

PRESS KIT

Arkema 4



ARKEMA
SAILING

Thierry LE HÉNAFF

Arkema President and CEO

The new *Arkema 4* trimaran is the result of 8 years of close and productive collaboration between the Arkema Group and the Lalou Multi team. This technical and human partnership is a concrete illustration of our commitment to the research and development of new high-performance materials as well as the application of existing materials in new areas of activity.

Sailing and racing boats in particular belong to a sector that never stands still and in which innovation is paramount to improving performance. Lalou Roucayrol is a perfect ambassador of this. He is committed to constantly innovating in order to find new, more efficient and more sustainable manufacturing solutions.

The collaboration between a large group like ours and an SME with strong local roots is highly positive. Every day it makes sense thanks to the pervading nimbleness and creativity at the heart of our processes and in our respective DNA.

Arkema and Lalou Multi also share the same eagerness to pass the baton by backing future generations in many fields, and to share their knowledge and their passions. Quentin Vlamynck is a perfect example of this. He has been part of the Arkema Sailing adventure since the project was conceived. He is a very talented skipper, as he showed at the helm of the *Mini 6.50 Arkema 3*, and a young man who espouses the same values as our company.

We are confident that Quentin will proudly fly the colors of our Group on the world's oceans, at the helm of his new *Multi50 Arkema 4*.



Lalou ROUCAYROL

Manager and Skipper, leader of the Lalou Multi team



Innovation and transmission are etched in Lalou Multi's DNA. In 2011, the company embarked on processes aimed at developing racing boats while minimizing their social and environmental impact. In their venture, Lalou Multi has had the backing of Arkema and the *Région Nouvelle Aquitaine* since 2013.

Over the same period, Lalou Multi has followed a proactive approach to welcoming young talent. It is not a school in the strict sense of the word, but the company provides technical, financial and human resources for the transmission of knowledge, skills and experience.

Four young competitors have been selected: Quentin Vlamynck, Raphaël Lutard, Camille Bertel and Keni Piperol. The *Arkema 4* program is indeed an excellent 'demonstrator'.

With the development and application of advanced and recyclable composite materials and with the advent of a young talent, Quentin Vlamynck, this project marks a great step in the partnership between Lalou Multi and Arkema.

ARKEMA
SAILING

Arkema 4: The new rocket 1 concept, 3 hulls, 2 programs

1 SPORTING CHOICES: Aiming for versatility



Quentin Vlamynck
Skipper of Arkema 4

The appeal of the Multi50 Class is clear as it offers a diverse program ranging from Grand Prix (coastal regattas) to Transat races in crew, double or solo mode. In the history of the Class, some Multi50s have been specifically configured rather more than others to shine in various areas of the game, such as the Arkema 1, designed by Lalou Roucayrol for solo ocean sailing above all. With the new trimaran Arkema 4, the specifications immediately focused on versatility: good in offshore and in Grand Prix races, easy to handle solo but also ergonomic in crew sailing. Does this mean it can do everything you want it to? "It's true that the Arkema 4 design brief set out versatility as a priority," explains Quentin Vlamynck. "It's our vision, based on the experience gained on

our old platform, and it addresses the highly diverse program of the Multi50 Class. We also gave a lot of thought to protecting the spots where we keep watch as well as our living quarters," continues the man who will skipper Arkema 4 solo in the next Route du Rhum race. "Since the foils were added in 2018, boats have gained up to 5 knots at certain speeds. Everything happens faster on board, including crashing waves! And it's well known that at sea, the physical and mental fitness of a sailor is paramount. In the deckhouse of Arkema 4, headroom is 1.65 m, the grinders are protected, and we have almost 6 m² sheltered from heavy seas."



Romaric NEYHOUSSE
Architect of Arkema 4

2 ARCHITECTURAL CHOICES: Hydro and aero!

The Multi50 gauge is laid down strictly with mandatory guidelines, in particular minimum weight and monotype foils. Does this leave room for innovation? "Quite naturally we ended up with an X-shaped structure," explains naval architect Romaric Neyhousser. So the outriggers do not run parallel, but converge towards the center of the hull: "This allows a concentration of the masses and significantly better protection for the crew, low down, at the rear of the structure. It's also a great feature as the crew and the cockpit are lower down, and we can fit the boom lower down too", explains the architect. In hydrodynamics terms, the support of the foils has helped limit the volume of the floats that also gain reserve

buoyancy thanks to their raised section. The central hull is deep with V-sections to cushion the impacts, with a clearer bow for directional agility in Grand Prix races. But it is probably in aerodynamics that the research has been most spectacular: "The outriggers' fairing has been extended by "aero" tarps at the rear, and the integration of fittings and devices has been extensive," explains Romaric. As for the deckhouse, it can be removed, leaving a simple windshield for crew racing!

3 MATERIALS CHOICES: Efficiency, recyclability



Justin DOBSON
Arkema 4 R&D

The specifications of the Multi50 gauge limit the materials that are permitted in order to help control production costs. Like its competitors, the Arkema 4 trimaran is made primarily of a foam-glass-epoxy sandwich with carbon reinforcements. But the construction of this new Multi50 has also been an opportunity to continue the research undertaken with the Mini 6.50 Arkema 3 involving the Elium® resin. This thermoplastic material formulated and developed by the Arkema Group has been used for all front fairings of the

its reliability and mechanical qualities. The construction of Arkema 4 has also been an opportunity to demonstrate the exceptional and unique recyclability of this resin. "The outriggers' molds, for example, were made of Elium®, composite," explains Justin. "They have since been cut up and crushed before the depolymerization and purification phases by which the monomer can be recovered. The monomer can then be reformulated into a new Elium® resin, therefore now a «recycled» resin, with identical properties." In turn, the regenerated

outriggers as well as the deckhouse and cockpit, which are areas where its impact resistance is invaluable. It has also been the subject of an analysis campaign with a series of test parts conducted by Englishman Justin Dobson, a specialist in pre-impregnated structures, who joined the Lalou Multi team in 2019: "By using the Elium® resin for certain parts of the Multi50, we can capitalize on

resin will then reappear in the construction process for the production of new composite parts. This is the case with the cockpit as well as part of the outriggers' fairing, built from recycled resin. So, the process has come full circle!



Gilles BRETON
Arkema 4 construction

4 CONSTRUCTION SOLUTIONS: Uncompromisingly high-tech

"It's very difficult to build a modern and powerful Multi50 and keep to the minimum gauge weight," explains Lalou Roucayrol. For Arkema 4, the choice went to building the boat using pre-impregnated fabrics ("pre-pregs") baked in an oven at 120°C. This method ensures optimum resin rates in the composite, thus the best weight/rigidity ratio. Insulating the workshop and installing an oven to bake all the components were therefore prerequisites for the new Lalou Multi project launched in September 2019. Head of the worksite Gilles Breton comments: "With an 800 m² building, we can work comfortably. We made sure the ground was made perfectly

level, a prerequisite for building accuracy and wedging the molds, and we were able to assemble the parts indoors since we have 21 linear meters of doorways. These are the right conditions to put together a really high-tech boat that fulfils Quentin's sporting ambition."

Performance: The inside story

As in the past, this new Multi50 is the result of intense technical collaboration between Arkema and Lalou Multi. With recyclable resins, new materials, 3D printing of technical parts, clean energy, many features are indeed driven by innovation, and others will remain flexible throughout the sporting life of Arkema 4.

SAILS

Signed Incidence, closely involved with the Arkema 4 project since Pierre-Antoine Morvan, Match Racing European Champion and Technical Manager for Incidence sailmakers, will be the tactician for the Grand Prix. The gennakers, J2 and J3, are cable-less, therefore do not have any tension cable: the leading edge is thinner and the void better distributed. The fixture points are made of Elium®/carbon composite rather than aluminium, with the added benefits of lower weight and recyclability.

CENTRAL HULL:

Validated by many digital simulations (CFD), this hull is wide at the bridge to increase the sheet effect on the front sails. Below the waterline, it is deep with V sections for less bumpy sailing. The clear forefoot allows for more efficient rotations. As with the floats and the outriggers, the structure and bulkheads were assembled by structural bonding using methacrylate products from the Arkema subsidiary Bostik.

DECKHOUSE / COCKPIT:

Completely recyclable and made entirely of composite based on the recycled Elium® resin. Approximately 80 cm lower than on the other Multi50s, the cockpit allows for sheltered maneuvering. For superior visibility whatever the sea conditions, cockpit and deckhouse are fitted with Altuglas® ShieldUp® Flex PMMA* glazing, the world's first flexible sheet recently developed by the Arkema subsidiary Altuglas International. This material's flexibility makes it easy to install without thermoforming over substantial contours. This "acrylic glass" is 5 times more impact-resistant than traditional PMMA. It also has an anti-scratch and water-repellent coating. The result: a remarkable and durable optical quality, even in challenging conditions, as well as a weight reduction of the order of 50%!

* polymethyl methacrylate

ENERGY:

Latest-generation lithium batteries using Arkema's Kynar® technology were selected. Developed by the young French company Powertech, they help increase energy storage capacity by 50%, with no increase in weight compared to Arkema 1. Combined with a larger surface of photovoltaic panels installed on the front outrigger arm, the system delivers fully autonomous energy supply to on-board equipment, without emitting a single gram of CO₂.

FLOATS:

The floats feature raised sections, but their volume is smaller than on its forerunner since the foil gives the necessary support. The dihedral angle (between outrigger and horizontal plane) has been increased to prevent the windward float from dragging in the water in light winds.

Quentin Vlamynck the skipper of Arkema 4, that's him!

Still waters run deep! Straw-like hair, a casual look, a gentle face: it would be tough for Quentin Vlamynck - soon to be the youngest skipper in the history of the Multi50 Class - to lie about his age. But when his azure eyes gaze into yours, you can see utter determination. Ask him a question, and he will think it over first, never launching into speeches like so many young sportspeople completely attuned to the media. Quentin has an unpretentious, easy-going and direct character: *"Some skippers are better than me,"* he says, *"but I'm highly versatile. Even though I still have a lot to learn (quite normal for someone who isn't 30 yet), I feel ready... Besides, I'm happy to be where I am!"*

And he has every reason to be because in a few weeks' time, the new Multi50 that has been his daily life for the past two years will finally be launched in the water, at the foot of the Lalou Multi worksite that he also saw emerging from the ground in 2019 in Verdon-sur-Mer. After this double advent, Quentin will be taking off at the age of 27, at the helm of the latest Multi50 in a class undergoing complete renewal.

PASSING THE BATON

The tides have seen plenty of ebbs and flows since his first family outings on Lake Biscarrosse (south-western France) aboard a Surprise or a Requin sailboat. The young sailor was studying composite materials at the maritime high school Gujan-Mestras when he met skipper and entrepreneur Lalou Roucayrol who was giving a lecture there in September 2010. Ten years on, their collaboration is still going strong, and, within the team, passing the baton is the patently obvious thing to do. This is because since then, Quentin has earned his stripes, one at a time, in a story that he has been writing himself. First, as a crewman on the Multi50 *Arkema 1*, then as navigator of the experimental prototype *Arkema 3*, built with the Elium® resin, winning a very honorable sixth place in the Mini Transat 2017. On his return, Lalou promoted him to boat captain so he could hone his skills on the trimaran *Arkema 1*. *"For ten years, I was involved in the Mini and the Multi50 only, but I know them by heart!"* recalls Quentin who loves the open seas and knows how to push himself when the going gets tough. Composure, drive, determination: these are the attributes that invariably come to mind when his mates at the boat worksite speak about Quentin, where he has been checking in and learning about composite materials every morning for the past two years. Just as well, because sailing a Multi50 solo is still to this day the most demanding event in ocean racing. *Bon voyage*, Quentin, and may the winds be good to you!

Track record

- **2019**
Record in Gran Canaria two-handed race with Lalou Roucayrol on Multi50 [Lalou Multi].
- **2017**
6th in the Mini Transat and 3rd in the French Championship offshore racing in Mini 6.50 [Arkema 3].
- **2015**
Winner of the Armen Race in Mini 6.50 [Arkema 1].
- **2014**
8th in the Les Sables-The Azores-Les Sables in Mini 6.50 [Arkema 2].
- **2013**
Winner of the Route des Princes in Multi50 [Arkema 1].
- **2010**
French Champion UNSS Habitable

PHYSICAL PREPARATION: A triathlete in the making!

"I realized the value of working on my physical condition a few years ago, especially by sailing a Multi50 boat. I swim, run and cycle. Last March, I entered my first triathlon, but Covid-19 got the better of it. So I found another event next October around La Rochelle; it shouldn't interfere with the boat's schedule! With my mates in the construction team, we practise regularly. Often, Raphaël Lutard, young skipper at Team Lalou Multi and future boat captain, organizes the sessions and it's great for all of us to be able to share these moments, especially as here in the Médoc region, the environment is perfectly suited to this. As soon as the lockdown started to wind down, we got back on our bikes to ride in the local woods; it was like a new beginning! We also have the support of a professional coach who prepares each of us specifically based on our needs. Especially as she knows us well, as she is Lalou's sister Valérie!"

MENTAL PREPARATION: Confidence, assertiveness

"My coach Emmanuelle Fouillet follows my progress. This preparation is important and goes beyond psychology to tackle the races. I'm young and I have to learn to communicate properly, to clearly express my intentions and my demands, and to establish my leadership within a team. During the lockdown, we operated by teleconference, and in mid-May we resumed the traditional sessions. This coaching means very positive and essential support when you look at performance overall."

SPORTING PREPARATION: Changing horizons

"The last time I sailed was... [hesitating] yes, it was during our training sessions in the Canary Islands with Lalou, last December. Being involved in the construction project on a daily basis and the lockdown phase haven't made things any easier in that respect. But that doesn't mean I'm rusty. I can actually even remember perfectly well how you "push" a boat forward! [laughing]. So now, when I see the three hulls put together in the workshop, I can't wait to put on my oilskin!"



Multi50 Class:

High standards, budget control, conviviality

For a reasonable budget, Multi50s are among the most spectacular and fastest offshore racing yachts in the world. The high standards required for these high-flying machines does not preclude conviviality. No wonder the Multi50 Class is undergoing a complete renewal!

For over 10 years, the Multi50 Class has brought together talent from all walks of life for both the greatest offshore races and restricted events. Solid and durable, the construction of Multi50s has emerged from a now well-established and mature set of specifications, preventing undue technological drifts while giving some degree of freedom

to the biggest names in naval architecture. This makes for a highly homogeneous fleet, guaranteeing close-run regattas!

The sailing schedule comprises offshore and grand prix races, and combines solo, two-handed and crew events. With seven competitive boats, the Multi50 Class will this year see two new prototypes, one of which is *Arkema 4*. So, plenty of fierce tussles to look forward to in the Atlantic... and in the Mediterranean.

THE 2020 PROGRAM: 50 days of sailing: 8,000 miles!

- September
Training and reliability checks in Port Médoc. Ferrying to the Mediterranean
- October 12-24
Rolex Middle Sea Race
(600 miles starting from Malta)
- November 2-6
Record des Griffes du Lion
(250 miles from Le Grau du Roi to Mallorca)
- November 9-15
Ferrying to the Canary Islands. Training
- November 19-22
Gran Canaria Grand Prix
(under discussion with Multi50 Class)
- December 7-19
Ferrying back to Port Médoc via the Azores before winter maintenance work



Arkema, the value of long-term and commitment

Since 2013, Arkema and Lalou Multi have been collaborating on the construction of highly innovative offshore racing yachts and their racing schedules. Both partners have continued to innovate in this area where they inspire and instill great impetus, composite materials, new energies, adhesives... The Group's innovations have been implemented by Lalou Multi, successively in the design and improvement of performance of a Multi50 multihull, a Mini 6.50 monohull, and, since mid-2018, in the construction of the new Trimaran *Arkema 4*.

These exchanges between an innovative specialty materials group and a bold SME have given rise to both tremendous research and development successes and formidable racing machines.

This collaboration is driven by a spirit of solidarity and commitment typified in particular by the transmission of know-how and the backing of young talents to help them fulfil their professional aspirations with passion and clear-mindedness.

Finally, this partnership over the past eight years has shown both the general public and boating specialists that innovation, performance and sustainable development can indeed mingle. The three boats of the Lalou Multi team bear witness to this and illustrate the partners' real commitment in this regard.



ARKEMA

SAILING

ARKEMA
SAILING

LALOU
MULTI
TEAM

Headquarters : **Arkema France**

420 rue d'Estienne d'Orves

92700 Colombes - France

Tel. : 33 (0) 1 49 00 80 80

Fax. : 33 (0) 1 49 00 83 76

arkema.com

PRESS CONTACT

Marie-Astrid Parendeau

Tel. +33(0)6 24 53 52 41

marieastrid.parendeau@gmail.com

 facebook.com/arkemasailing

 instagram.com/arkema.sailing

 @TeamArkema