIA				EXAMPLE REQUIREMENTS
CUSTOMER SOLUTIONS	ENERGY	FUEL ECONOMY	OEM specification for fuel economy	DEXOS Gen 3 BMW LL12 FE
			Industry specification	ACEA C2 5W-30's
			Proven independent of specification	CASTROL MAGNATEC STOP START EDGE EXTENDED PERFORMANCE Castrol assessment based on engine and chassis dynamometer performance.
			Lower viscosity vs market average	Products which have a viscosity grade equal to or lower than 0W-20 can qualify as PATH360 regardless of the specification the product holds.
	WATER	SAVES WATER	<ul style="list-style-type: none"> – Products designed to work as systems thereby reducing customer water demand. When sold together these products can qualify as PATH360 in the water category. – When designed and sold as systems to save water they can qualify as part of the PATH360 family. 	Castrol assessment based on field trials and field performance.
		REDUCES WATER CONTAMINATION	Products with improved biodegradation, reduced bioaccumulation or toxicity (in line with requirements of EU Ecolabel or OSPAR Convention on the Protection of the Marine Environment of the North East Atlantic) can qualify as part of the PATH360 family.	EU Ecolabel – OSPAR Convention on the Protection of the Marine Environment of the North East Atlantic.
	WASTE	EXTEND USEFUL LIFE	Extended drain interval specification or proven to extend drain intervals independent of specification. <ul style="list-style-type: none"> – To qualify as a PATH360 under the waste criteria “extended drain”, a product will need to carry an extended drain interval specification or been proven to extend oil drains independent of specification. This means the product has had to pass a stringent extended performance test or an in-field assessment above and beyond what is typical for that application. 	MAN 3677 – Scania LDF-3, LDF-4, LDF-5 Castrol assessment based on field trials and field performance Proven extended drain claims on CVO products.
		REDUCE	Extending useful life protection characteristics relative to previous benchmark.	BIO CFX 85 cutting fluid vs incumbent fluid Castrol trials.
		REUSE	Products designed to work as systems thereby reducing customer waste arisings. When sold together these products can qualify as PATH360 in the waste category.	e.g. our Techniclean XBC product range sold as compatible cleaner to our XBB coolants is to be considered as a system enabling waste reduction.



SUMMARY & EXAMPLE REQUIREMENTS (MAY 2022)

PATH360 QUALIFYING CRITERIA				EXAMPLE REQUIREMENTS
CUSTOMER SOLUTIONS	HEALTH & ENVIRONMENT	REDUCED TOXICOLOGICAL OR ECOTOXICOLOGICAL IMPACT	<p>The toxicological and ecotoxicological properties of relevant Castrol products are assessed to determine its health and environmental impacts.</p> <p>The minimisation and mitigation of these impacts primarily include alternative selection of raw materials and substituting these where applicable.</p> <p>Where alternatives are not available measures can be taken to eliminate these raw materials or where low risk appropriate measures are put in place to manage the use of products.</p> <p>– Where a product can demonstrate that a raw material has been removed or substituted to mitigate the impact (ahead of legislation) it may qualify as part of the PATH360 family.</p>	
ADVANCE THE TRANSITION	E-MOBILITY		All products and services developed to serve e-mobility qualify as part of the PATH360 family.	
	RENEWABLE POWER		All products and services developed for these new growing sectors will qualify as part of the PATH360 family.	
LOWER CARBON DESIGN		>10% LIFE-CYCLE CARBON VS BASELINE	To qualify for PATH360 lower carbon, the product's cradle to gate or gate to gate life-cycle carbon emissions must be at least 10% lower than previous baseline.	Measured in accordance with GHG Protocol.
CARBON NEUTRAL		CARBON NEUTRAL	To make a product carbon neutral we follow the PAS 2060 standard specification to calculate the life-cycle carbon profile of the product or service, develop a carbon reduction plan, purchase and retire sufficient carbon offset credits to compensate. This is third party assured. All carbon neutral products can be included as part of the PATH360 family.	In accordance with PAS 2060.



DISCLOSURE

Castrol®, a bp brand, blends and markets Castrol lubricant products made from hydrocarbons. The global scientific community has reached consensus that emission of carbon dioxide (CO₂) and other gases from the use of hydrocarbons, including the combustion of fossil fuels, is a contributor to global warming causing what is commonly referred to as climate change. Castrol acknowledges this scientific consensus but also recognizes the role that lubricants play in supporting efficient motion to meet everyday energy needs.

Castrol is offering carbon neutral products offset in accordance with PAS2060, which includes the full lifecycle carbon emissions of the products, including production, distribution, use and end of life. When you use a carbon neutral lubricant in your vehicle or machine, CO₂ will be emitted into the atmosphere –, either through losses in use and if combusted at end of life.

A carbon offset is an action or activity (such as installation of renewable power or switching to more energy-efficient cooking methods) at one location that compensates for the emission of CO₂ or other greenhouse gases to the atmosphere at another location. Put another way, carbon offsetting is a way to

compensate for emissions by making an equivalent CO₂ saving elsewhere. Castrol procures sufficient quantities of carbon credits from a range of carbon offset projects that not only reduce or avoid carbon emissions but some also provide livelihood benefits that support the UN Sustainable Development Goals. Castrol retires carbon credits in an international registry which means they can only be counted once.

Please note that a carbon offsetting program will not change or reduce the CO₂ emissions from any use of Castrol products nor is it certain that carbon offsetting has a quantifiable effect on the planet.

To learn more about climate change visit <https://www.ipcc.ch/>

To learn more about bp and our net zero ambition visit <https://www.bp.com/en/global/corporate/news-and-insights/reimagining-energy/net-zero-by-2050.html>