

Muc-Off®


12

YEARS

OF PERFORMANCE INNOVATION



MEDALS, PODIUMS AND RECORDS



**A NEW
OF SPEED
& DURABILITY**



OVERA.

**PEED
BILITY**



A FAMILY BUSINESS

The first chapter in our history was in 1991 when we started out as a bicycle component manufacturer called X-Lite. Inspired by their son's purchase of a Klein mountain bike, Rex and Marilyn Trimnell opened the doors of our head office in Poole, Dorset, with the goal of engineering the world's first twin crown aluminium bicycle fork and the lightest bar ends.

Business was good, but Rex, a man whose obsession with detail was second to none, grew frustrated at how long it took to clean his bikes during the development process. His research found that most riders were taking care of their equipment using plain old washing up liquid – a material that contains lots of salt and causes corrosion of delicate components.

This wasn't good enough for Rex or his son Alex, today's Managing Director. There was a clear gap in the market for a range of products that were highly effective, eco-friendly and, most importantly, safe to use on all parts of the bike. It was 1994 and Muc-Off had arrived.

A CLEANER IS BORN

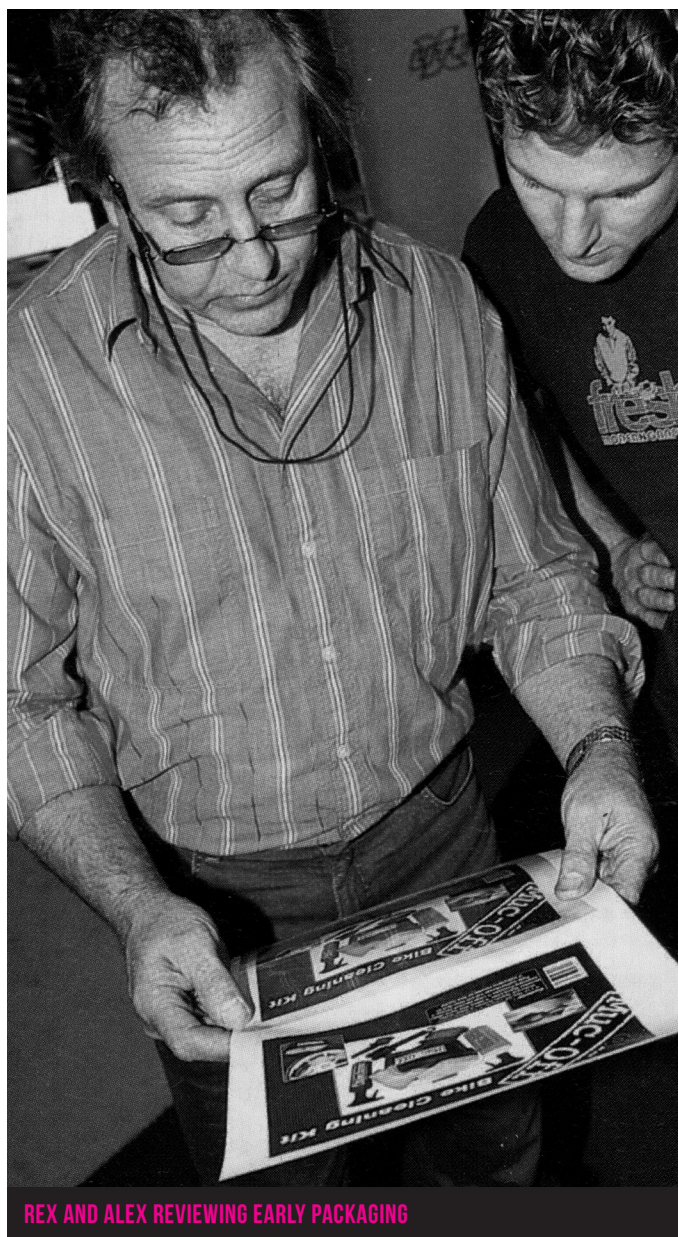
It all started with a single flagship product – the Nano Tech Bike Cleaner. Free from dangerous acids and chemicals, the biodegradable liquid was an instant success thanks to its ability to break down dirt and grime at microscopic levels. We began to sell it around the world and customers asked for more and more bike-specific cleaning products that would help them get their ride looking fresh and running smooth. The range quickly grew to include a number of degreasers and protectants that we continue to sell to this day.

Then, in 2004, we faced one of the hardest moments in our history when Rex Trimnell sadly passed away unexpectedly. Alex took over the business full-time, alongside his mother and sister, and with a core team around him worked tirelessly to drive the business forward. Shortly after Rex's passing, the decision was made to shut down X-Lite and focus purely on Muc-Off.

Right from the early days, product development has been at the heart of the business. Muc-Off's in-house engineering team lived by the simple ethos of not letting anything reach the hands of the consumer before it had undergone rigorous testing by professional athletes and, perhaps more importantly, the die-hard cycling enthusiasts working for the company. This methodology carries on to this day.



REX TRIMNELL DRAFTING X-LITE IDEAS



REX AND ALEX REVIEWING EARLY PACKAGING



OUR FIRST BOTTLE OF LUBE!

After 10 years designing and developing the world's the most innovative range of bicycle specific cleaning products, our attention naturally turned to lubes for mountain bikes. It was clear that there was a desperate lack of knowledge in the marketplace about which types of lube were suited for changing weather conditions. We spearheaded a massive initiative to not only create the most durable and leading-edge formulas, but also to teach customers which lube to use whatever the weather.

As riding evolved, so did we. Our packaging clearly reflected what types of conditions the lubricant would best serve to ensure our customers got the best possible riding experience. Over the next few years, we began to experiment with advanced additives and friction modifiers, as our formulas became more advanced.

Muc-Off's collection of lubricants grew from a single 400ml dryaerosol to five unique products that each served a specific purpose in changing weather conditions. Nothing left the doors of our R&D Centre without first being tested by us and our athletes.

By 2013, we were ready to take things to the next level and test our products on the international stage. As Alex had an obsession with efficiency and innovation, he had some principles he wanted to prove, and there was no better place to do this than in the upper echelons of professional road cycling. He felt that there was only one place to do this, with a team that coined the term 'marginal gains' and were revolutionising what we meant to be professional road cycling – Team Sky.

Alex spent months trying to set up a meeting with the professional team, who hadn't even heard of Muc-Off at the time. Finally, Alex's calls were answered and he was invited to meet with Carsten Jeppesen, Team Sky's Head of Operations, at the Amstel Gold Classic in the Netherlands to state our case.

The only problem was that Alex, fresh from a nasty MX accident, was suffering from a broken ankle and snapped Achilles! He knew, however, that this was a huge opportunity for Muc-Off, so he jumped in his car and made the 400-mile journey, crutches and all.

Needless to say, the relationship got off to a flying start, but Carsten made it clear that we needed something we didn't yet have – data to back up our claims. On his drive home, Alex realised we needed it to take it to the next level.



FIRST DAYS OF TESTING IN OUR R&D LAB



HANGING OUT WITH WORLD CLASS ATHLETES

C.L.O.D

CHAIN LUBE OPTIMISATION DYNAMOMETER

The official agreement was signed on the 1st January 2014. The first step was to meet with the Team Sky mechanics at their service course in Belgium. At first, they weren't impressed with what we had to offer. We needed hard data to prove quantifiably our products would hold up to our high standards. We knew that our products worked based on our personal experience and feedback from customers. But we needed something more.

This is when C.L.O.D (Chain Lube Optimisation Dynamometer) entered the picture – designed and created in-house. This award-winning machine enabled us to measure any combination of chain and lubricant to produce quantifiable data on power output.

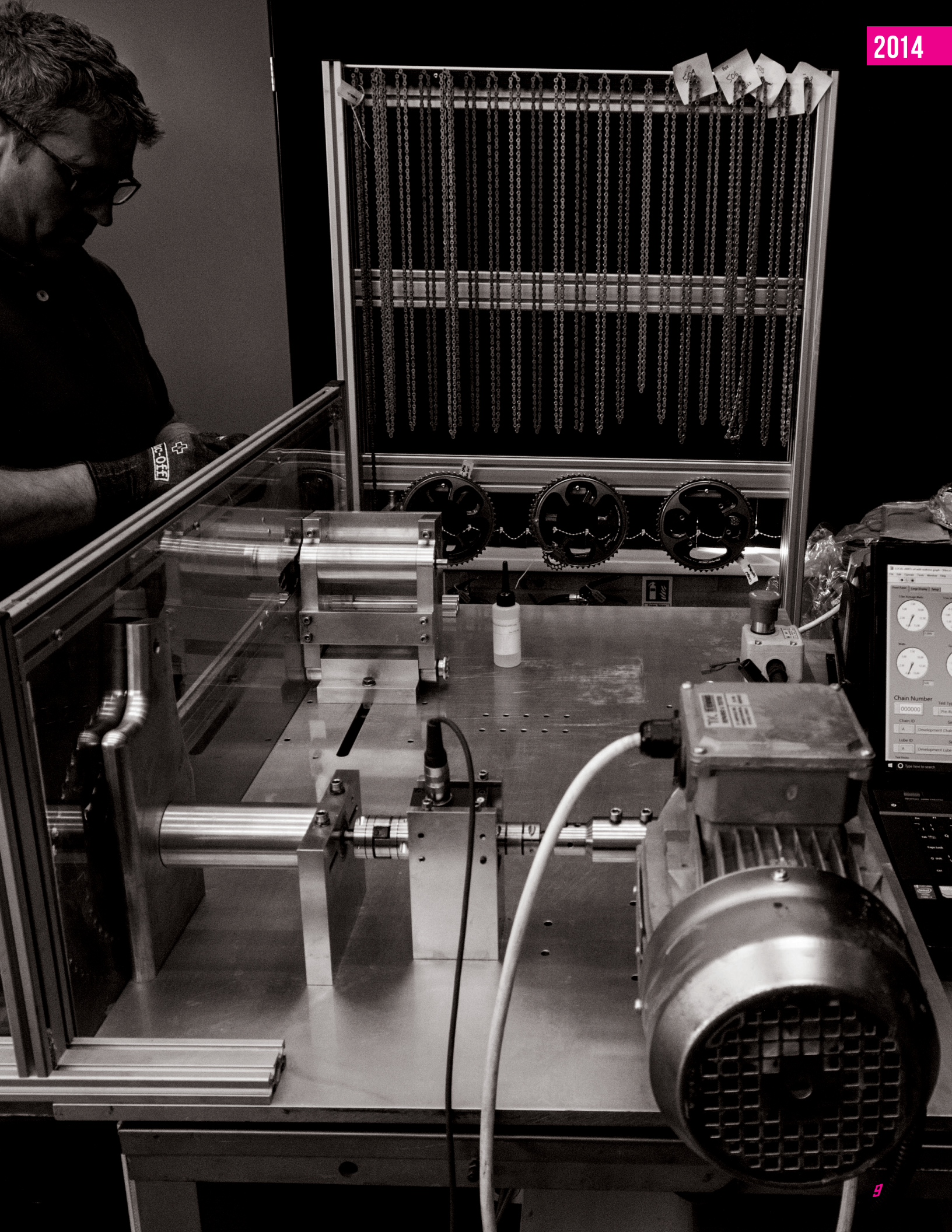
Extensive research and development on C.L.O.D over a gruelling 6 month period (and 17 formulas later!) resulted in our first Hydrodynamic Lube – a formula that could last up to 400 miles per application under extreme loads and in all weather conditions. Tested on the battleground of the 2014 Tour de France, which saw the worst conditions faced on a Grand Tour in years, Chris Froome unfortunately crashed out. But we came away with extensive data and the incredible success story of developing the world's first all-weather lubricant that could deliver massive efficiency gains over long distances.

During the same event, we experimented with dry-wax treatments for the TT stages, as it was seen at the time as the most efficient method in treating a chain for maximum efficiency. However, our research (and the feedback from Team Sky mechanics!) told us that dry wax optimised chains simply didn't last long enough over any real distance – especially in wet weather!

This finding was potentially disastrous for top level riders, whose most powerful asset on the start line of a stage is their mindset. The last thing any rider needs is the thought that their equipment could change in use, simply by just a change in the weather! We needed to be able to instil complete confidence in the team and the riders that the lubricant coating on their chain would deliver exceptional performance, come rain or shine. So, once and for all, we put dry wax optimised treatments to bed.

Even with our highly advanced Hydrodynamic formulation, we knew that there was still work to do in improving drivetrain efficiency. Our formulation technicians began experimenting with nanotechnology, specifically nanotubes. We found that by adding these atom-sized rolls of graphene to our existing formulation we could deliver even more impressive wattage savings over long distances. This discovery could not have come at a more perfect time, as it geared us up for our next major challenge – breaking a world record.





THE £6K CHAIN

SMASHING THE HOUR RECORD

In 2015, we were approached by Sir Bradley Wiggins and his team to create a chain optimisation process that would help the Olympic champion smash the Hour Record attempt. It was clear to us that this feat would require something special, something that had never been done before in the history of drivetrain optimisation.

Our aim was simple - to create the world's fastest chain lubricant, backed up with quantifiable data. We started by speed grading over 30 Shimano Dura-Ace chains and then handpicked the most efficient ones to be deep cleaned and treated with our ground-breaking lubrication formula. These chains were then run-in under load on C.L.O.D before being hand delivered to the velodrome.

This was the birth of the £6,000 Nanotube Chain – a true pedigree in drivetrain efficiency, forged through the toughest cycling challenges of the world. Go to page 30 to learn more about the NTC and its incredible power savings.

Optimisation continued up until the eleventh hour. After hand-delivering the treated chains to the velodrome in Stratford, London, the day before the attempt, Alex was called on his way home by Brad's technical team who urgently needed the bike's chain rings run-in, and only the C.L.O.D could do this in the time allowed. Muc-Off's MD raced back to the velodrome, picked up the rings and, worked through the night. Thankfully, Dr. Martin Mathias and he were able to pull the feat off and get the rings back to London without a moment to spare! This process alone helped save valuable watts for the attempt.

Every so often there are events that define a human's existence, a chance to prove that nothing is impossible. On 7th June 2015, a capacity crowd at the Lee Valley Velodrome witnessed Sir Bradley Wiggins conquer the hour record – all while using our proprietary Nanotube Optimised Chain. Our simulation proved that we gave Sir Bradley Wiggins and additional **337m** of the velodrome against a dry-wax optimised chain.



**THE HOUR
RECORD:
54.526 KM**

CONQUERING THE TOUR DE FRANCE

TAKING OUR FIRST GRAND TOUR WIN

Shortly following Sir Bradley Wiggins successful world record attempt, our attention turned firmly back to the international stage and helping Team Sky and Chris Froome conquer the Tour de France. We worked closely with the team's mechanics in continuing to tweak the Hydrodynamic Lube to its absolute optimum, and we were incredibly privileged to help the team take home the yellow jersey in 2015. Our first Grand Tour, but certainly not our last!



OUR FIRST GRAND TOUR WIN

TEAM | sky



VASIL KIRYIENKA

Riding on Nanotube Chains, Team Sky helped propel Vasil Kiryienka to the top of the men's elite individual time trial at the UCI Road World Championships in 2015, securing the rainbow jersey for the following season.



CONQUERING RIO 2016

CONTINUING THE JOURNEY

In 2016, we continued our journey of creating the world's fastest chains. We were incredibly proud to optimise and treat all of the bike chains used by the Great Britain Cycling Team in the Rio 2016 Olympics, Track World Cup Series and Track World Championships.

Over 75 nanotube-treated chains were sent to athletes, including the likes of Sir Bradley Wiggins, Mark Cavendish, Chris Froome, Laura Trott and Jason Kenny to name a few. In Rio, the riders racked up an incredible 12 medals, including 6 golds. The Brits were unstoppable, with all 14 riders who took to the track winning at least one medal.

Working so closely with the British Cycling technical team at the highest level of international sport was a huge project for us and an absolute privilege to be a part of. The relationship proved to be so effective and beneficial that we're already looking towards Tokyo 2020, with further exciting developments in the pipeline.

British Cycling's Commercial and Technical Manager, Dave Parsons, said on the result:

“We’ve been working closely with Muc-Off to ensure that the chains used by the Great Britain Cycling Team are of the highest possible standard, and obviously lubrication plays a huge role in this. This is why we have entrusted Muc-Off to deliver highly optimised chains as well as faultless service to the team.”





SUCCESS IN 2016

RIO 2016 PARALYMPICS

Our success also extended to the Paralympics. Crafted by a team of 30 Formula 1 engineers, Karen Darke's handbike at the Rio 2016 Paralympics was a feat of engineering prowess and we were privileged to optimise her chain with our unique nanotube formulation for the event.

The carbon fibre handbike was built by mechanics at the Williams Advanced Engineering department, who take F1 technology and apply it to other uses. Aerodynamicists took Karen's existing handbike and used airflow modelling to see where it could be improved. One clear area of improvement was the drivetrain and Williams turned to Muc-Off to help them. Using a specially optimised Nanotube Chain, the Paralympian took her machine to Rio and rode it to victory, winning Team GB's 37th gold medal.



ANOTHER YELLOW JERSEY!

WINNING THE 2016 TOUR DE FRANCE

In the same year, our Hydrodynamic Lube helped Team Sky secure the yellow jersey once again at the 2016 Tour de France. What made the event even more special was the fact that this was the first year the team's riders rode with our Nanotube Optimised Chains during the time trial stages of the race. Confirming his absolute superiority over the Grand Tour that year, Chris Froome won the uphill mountain trial from Sallanches to Megeve by a massive 21 seconds over the next contender.

Dear Alex,
Dr. Martin & Team Muc-
off.
THANK YOU!
We pulled it off! You were
links in that chain (haha!).
Seriously, I appreciate your
help & support so much.
Thank you for the chain
study, the special treatments
etc. It all came good!
Best wishes
Cloner

2016



2017 & ONWARDS

SMASHING ANOTHER WORLD RECORD

2017 has been another historic year for Muc-Off. Alongside the launch of our Nanotube Chain, bringing massive efficiency savings over long distances to millions of riders around the world, and the addition of 34 new products to the Muc-Off range, we've continued to cement our place in the history books by helping Team Sky achieve what many thought impossible in modern-day professional cycling.

After an incredible Tour de France that saw Chris Froome take the yellow jersey for the third consecutive year with Muc-Off, our Team Sky Hydrodynamic Lube helped take him and the team to a back-to-back win at the Vuelta a Espana – the first time a rider has achieved this since 1978! And, to top it off, Chris Froome smashed the TT stage with our NTC chain, extending his lead by almost 2 minutes!

So, that's the story of how Muc-Off got to where it is today. There may be more faces at HQ and bottles of

our lubricant can be found everywhere from Australia to Venezuela, but our ethos has remained the same – to deliver great products that help everyone get the most out of their equipment, from professional athletes to amateur riders. We're excited to be able to share the results of our intense research and development with customers around the world looking for a performance edge. We're only just getting started.



2017



TEAM | sky

OFFICIAL SUPPLIER

Muc-Off



**THE
4X GRAND TOUR
WINNING LUBE.**





“When you get into the nasty weather, you really feel the difference between what products you use on your bike. That’s where you need a really good quality lubricant.”

TEAM SKY MECHANIC



TEAM | sky

OFFICIAL SUPPLIER



TAKE A PEEK INTO MUC-OFF'S R&D LAB

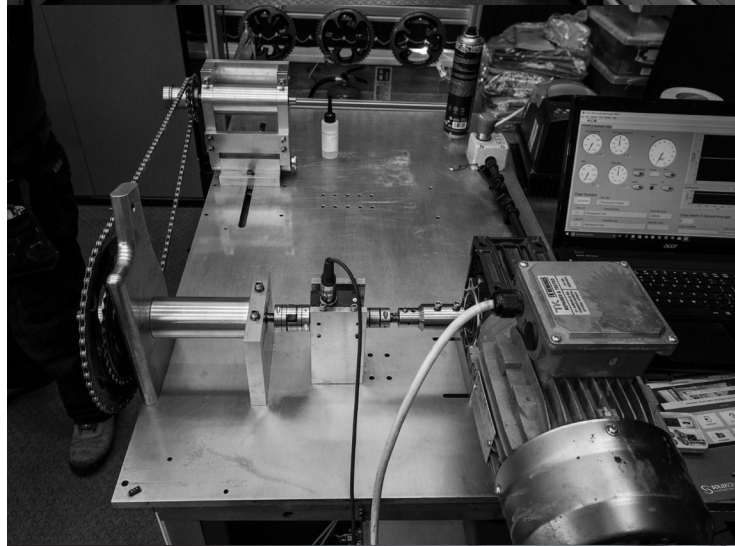
THE HOME OF OUR PRODUCT DEVELOPMENT

Welcome to Muc-Off's Development House – the place where drivetrain optimisation magic and the journey to world domination happens. Home to C.L.O.D and other state-of-the-art proprietary testing equipment, every single one of our lubricants has started its journey within these four walls.

We run tests throughout the year, day in and day out. Sometimes our machines are running 24/7 in the build-up to a big event – needless to say, we have a great coffee machine too!! Whether it's measuring the most efficient chain and lube combinations or experimenting with the futuristic lubricity ingredients like nanotubes, our engineers are always on call for the professional teams and athletes that we work with.

One of the biggest differences in the methodology that takes place at Muc-Off's Development House is just how long we measure our formulas for. We've seen some lube manufacturers only test their formula for just 5 minutes! Way shorter than any bike ride that'll take place in the real world (apart from a quick pub run!) We're not interested in this kind of data (but will quite happily sink a pint... or two!)

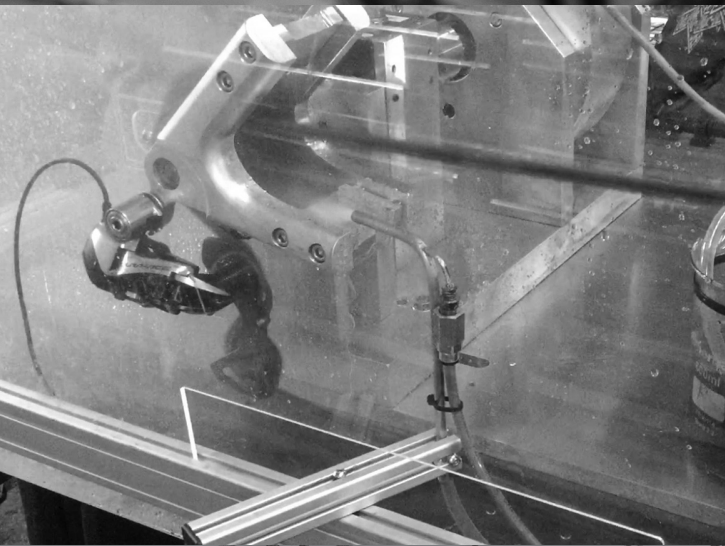
At Muc-Off, the majority of formulas are measured for a minimum of 4 hours on C.L.O.D (often going north of 10 hours!) on a load that simulates real-world conditions to give highly accurate data. Needless to say, we also test the lubes of our major competitors. That way you know that each and every piece of data we publish is backed up by testing that simulates real-life riding.



C.L.O.D

C.L.O.D is an incredible bit of kit. Built in-house to test any combination of bicycle chain and lubricant out there, it's able to prove with quantifiable data that our lubricants can save valuable rider watts. Unlike other dynamometers we've seen in the industry, which use off-the-shelf software anyone can buy, C.L.O.D is powered by bespoke technology developed by National Instruments, a billion-dollar international producer of automated test equipment used in the automotive and defence industries. They run nuclear submarines with this kit!

In fact, our equipment is so good, it won the Application of the Year Award from National Instruments in 2015 over the University of Oxford and Cambridge – a major accolade that firmly put on this map of engineering and innovation.



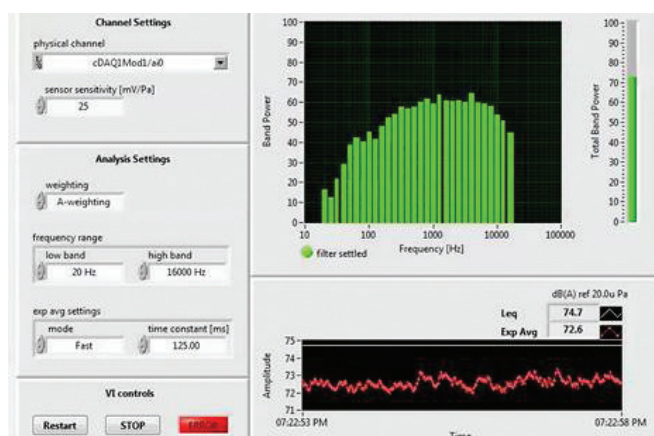
SOUND ANALYSIS

The use of sound and vibration analysis is essential to Muc-Off, as not only can it have an impact on performance, but is one of the most important factors to rider experience, and one of the biggest areas of feedback from them.

The psychology in cycling is almost as important to the overall performance as provable data on equipment. The rider must believe they have the best equipment to perform at their peak, and additional noise can add doubt to their mind.

Muc-Off's use of sound analysis is more advanced than simple dB sound pressure measurement as used by some of our competitors, as we also look at the individual frequencies that make up the sound pressure level (dB). A simple example of how the frequencies make up the overall dB would be: laughing children versus crying children: the dB may be the same (loudness), but sounds totally different due to the frequencies that make up the overall dB (loudness).

Using our equipment, we identify the most predominant frequencies and analyse any correlation to performance on the dynamometer (C.L.O.D).



THE FINEST INGREDIENTS

It's one thing to measure a clean drivetrain in a lab setting, but this isn't necessarily representative of what it's like to ride on the road. To simulate the conditions faced on the road, we built our proprietary 'Muc-Gun' and Venturi Spray. This apparatus was programmed to fire a precisely metered dosage of road salt, grit, mud and water onto a running chain at regular increments. Muc-Off's lubricants topped the charts each and every time!

PROUD TO BE BRITISH

All Muc-Off products are tested here in the UK by our team of cycling boffins!



MX-5H

MA
JAPAN

PA



THE PROCESS

HOW OUR NANO OPTIMISED
CHAINS ARE MADE:

CONCEPT TO STORE

All Muc-Off lubes undergo the exact same development process, from initial idea all the way to finished product. When we first opened our doors in 1994, our philosophy was clear – nothing left the building until it had been tested by our team of in-house cycling nuts and the professional athletes that we work with. Only then could we guarantee that customers were getting the very best in bicycle cleaning and maintenance.

Even though the company has gotten bigger, this ethos remains unchanged. Read on below for an inside look at the journey each and every product takes before it ends up on the shelves at your local bike shop.

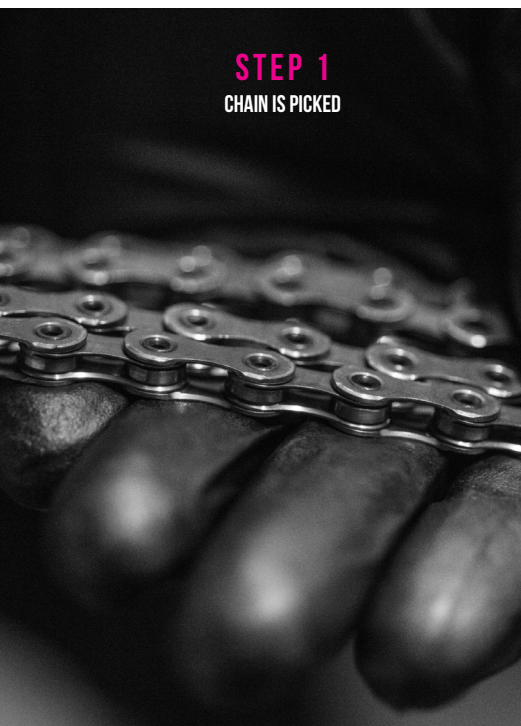
STEP 1: INITIAL IDEA

On the track, on the road or on the trail - the best ideas can strike you anytime, anyplace. All of the products in the Muc-Off repertoire have been designed to solve a particular problem that we've faced during taking care of our bikes or trying to maximise their performance. Each idea is discussed and spec'd by our product development team before it makes its way onto the next stage.

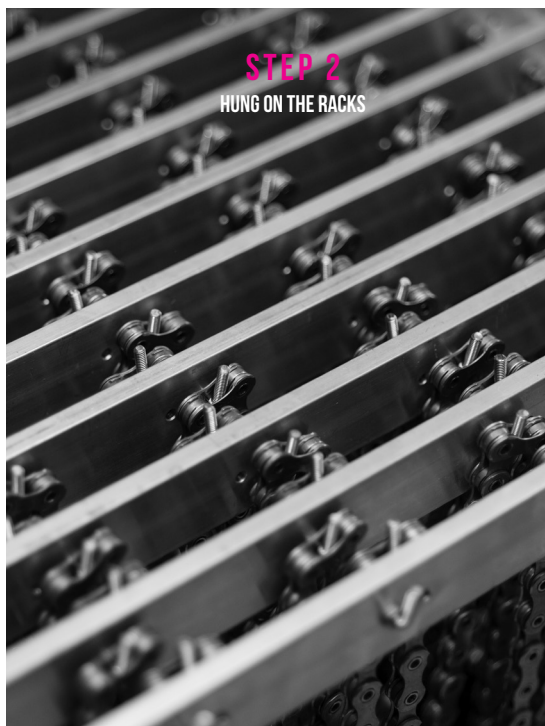
“We owe our success to all the hard work carried out by the dedicated enthusiasts on the Muc-Off team who constantly push the status quo to keep us ahead of the curve.”

ALEX TRIMNELL, MUC-OFF

STEP 1
CHAIN IS PICKED



STEP 2
HUNG ON THE RACKS



STEP 3
SONIC CLEANS





STEP 2 - TESTED BY: ALEX TRIMNELL

That's right. Muc-Off's Managing Director, Alex Trimnell, is still the heart and soul of all the innovation that happens at Muc-Off HQ! His dedication to delivering the best products in cleaning and maintenance has resulted in over 150 products designed exclusively for two-wheeled maintenance. When he's not busy running the company, you'll find him out on the road or trail pushing his latest creations to the limit.

STEP 3 - TESTED BY: MUC-OFF CYCLING TEAM

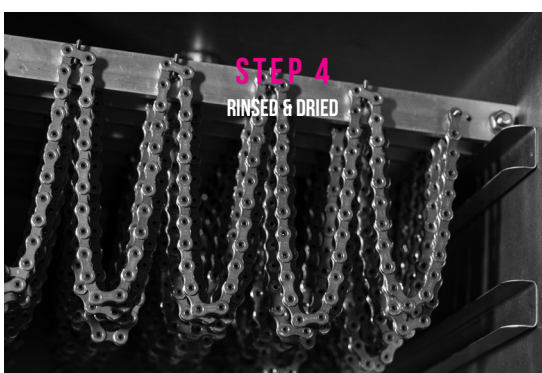
Once Alex is happy with the product, it makes its way to our team of in-house cycling nuts. Andrew and Matt (pictured) are two of the most senior riders in the office and can often be found on the road or trail, testing all of the latest creations to leave Muc-Off's Research and Development department. Their passion for performance helps to fuel minor tweaks and updates that take the product to the next level.

STEP 4 - TESTED BY: PROFESSIONAL ATHLETES & TEAMS

Whether it's for road or mountain bike, a small batch of every product is sent to the world-class athletes we work with for testing on the professional circuit. We take any feedback from the riders and implement it into the final product development stage. Check out the infographic overleaf for a real visualisation on how our Team Sky Hydrodynamic Lube came into existence!

STEP 5 - PRODUCTION: THE FINAL STAGE!

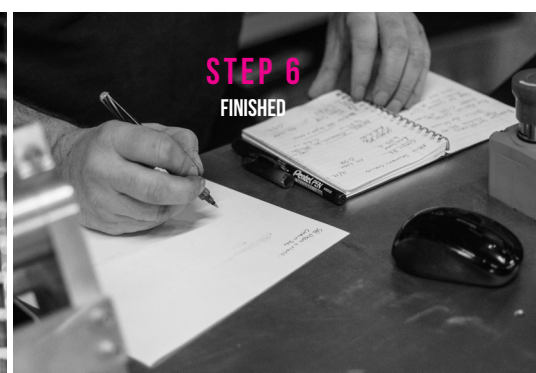
The final stage! Once the product has been signed off by the Muc-Off testing team and the athletes, it undergoes a final quality check before production begins!



STEP 4
RINSED & DRIED



STEP 5
OPTIMISED WITH NANO FORMULA



STEP 6
FINISHED



STEP 7
PACKED AND SHIPPED

HOW HYDRO DYNAMIC CHAIN LUBE

WAS CREATED

START



INNOVATIVE, CRAZY IDEAS

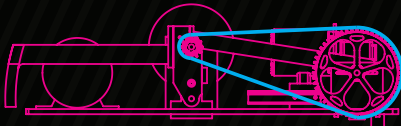
426 DAYS IN FORMULATION
DEVELOPMENT



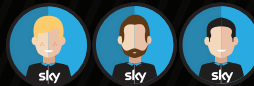
OVER 1000 CUPS OF COFFEE



300 HOURS TESTED ON DYNAMOMETER

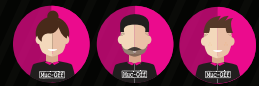


TESTED ON THE BIKE



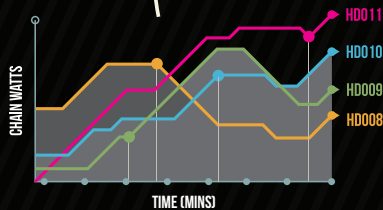
18,687 MILES

GIVEN TO OUR TEAM

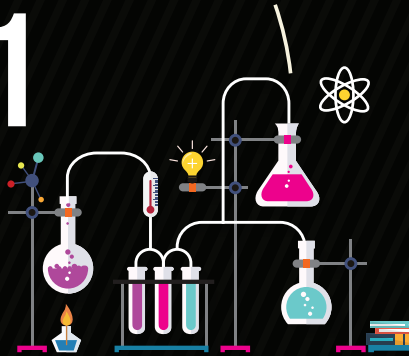


6,700 MILES

x11



QUANTITATIVE DATA ANALYSED



REFORMULATED

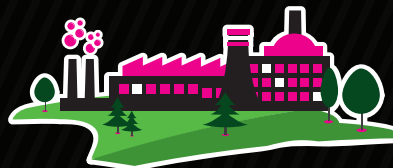


EVEN MORE COFFEE!



OVER 80 HOURS IN
PACKAGING DESIGN

IN TO PRODUCTION



DELIVERED TO TEAM SKY
AND STORES



FINISH



LUBING THE GEARS OF GREATNESS

PROVING IT

Real-world Olympic medals and yellow jerseys are one thing, but backing up our claims with quantifiable data is at the heart of Muc-Off's research and development process. Significant investment in equipment and materials was a necessity for working with the world's greatest teams and athletes, whose view was simply 'if you can't prove it, just go home!'

This constant pressure for hard numbers gave birth to an unrivalled research facility that can friction-test every conceivable combination of chain and lubricant, as well as other drivetrain parts. We pride ourselves on our ability to deliver transparent, calculable data that proves the durability and speed of our comprehensive range of lubricants.

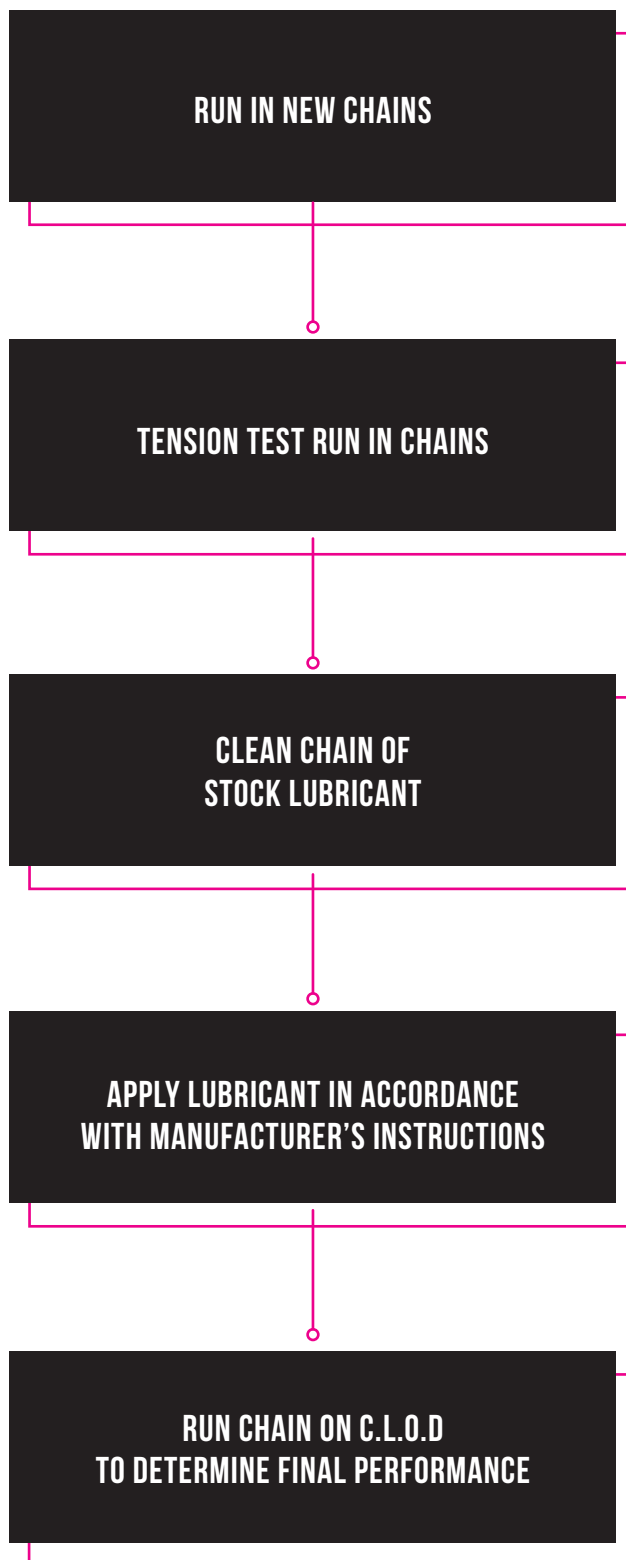
5 MINUTE TESTS – ARE YOU SERIOUS?

At Muc-Off, as standard, we will always test our lubricants for a minimum of four to ten hours to best replicate cycling in the real-world. This ensures that the data we publish is not deceptive to consumers. We've seen other lube manufacturers produce data that only tests formulas for just 5 minutes. We believe this is not representative of real-world riding, and in fact, the data is practically useless to cyclists.

Other reports we've seen on chain lube testing have mixed dry and wet lubes together. We think this is highly misleading and unfair, as they are formulated to perform two different functions. When we test lubricants, we only do so by category – wet, dry, harsh and all-weather.

THE TEST

One experiment conducted at Muc-Off's Development house was to quantitatively report on the durability of leading dry condition chain lubrications using real-world preparation and a realistic riding time - 4 hours. To produce this report, we took 15 of the most popular lubes on the market and performed the following test:



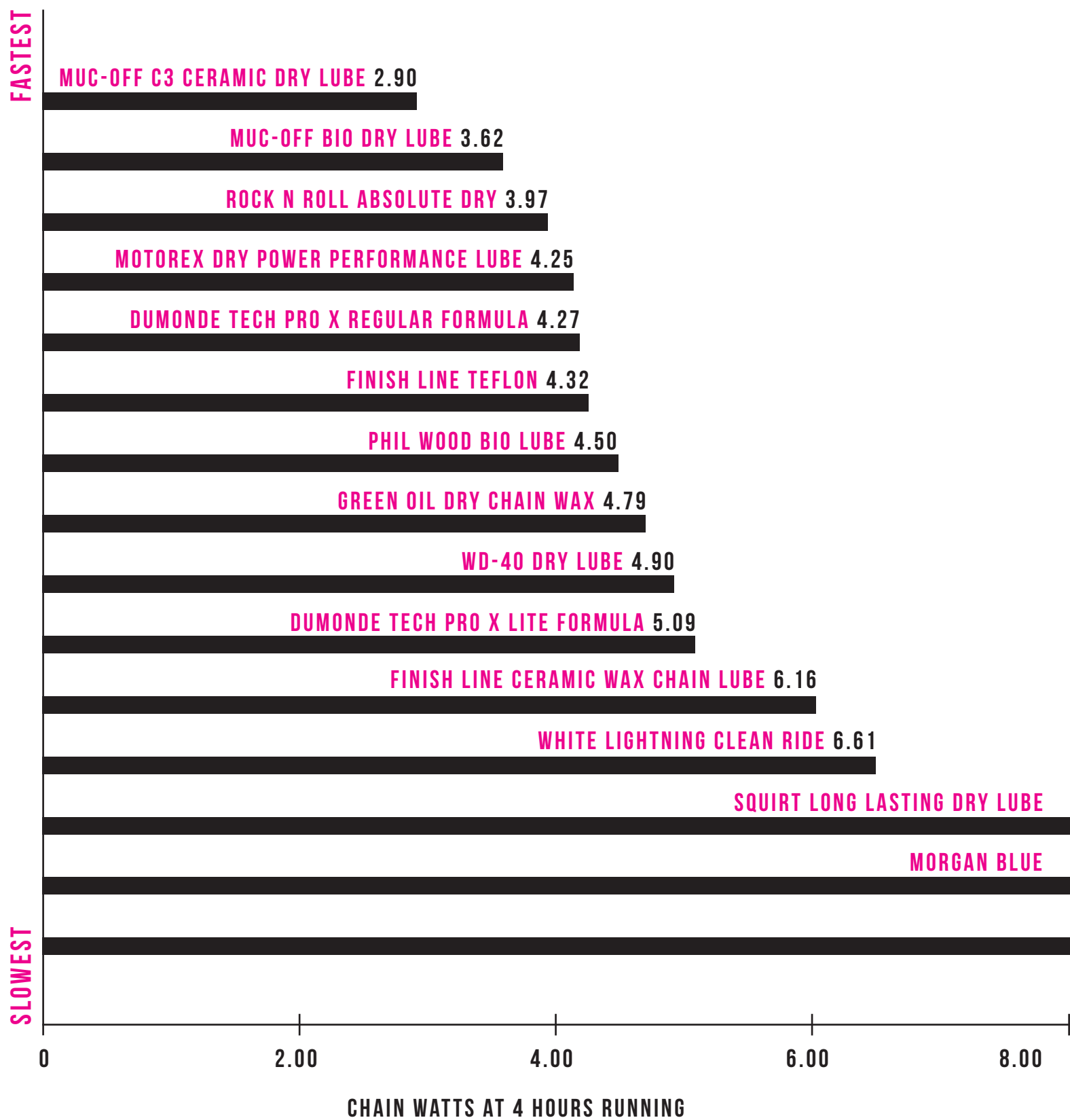


The important thing to note is that all the cleaning was done with equipment typically available to the cyclist, like our X-3 Dirty Chain Machine, and not specialist chemical cleaners or ultrasonic tanks. The purpose of this was to give the clearest understanding of the lubes performance when using regular equipment.

The tests were run for 4 hours at which point some of the lubricants were so bad we had to stop the test as the high friction generated would have damaged C.L.O.Ds sensitive transducers.

See overleaf the results of our test.

4 HR DRY LUBE ANALYSIS



“To work with the worlds greatest teams and athletes, it was a necessity that we design a laboratory fit for the 21st century pro cyclists requirements. Significant time and investment has gone into sourcing the most cutting edge equipment and ingredients that will deliver incredible power savings. We couldn’t be happier with the results.”

ALEX TRIMNELL, MUC-OFF

THE RESULTS

As you can see in the results to the left, Muc-Off’s C3 Dry and Bio Dry Lube came out on top against 13 competing lubes in a test that measured lubricant efficiency over the real world testing time of four hours.

There is more to publishing data than just publishing graphs and marketing: the essence of Muc-Off testing is the methodology and transparency of results. It is easy to say you have the fastest lube/chain if there is no context behind your statement.

Several other manufactures may publish their results but without international standards governing how the tests are undertaken, results are always likely to vary and you need to take a look behind the headline numbers to critical factors, such as test duration, to see the whole story.

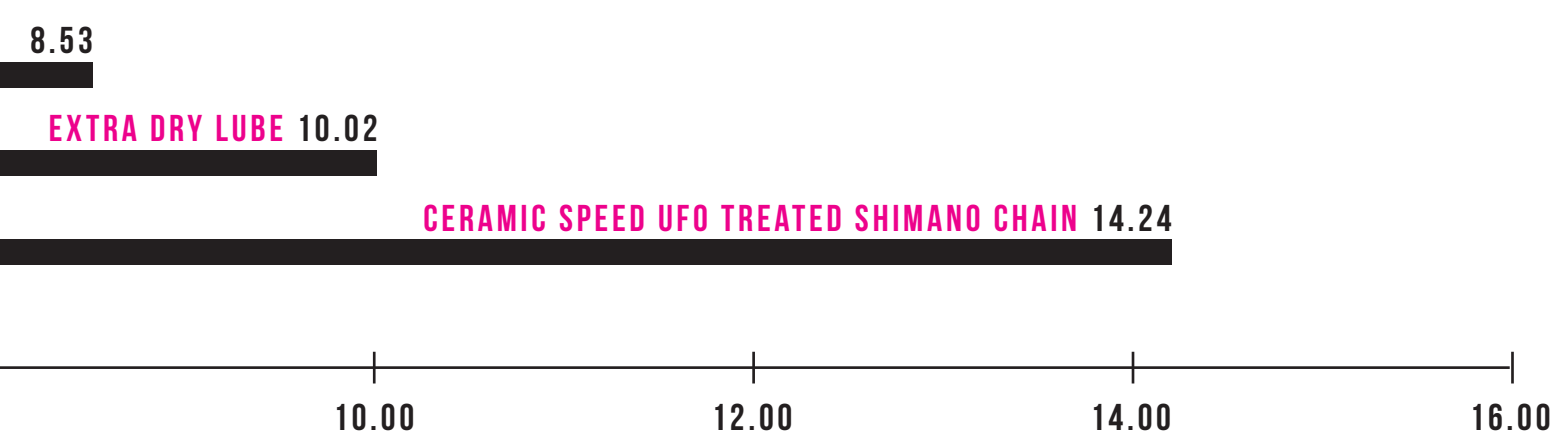
We are driven to not only making fast lubes, but durable lubes, hence why you will always see a graph of performance over time, not just a snapshot at the best time. Our comparative tests are always undertaken under the same conditions and loads, but we do investigate performance linearity at different loads, especially for track chains where riders can output over 2200 watts.

Essentially this tells us if the lube/chain performs the same under different loads as, for example, the power would be different for a track rider compared to an IRONMAN.

Our lubes are stable, and even after extended test durations, run with very little performance variance over time. We are therefore getting a true linearity graph as the load is varied during the test.

For many other lubes, such as Ceramic Speed UFO chains, that do not exhibit a stable period. This makes it difficult to determine actual performance under different loads because the change in value due to the new load is impacted by the underlying change in performance over time.

Our results are also chain and drivetrain specific and not normalised across different manufacturers hardware, thus giving a true picture of what you ride. It is not a surprise that lubes perform differently with the different surface treatments hardware manufacturers apply e.g Sil-tec and Titanium Carbon Nitride (TiCN) to name just two.



THE NTC

THE NANOTUBE CHAIN (OR NTC, FOR SHORT)

Proving savings of over 10 watts* against Ceramic Speed's Shimano Dura-Ace UFO Chain over a race distance on our dynamometer, the NTC is the culmination of thousands of hours of research and development into drivetrain optimisation.

To create this revolutionary product, we sonic cleanse a Shimano Dura-Ace chain and then hand treat it with a proprietary nanotube formulation. Once in the hands of the customer, it simply needs to be run-in on a turbo for 4-6 hours before it reaches its optimum lubrication state.

What makes the NTC so special is its ability to deliver wattage savings consistently over long periods of time and in all weathers. Other chains may claim to be 'the fastest' but what they don't tell you is for how long and in what conditions.

A major finding to come from Muc-Off's Development House was the shorter durability of Ceramic Speed Shimano UFO Chain. Whilst efficiency of this product was admittedly quite good in the first few minutes, registering at around 4.5 - 5 watts, this performance rapidly deteriorated after only 18 minutes! See graph overleaf.

In comparison, the NTC only continues to get faster, with over 10 watts advantage against Ceramic Speed's latest treatment UFO Shimano Chain after four hours. In performance terms, this means that the NTC will give you a gain of 3 miles over a 112-mile Ironman bike stage, calculated using the average time of 6 hours and 25 minutes. Unlike other optimised chains currently available in the market, the NTC maintains its performance in all-weather conditions.

So, what's the science behind it? One of the primary ingredients of the lubricant is nanotubes, which are composed graphene and rolled into a tube. Now imagine the metal of a bicycle chain's inner and outer plates. To the naked eye it may look smooth, but at a microscopic level, it is in fact quite rough and ragged. As the chain is run through the drivetrain, these jagged edges catch on each other, which in turn causes friction.

The job of a nanotube is to fill these gaps, creating a slippery smooth surface that minimizes metal-on-metal resistance. The end results? Substantial wattage savings that can cut significant time from a ride and the peace of mind that it won't change with the weather.

We've also developed a top-up bottle of Nanotube Lube, which will bring the chain to within 1-2 watts of its optimum state!



ALL-WEATHER FORMULATION

Muc-Off



NTC

NANOTUBE CHAIN

The World's Fastest Chains

- Groundbreaking ultra-low friction treatment
- Unrivalled all-weather optimised performance

GOT SPEED?



Muc-Off

**NANOTUBE
CHAIN LUBE**



GOT SPEED?

- Groundbreaking all-weather lubricant
- Ultra-efficient and highly durable

50ML e - 1.7 US FL.OZ

WARNING: EYE AND SKIN IRRITANT.
CAREFULLY READ PRECAUTIONS ON BACK PANEL.

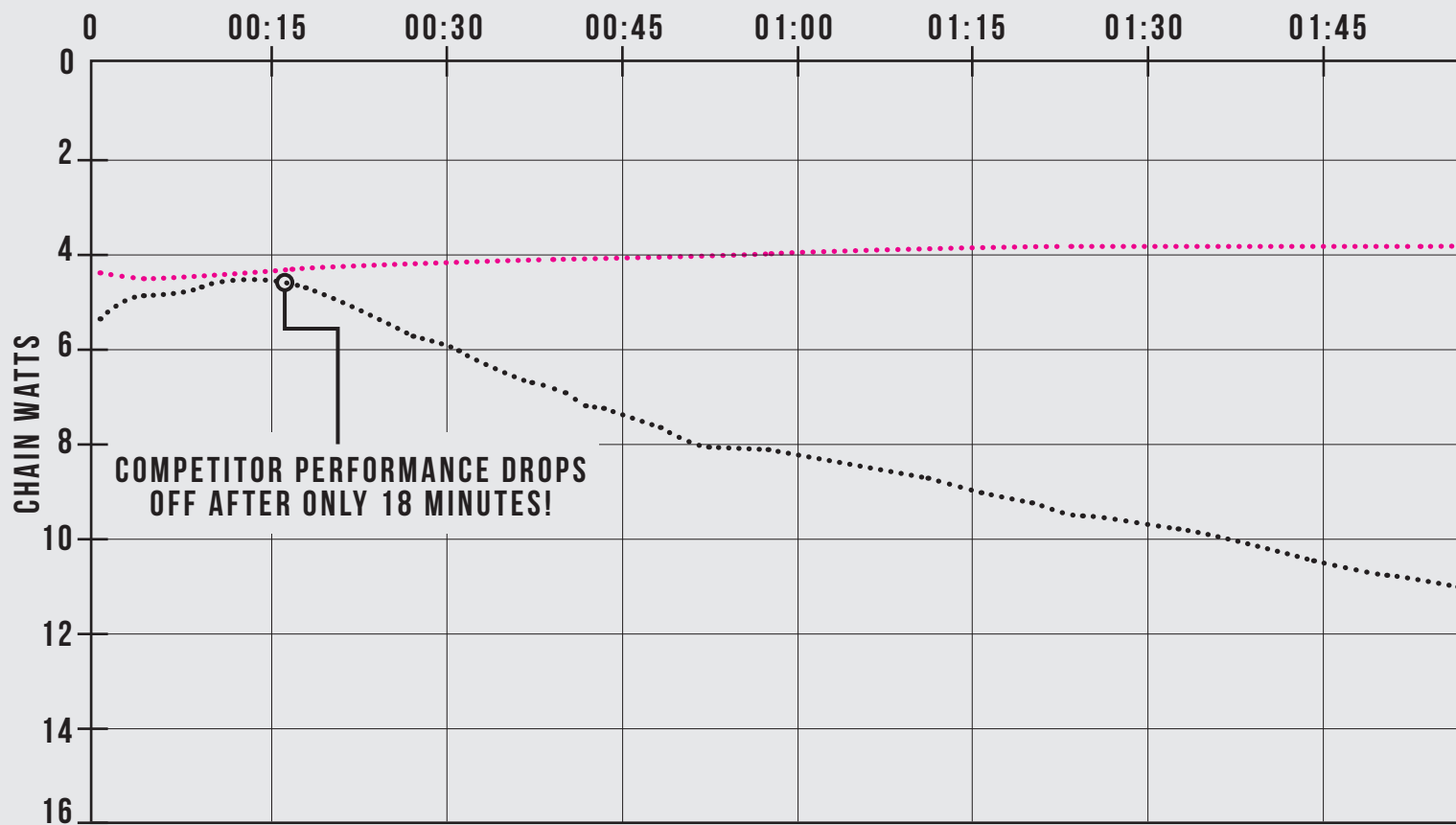
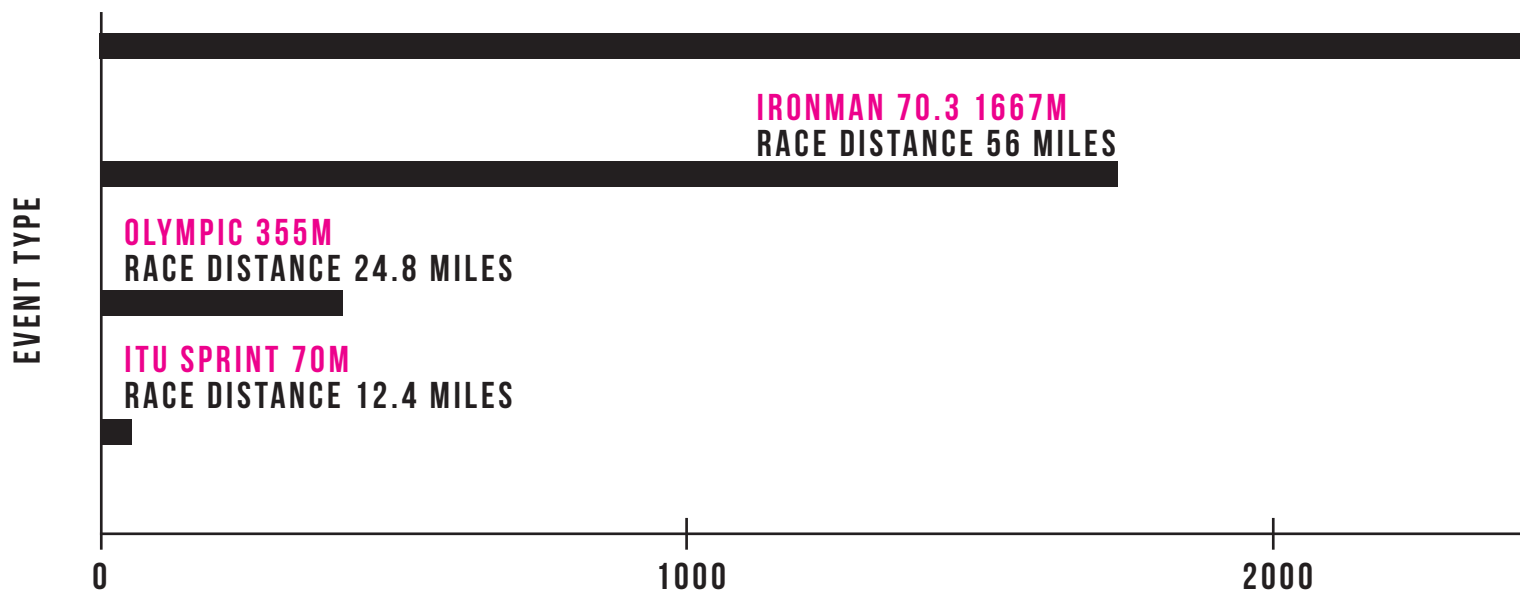


**UP TO A 10 WATT
SAVING**

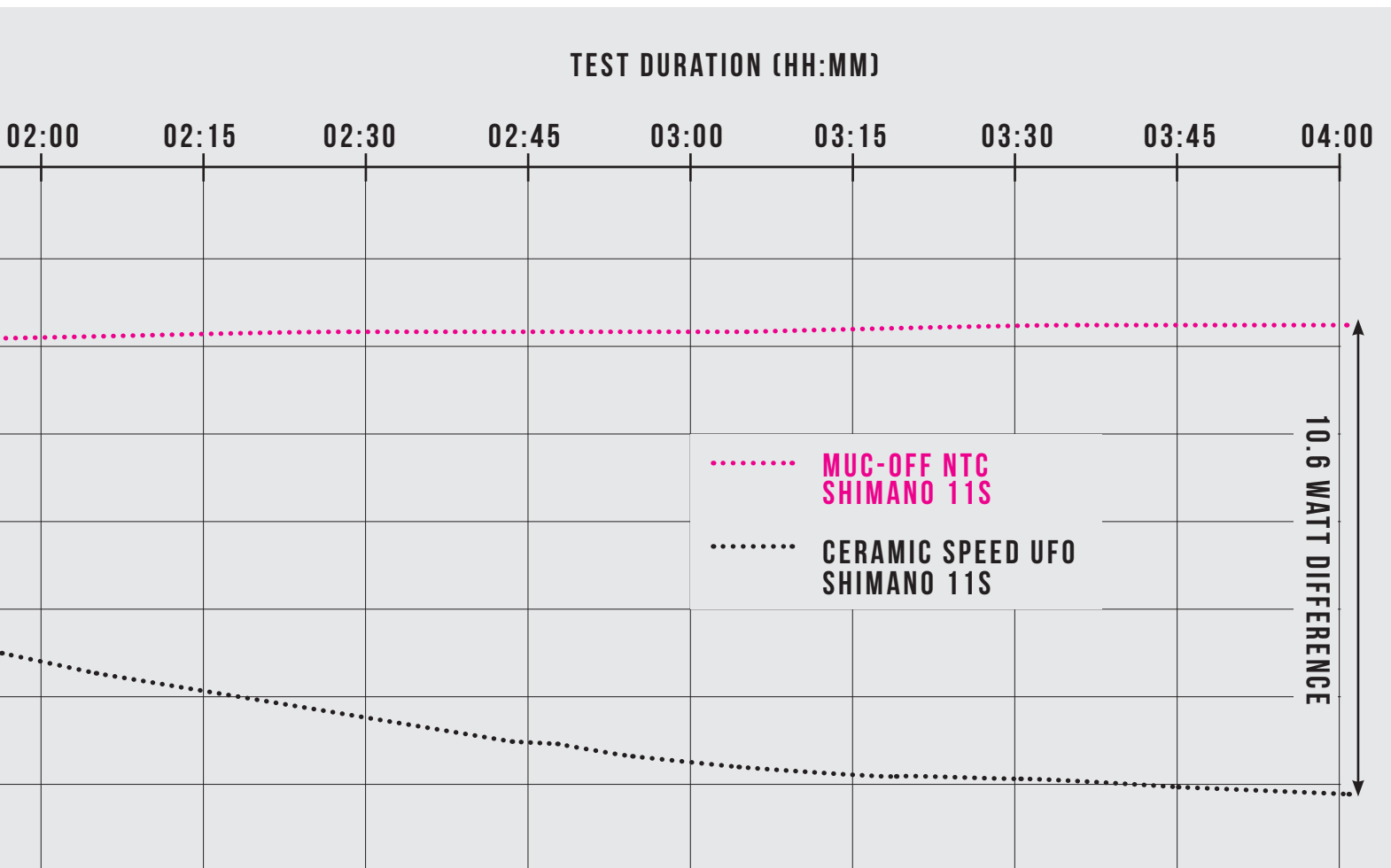
**400KM PER
APPLICATION**

NTC CHAIN

DISTANCE SAVINGS OF NTC
SHIMANO 11S VS. CERAMIC
SPEED'S UFO SHIMANO 11S!



IRONMAN 4911M
RACE DISTANCE 112 MILES



THE RESULT? A LUBE FOR EVERY CONDITION

THE RANGE

We had no idea when we first started formulating bicycle chain lubricants back in 2005 just how deep our research and development would go. What started as a single 400ml dry lube aerosol over twelve years ago has ended with twelve unique products that will prepare riders for any weather condition. Each has its own story and unique characteristics – read on to learn more!



DRY



WET



HARSH



**ALL-
WEATHER**



**ALL-
WEATHER**
ULTIMATE SPEED







DRY



DRY PTFE CHAIN LUBE

Muc-Off Dry PTFE Chain Lube is formulated to hold up to the extreme pressures that are applied to modern drive chains. This highly versatile, dry weather chain lube has superior penetrative qualities that ensure every part of the chain link is completely lubricated. Our advanced 'Dry Formula' creates a clean, durable and protective chain wax layer that inhibits rust development and chain link corrosion.



BIO DRY LUBE

Muc-Off Dry Chain Lube is a durable, deep penetrating Chain Lubricant and oil that's formulated to hold up in extreme conditions that would destroy ordinary chain lubes. Muc-Off Dry Lube is a highly versatile, dry weather chain oil that has state of the art penetrative qualities to ensure that the lube is driven deep into each chain link's core.



CERAMIC C3 DRY LUBE

C3 Dry Ceramic Chain Lube raises the bar when it comes to providing the ultimate lubrication. It provides total corrosion protection and unparalleled performance in dry, dusty and damp conditions. With added nano ceramic particles and synthetic polymers, C3 Dry Ceramic Chain Lube maximises your power output.



WET



BIO WET LUBE

Muc-Off Wet Chain Lube is an ultra durable, long distance bicycle chain lubricant and oil that's been specifically formulated to excel over long distances in wet or muddy conditions. Our state of the art formula has been derived from natural ingredients and made completely from renewable sources.



CERAMIC C3 WET LUBE

The secret to the C3 Ceramic Wet Chain Lube is its unique ceramic coating that provides incredible durability and long distance performance on all bicycle chains. The innovative formulation in our chain oil also uses Boron Nitride and Fluoro Polymers to ensure ultra low friction for ultimate drive chain efficiency, high performance and durability.

MAKE POWER





HARSH



-50°C CHAIN LUBE

-50°C Chain Lube is specifically designed to withstand the coldest of conditions. Whether you're a roadie, mountain biker or fat bike rider, -50°C Chain Lube will keep your chain running smoothly and prevent any links from freezing.



ALL-WEATHER



TEAM SKY HYDRODYNAMIC LUBE

Team Sky Hydrodynamic Chain Lube is the Ultimate in bicycle chain lubricant technology. If you are looking for the most efficient chain lubricant formula for long distances and the harshest of weather conditions, look no further. The winner of four Grand Tours and counting!



HARSH CONDITIONS LUBE

Developed specifically for the harsh weather faced in the European Classics, we took our Hydrodynamic formula and increased the viscosity to cope with anything these gruelling races could throw at the chain. Each handmade batch takes hours of painstaking work, resulting in a highly advanced bicycle chain lube that reaches previously unattainable levels of lubrication and protection.

ALL-WEATHER ULTIMATE SPEED



NANOTUBE LUBE

Nanotube Chain Lube top up bottle is now available! Retreat your chain for many more miles of ultimate all-weather speed! It won't be as fast as the original treatment as we use a special technique to ensure the formula is driven deep into each link for 100% coverage, but you can still achieve significant savings within 1-2 watts of your chain's original optimum.



NOT FRICTION





ALEX TRIMNELL

FOUNDER'S NOTES

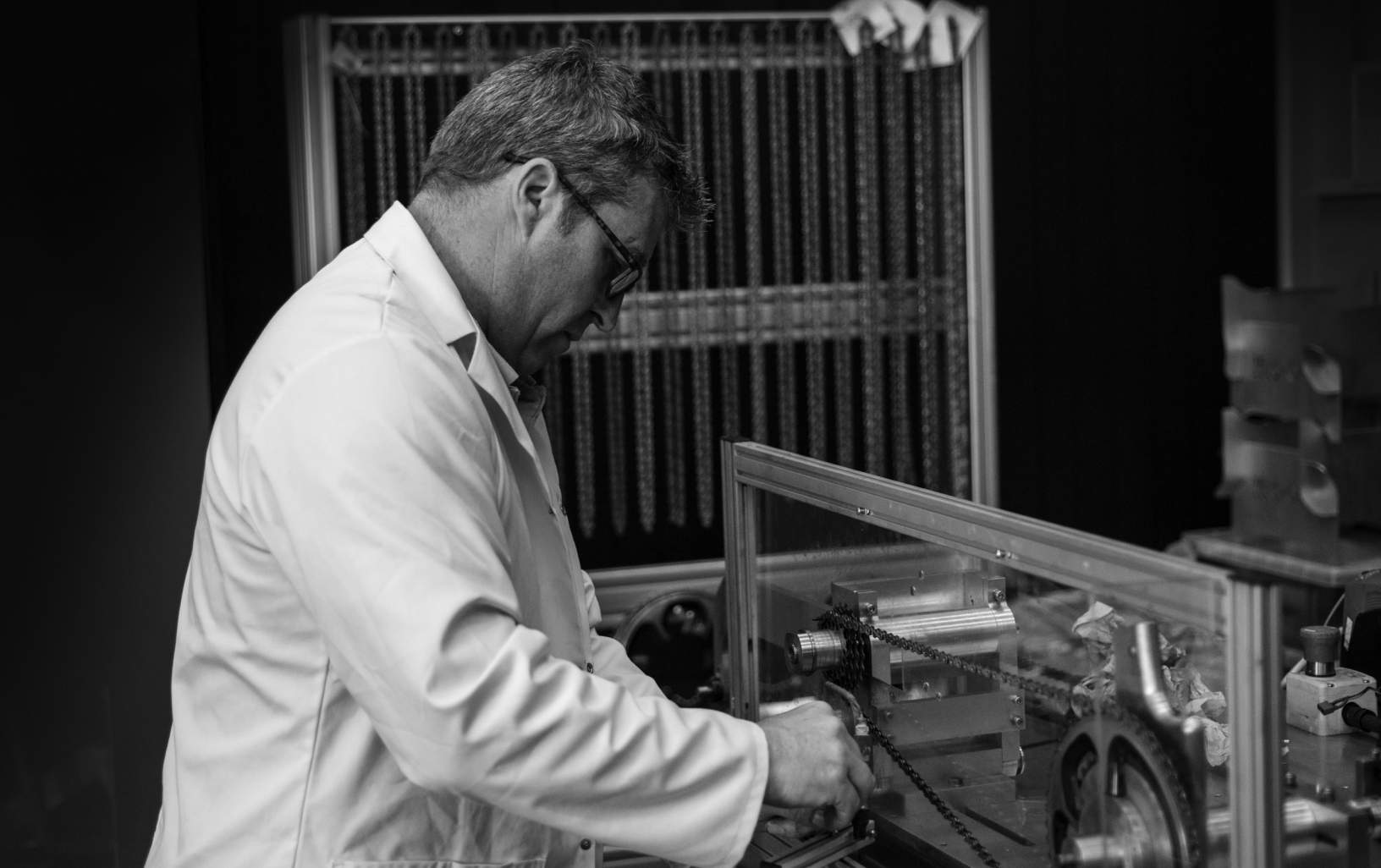
Having speed is one thing, but for Muc-Off's Managing Director and all-round performance nut Alex Trimnell, it simply wasn't enough. Riders around the world were not just looking for the fastest chain lube – they wanted something that will last for as long as they do in the real world.

This thought is what kicked off a journey in 2005 to formulate a product that was a pure thoroughbred in racing performance. Something that could handle any weather condition mother nature threw at it, deliver huge wattage savings that would help riders smash their two-wheeled goals whilst retaining its performance over hundreds of kilometres, no questions asked.

Fast-forward 12 years and we're ecstatic to finally offer our world-class Nanotube Chain – a breakthrough in drivetrain optimisation that has helped Team Sky win the Tour de France, Sir Bradley Wiggins conquer the hour record and the Team GB riders take 12 medals at the Rio 2016 Olympics.

Other lubricants may claim to be the “fastest” but none give a clear indication how long this speed will last for. For Alex, this isn't good enough. It's misleading to promote efficiency gains, but not say how long it'll be before you're running metal on metal.

Instead, he was determined to get quantifiable data that proved real-world durability and pace. Drawing on his 20+ years of creating cutting-edge products that have helped define the cycling industry, and working closely with the world's greatest athletes and technicians, Alex has developed the next generation of racing performance.



DR. MARTIN MATHIAS

DR.'S NOTES

Meet the Willy Wonka of Muc-Off's bustling Research and Development Centre, Doctor Martin Mathias! Doctor M is obsessed with engineering the world's greatest performance products. If he isn't experimenting with cutting-edge ingredients and formulas, you'll most likely find him building the revolutionary testing equipment we use to prove our products are best-in-class.

Having kicked off his career as an aerospace engineer, Doctor M has held senior technical roles for the past 15 years and designed everything from motor gearboxes to exoskeletons. For the past 3 years, he's found a home at Muc-Off, formulating the fastest bike chain lubricants for every racing environment!

Data is at the heart of Doctor M's work; if he can't prove what he thinks in quantifiable numbers, it doesn't leave the lab! His unrelenting passion for data-driven findings was the catalyst that gave birth to our world-first C.L.O.D (Chain Lube Optimisation Dynamometer). Built from the ground up under Doctor M's guidance, the £100,000 machine allows us to test any combination of chain and lube and produce crystal clear data we can share with our athletes!

Now, we're proud to reveal Doctor M's greatest achievement - the world's most durable, all-weather bike lube formulation. Promising savings of up to 10 watts against the leading dry wax optimised chain, the NTC is the culmination of Doctor M's impressive career.

His passions outside of the lab include tinkering with his Land Rovers and hosting legendary BBQs!

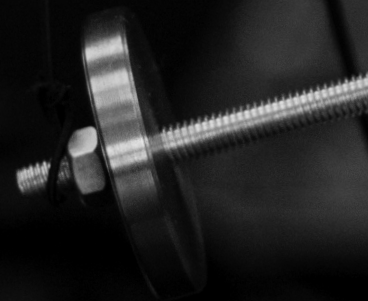
ONWARDS & UP- WARDS...

CONTINUING THE JOURNEY

Muc-Off's journey into developing the ultimate drivetrain efficiency products has been ongoing since 2005, but really, it has only just begun. Our comprehensive range of lubricants is second-to-none and remains the only choice for riders looking to save the most watts, over long distances, and in every weather condition.

With 2018 just around the corner, we're bunkering down with the professional teams and athletes we support to devise ways in which they can squeeze the most out of their bicycle and continue to dominate the professional cycling team. It's an incredibly exciting time for both the company and the cycling industry as a whole. You're going to love what we're working on.

TO BE CONTINUED...







For more information please contact:

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MUC-OFF

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