

BOW-4Z



BOW-4Z



PWA © CARTER / PWA WORLD TOUR.COM

WELCOME

Welcome to our Tender for the Olympic Windsurfing Equipment for 2024. We would like to introduce our revolutionary but very accessible windsurfing concept BOW-4Z. The Name BOW comes from the newly released Gunsails sail on which the concept is based. The letters 4Z stand for - «for Zeus», the Greek God to whos honors the first ancient Olympic games were held. In other words we BOW before Zeus in order to be able to compete at the next Olympic games. Now before we go into closer detail on our Equipment, we took the liberty too introduce our brand and 32 year old family business.

WHO IS GUNSAILS

The Gun sails von Osterhausen GmbH was founded in 1987 by Eberhard von Osterhausen. The idea behind the brand was to offer Windsurfing gear directly distributed from brand to customer without a shop. That allowed us to offer quality products for a reasonable price. In times before the internet, the “call and order” claim was a revolutionary concept, however it led to immediate success. The name Gun Sails was derived from the Speed Needle Boards named “Speed Gun”. In the 90s Gunsails was dominating the Speed Surfing Scene and in that time achieved multiple world records in Woman en Men divisions as well as several world titles. After the tragic death of the founder in 2004, his wife Petra von Osterhausen was taking over the management. Now since 3 years the son and engineer Thilo von Osterhausen is leading the product development and supporting the management of the family business.

Today, after 32 years, Gunsails has established itself as one of the biggest Windsurfing brands in Europe and is well known all over the world. The distribution system easily reaches every corner of the world and Gunsails Equipment is well known for exceptional quality and durability.



Pioneers in Windsurfing. Founder Eberhard von Osterhausen (right) with his Composite Speed Wing in 1985.

THE BOW-4Z DEVELOPMENT TEAM

Introducing the team behind the concept



Renato Morlotti

A sail maker at heart with a constant striving for perfection. Renato Morlotti started building big boat sails over 35 years ago. Renato was put in charge of GUNSAILS sail design in 1998. Since then Renato has designed countless mindblowing windsurfing sails and has helped to grow our reputation for great quality.



Pieter Bijl

A windsurfer at heart, Pieter Bijl has competed at a world level and in parallel was always involved in the sail development. Many different products with his feedback and innovative ideas have won multiple national and world titles all over the world. Pieter is also the initiator of the Bow Concept.



Thilo v. Osterhausen

Thilo, the son of the founder is managing the Gunsails product development since 3 years. As a graduate from Technical University Munich with a Masters Degree in Technology and Management he brings diverse academic and practical know how to the R&D. As the former National Coach in Freestyle Snowboarding for the German Snowboard Association he is well experienced with an Olympic approach to a sport.

Together they combine a diverse technical Know How, unsurpassed passion for the sport and unmatched experience in windsurfing development.

ATHLETE SUPPORT

Dorian van Rijsselberghe – NED 8

We are happy to announce that we can count on the support of two times gold medallist Dorian van Rijsselberghe, NED 8. Dorian is fully convinced and excited about the BOW-4Z concept and stands 100% behind our suggested foil and windsurf format.

«Foil windsurfing will be more attracting to many windsurfers, it will not only appeal to current Olympic RS:X windsurfers but I strongly believe that it will attract sailors from other classes within windsurf racing, such as the professional tour and many young talents from Techno and other youth classes.»

Dorian van Rijsselberghe NED 8 - 2 times Olympic Gold Medallist



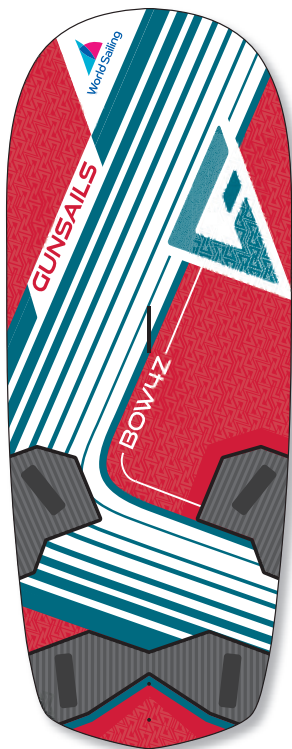




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1. INTRODUCTION OF THE TENDER

The Gunsails BOW-4Z Concept is supported by the revolutionary BOW Rig. With dynamic performance delivered through a large wind-range the sailor can now put more of his focus on racing. Combined with the most sustainable board construction, as well as a foil design developed by Airbus engineers and realized by a world sailing certified composite company we offer the Olympic Windsurfing Equipment for the 21st century.

The innovative concept is based on the Gunsails BOW sail (patent pending) which has been released to the market in November 2018 and is already moving up to become a best seller. The exact BOW 4Z has been already successfully competing in the 2019 PWA under the name BOW Fly. Sailed by Athletes Dorian van Rijsselberghe and Steven van Broekhoven the sail clearly demonstrated that it can easily live up to the performance and speed of the current long aspect ratio or slalom sails on the market.

However the sail includes several advantages:

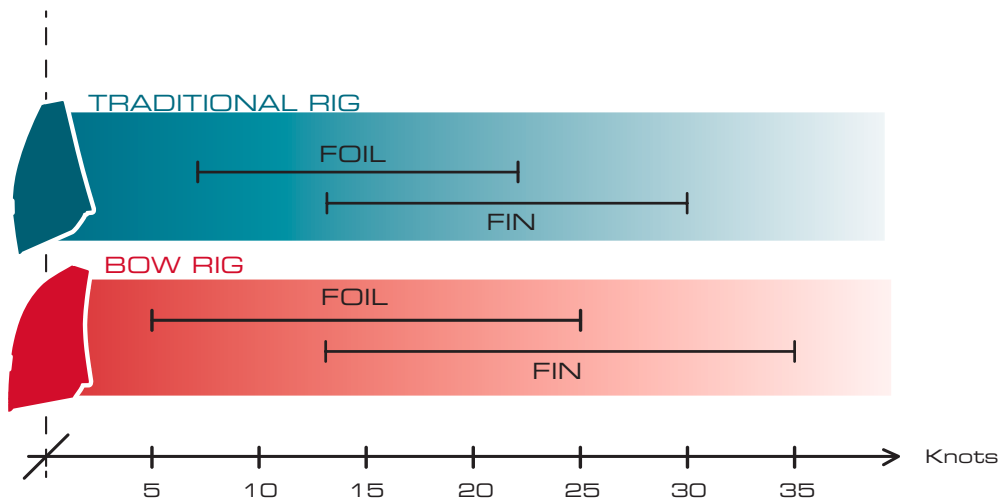
The sail concept shows unique efficiency with an astonishing adaptability to different wind strengths. Therefore the BOW sail comfortably covers a wind-range of two traditional sails in a single rig. Eventhough the sail is designed for foiling it does perform amazingly on a normal windsurfboard. That versatility, efficiency, easy handling and unique wind range will not only allow to reduce the overall needed gear to one rig (Woman 8.3, Men 9.3) but will also open the opportunity to create a much more appealing and accessible(financially and physically) windsurfing class for female athletes or for the younger generation.



Dorian and Steven competing at PWA Costa Brava with the BOW Fly
Stand out from the crowd

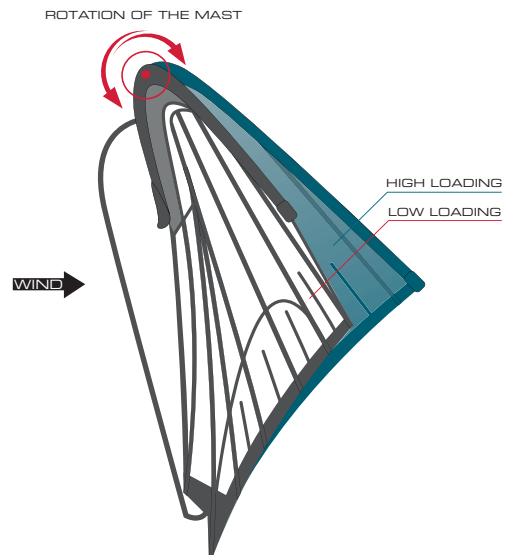
WINDRANGE

To get an idea of the windrange we prepared below graphic including a demonstration of the bow rigs windrange (applicable for our suggested sail size for women and man) in direct comparison to the windrange of a current state of the art windsurfing sail. Each windrange demonstrated for racing on the foil or with the fin.



As the chart demonstrates, the BOW concept slightly enlarges the windrange in the low wind area as well as a vast increase in the high winds.

This incredible range is achieved by the extreme curvature of the mast in the top section in combination with the ability of the mast to rotate within the boom-head. That is resulting in a performing sail that dynamically adapts its profile to the conditions. Thanks to its special geometry, the sail shows a much higher level of control thus making the handling super easy and intuitive.



As this is a totally new sail concept and desired length of chapter is limited to 2 pages, we took the liberty to include a detailed explanation of the functionality and the resulting benefits of the rig in Chapter 7.

With its unique abilities the sail creates a level playing field for competition and enables results which are actually based on the sailors ability. May the best sailor win!

— BOW-4Z EQUIPMENT

BOW-4Z SAIL

Woman: 8.3
Men: 9.3

BOW FLEX 70 MAST

Length: 490 cm

GUNSAILS SELECT 100% CARBON BOOM

Length: 200 – 260 cm



BOW-4Z BOARD

The shape of the board is to allow for efficient release in the light wind to start flying as quickly as possible, with the slightly drawn in tail provides great response and control when sailing on the fin.

The side dagger boards provide lateral grip to help reduce the super low wind range. They can be mounted on discretion of the rider. As the side daggers are lifted out of the water when on the foil they will not limit top end performance.

The board will be provided with four foot-straps mounting positions (2 on starboard and 2 on port-tack) and a single foil/Fin mounting position.

For the sail mounting position there will be a variable mounting position with an adjustment range of 16 cm.

Board, Thermo formed composite technology produced by BICSPORT

Length 230

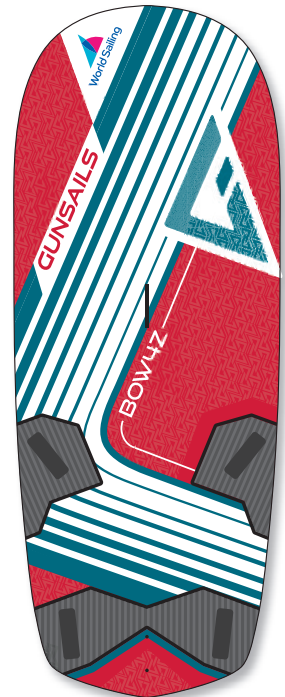
Width 91

Volume 200

Weight 8.5kg

Side dagger-boards

Length: 25cm



BOW-4Z FOIL

The BOW-4Z foil is one of the latest developments of Gunsails and has been designed and streamline optimized by Aerodynamics and Hydrodynamics Engineers from Airbus. All parts are 100% constructed from carbon prepreg.

For the foil we are sharing all the components in between Men and Woman Classes. The only difference is that we choose a smaller front wing for the Woman class compare to man class to offset the reduction of weight between the Men and Woman class competitors.

The lifting foil package for Men:

- One mast 100cm
- One fuselage 110cm
- One front lifting wing for Woman 800cm/2
- One rear stabilizing wing. 220cm/2

The lifting foil package for Women:

- One mast 100cm
- One fuselage 110cm
- One front lifting wing for Woman 800cm/2
- One rear stabilizing wing. 220cm/2

Foil Complete set

- Mast: 100cm
- Fuselage: 110cm
- Front Wing: Woman: 800 cm
- Front Wing: Men: 900 cm²
- Tail Wing: 220 cm²
- Weight: 4.5kg

Fin

- Men: 60 cm
- Woman: 56 cm



2. CLASS ASSOCIATION

— DETAILS AND STATUS OF CLASS ASSOCIATION

As we are tendering based on a new discipline of windsurfing with a completely new sail concept that was only introduced into the market towards the end of 2018 we have not started a sailing class or class association. We don't feel that a class association should be a requirement to be able to tender for the 2024 Olympic equipment. We know that others might have deliberately opened a class but that would have only solved the purpose of fitting the requirements of this tender.

As we are entering a complete new era of windsurfing with the introduction of foils and new sails specially suited for foiling we believe that any future class association should be carefully designed together with World Sailing as well as the worlds leading athletes. From our experience our equipment is very diverse and adaptable and therefor suits basically any format.

Therefore we are open to suggestions from World Sailings experience on how to best run this class. So that it's position inside of world sailing is in conjunction with World Sailing's needs.

Introduction

The BOW4-Z is a Hybrid (foil and fin) developed by the GUN SAILS von Osterhausen GmbH

BOW-4Z hulls, hull appendages, rigs and sails shall only be manufactured by GUNSAILES or their appointed manufacturers. Such equipment is required to comply with the the construction manual set forth and enforced by the GUN SAILS von Osterhausen GmbH and is subject to a World Sailing approved manufacturing control system.

A hull, a hull appendage, a rig or a sail may, after having left the licensed manufacturer, only be altered to the extent permitted in the class rules.

Owners and crews should be aware that compliance with the equipment rules is not checked as part of the factory based fundamental measurement process.

Rules regulating the use of equipment during a race are contained in the class rules, in the Equipment Rules of Sailing Part I and in the Racing Rules of Sailing.

The BOW4-Z is a one-design with a strict set of class rules, which are to be written to ensure that sailing skill takes the advantage over equipment know how. The BOW-4Z Class is based on finding the most skillful sailor and discourages those trying to find a way around the rules to gain an advantage.

These Class Rules promote the standard equipment as supplied by GUNSAILES and any of the limited permitted changes to the equipment are designed to ensure longevity and increase the enjoyment of sailing the board.

1. The International Authority of the Class shall be World Sailing
2. The official language of the class is English and in case of dispute over translation the English text shall prevail
3. Amendments to these class rules require the approval of the World Sailing

Status of the class rules

As recommended by World Sailing the Class Rules for the BOW-4Z will be complaint with the Standard Class Rule set out by World Sailing. Only changes will be made to the SCR where we feel needed to make the SCR applicable to the BOW-4Z concept. Class rules have not been written, however the SCR recommended by World sailing will be the leading document in creating the class rules.

Also our rules would comply with and follow the Racing rules of sailing, Equipment rules of sailing and Offshore special regulation set forth by World sailing.

3. EQUIPMENT CONTROL

By suggesting a single manufacturer for every item we can ensure that each piece is built under the same conditions and therefore ensure the most constant quality and performance of the equipment submitted. Also due to the economies of scale of a single manufacturer in combination with the Gunsails direct selling structure, we can ensure the most reasonable price, conclusively making the discipline also more accessible from a financial point of view.

One design - single manufacturer per item.

For the BOW-4Z Concept will choose the option for having a single manufacturer for every part of the gear. In our opinion a single manufacturer worldwide is the only possibility to enable fair competition for a worldwide group of athletes as well as constant supply and quality.

Please find below our argumentation for the decision:

- Each of our suggested manufacturing partners has the necessary production capacity to cover the worldwide demand.
- Gunsails has the capacity and expertise to distribute those parts worldwide.
- With one manufacturer we can ensure and continuously control the unique quality and durability we guarantee in our gear.
- Changing tolerances due to different manufacturers might not only influence the quality but also the performance of the whole gear. Conclusively this could lead to unfair conditions in competition.
- Different interpretations or approaches to the technical specifications could change the performance and quality of the equipment. Therefore multiple producers could be providing an advantage or disadvantage to the athletes equipped with that specific gear.
- One manufacturer will be able to realize the best economies of scale due to the higher numbers thus creating a lower cost price, again that will be reflected in the end consumer price and costs for windsurf federations. A lower overall gear price will furthermore lower the investment in the sport and will allow more people to participate and with that maximize accessibility to this class.
- A second producer who doesn't have the same scale will not be achieving the same fixed price, thus will be forced to find options to cut the cost in materials or manufacturing to make this commercially viable and with that would put the reputation and integrity of the class at risk.
- A single manufacturer per equipment will be able to quickly realize input from World Sailing to further optimize the class in performance and durability.
- As BIC Sports are the only ones having the Know – How for their unique production method and the production itself includes high setup cost, a single manufacturer will anyway be the only possibility for the board.
In case World Sailing finds any kind of violation towards their anti – trust policy for the Olympic gear we will be happy to provide and proof with more detailed information the advantages to a single manufacturer One design class. At the same time if World Sailing through the Anti trust policy feel an open licensed manufacturing to be better suited we would be open to discuss the possibility of this option for specific parts of the equipment.
- Description on how equipment is inspected at events.
- Permitted number of main equipment items per sailor at an event.

QUALITY MANAGEMENT AND CONTROL

The Durability of all the equipment produced by GUNSAILS is above industry standard. At GUNSAILS we work with a Direct sales strategy with 90% of our regular customers, this allows us to use more high end materials and a above industry standard production quality.

This quality is crucial for our selling structure as margins would quickly be absorbed by the replacement of faulty parts, and in the shipping back and forth in such an event. The only way to make our business model sustainable is through ensuring that we have the highest standard in materials and build quality.

As this proposal is based on Single manufacturer we can be certain that each of the pieces of equipment will be produced in the same facility with the best possible precision.

QUALITY AND SUSTAINED SAIL SHAPE IN PROLONGED USE – BOW-4Z RIG

In our sail production raw materials are always checked as the materials gets rolled out onto the flat bed plotter. Any inconsistencies in the sail materials will show up there and will be further investigated before proceeding into production.

On top of that the sail design of the BOW4Z in our proposal promotes a much lower down-haul load compared to a traditional rig. With a completely redesigned mast bend curve that is matching the sails unique curve we have been able to reduce the rigging tension by more then 20%. This means we are loading sail materials as well as the mast 20% less. This reduction in loading while using above industry standard materials will ensure longevity of the sail and ensures the sail will hold it's shape better over time. The reduction also has benefits in other areas.

Products that last longer have a lower environmental impact and reduce cost to sailors or MNA. The lower tension in the rig will allow woman and youth to rig the sail to the ideal settings without any rigging aid or help. The flexibility of the rig is greater improving comfort and reducing peak loading to the physical body.

The latest bow flex mast that is included in the proposal is currently in production and has so far a 0,9% breakage, leaving us very comfortable with the durability of this mast.

The BOW-Flex 70 490 mast is produced by applying Glass 30% in combination with normal and high modules pre-preg Carbon fibers in different orientation around a steel mandrel, those fibers then get wrapped with compression taped, cured and post-cured in an autoclave. The production of the BOW-Flex 70 490 mast proven it's self to be durable with minimal tolerance ensured by the use of only Torray prepreg carbon fibers.

Before leaving the factory each mast is compressed in length to the specifications of the sail ensuring that any pieces with faults in it's construction are eliminated. While doing this compression there is also the option of measuring the mast to ensure the bending curve is within the set specification using a combination of compression load and bending curve.

All sails at our factory have the assembly marks drawn onto each cut panel. The alignment and sticking of these panels is done by skilled workers and controlled by their supervisors on every step of the manufacturing. The precision of each part of the sail is controlled and supported by a 100% correct master pattern available at every production step. After sticking the sails are sewn, the critical markings to show proper alignment of the panels will remain visible throughout the production process and constant checking and observation is something that is currently already in place on our production line.

For the booms we are working with the Industry standard manufacturer Technic Devotion to ensure our boom is up to intense use. It is a boom that we are currently carrying in our product range and with a Warranty rate below 2% it has proven it's self to be very tough and reliable at a more then reasonable price.

For foil and fin we are working together with Holland Composites, a leading composite manufacturer whose production methods, quality and tolerances have been already approved by World Sailing for the production of the Nacra 17 Olympic Class.

Bic Sports as our Board production partner does not only exclusively produce the most durable board construction on the market but has also proven to achieve premium quality's and minimum tolerances. An ability that we haven't seen in the past years from any board producer from Asia as they are forced to reduce cost due to the general development of the windsurfing market.

Further insight and alteration precaution for the equipment

At the mast, boom and Foil factory the pre-preg fibers and resin always come with a certification and specification sheet complying with standard procedure. Clear lay-up instructions are followed by skilled and experienced workers.

For the mast we have a compression bench in the factory to compress the mast to the curve it takes in the sail. The compression load is measured in combination with deflection measurements at 3 points to ensure each mast is according to spec before leaving the factory.

For the board production we will use only steel molds and certified technologies. Any discrepancies in shape are visible on de-molding of the product. These products are discarded and recycled. The process is so well controlled that only 3 board per 1000 boards are discarded.

As the only supplier of this equipment measures will be taken to ensure that alteration to design by competitors is directly visible.

Board alteration precaution.

Print on the underside of the board as well as tough-skin on the whole board will prevent alteration, would there be any filling or sanding to alter the underside of the hull shape the printing would be removed and the board wouldn't be eligible for competition use. Alteration to the deck of the hull would be shown through the removal of the tough-skin. The skin is also protecting against UV light.

Mast alteration precaution.

The mast are produced with a continuous wrap where any alteration would be instantly visible. A very simple compression device could be supplied to the event measurer to control the masts bending.

Sail alteration precaution.

Due to much lower downhaul tension in the sail body the material as well as the sail shape will keep their properties for a much longer time than in conventional sails.

Battens will have a printed shrinkwrap around them and the different segments will always be the same size, this ensures easy control to prevent alteration as well as easy accessibility for spare parts. Sails are all stuck together and then sewn. Any unpicking of stitching and or unsticking of the seams would be easily visible on the exterior.

Foil and fin alteration precaution.

The foil will be produced with a gel coat. Any alteration to the foil will show either discoloration or removal of the gel-coat itself. If any of the items above show any way that they are tampered with they should not be permitted to compete.

Quality Control

Thanks to long term established business relationships to our manufacturers our quality management applies to multiple steps in the supply chain.

Thanks to the proximity to our customer we have been able to collect potential problems and suggestions at first hand. Like that we could continuously improve our products, our quality control and rule out potential threads for quality issues. That experience not only improved the quality but also developed efficient problem solving capabilities.

The Windsurfing media e.g. Surf Magazine, Wind, Planchemag, Windsurfers have been countless reporting about the outstanding quality and durability of our products.

4. FORMATS AND EVENTS

Since the introduction of Foiling into the windsurfing competition scene we have seen a lot of development of equipment to suit the criteria needed for foiling. Some of these are changes in sail development others obviously in board shape and foil design. All the different variation of the traditional sail design we have seen and tried this far have not been well suited to the wide variety of conditions required for the Olympics nor do they make windsurfing for the masses any easier. For this reason, we have chosen to develop our exclusive concept in the direction that works great for both foiling and normal windsurfing. A few problems with foil windsurfing in combination with the traditional sail concept is that as the wind increases the speed increases and with that the lift in the sail increases causing an excessive amount of lift. With the result that the sailor is having to shift his attention from racing to fighting to keep the foil lift under control. The unique aspects of the BOW sail design outlined in detail below. We will explain how our sail is actually helping to aid this hereditary issue and with that is giving a much more even performance and handling throughout the whole wind-range allowing the sailor to focus on racing.

If this new event is going to be a fair playing field from an equipment point of view we believe that having one sail per gender to cover all conditions is going to be a must. This will ensure that results are not based on the wrong or right choice of equipment, but on athlete skill based on single and fixed set of equipment for the whole fleet. At the same time this equipment needs to function well through a wide range of conditions and for a large variety of athlete height and weights. Our innovative sail design "BOW" is extremely well suited to the format above. The great performance and handling gains are the reason why we believe this would be best gear available now to choose for the 2024 Paris Olympic equipment for both Woman and Man. The BOW - 4Z sail matches the requirements set out in the invitation to tender like no other.

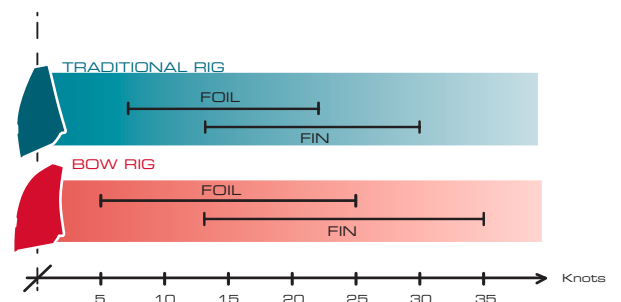
In our opinion the physical nature of the RS:X class is not in line with the gender equality requested by World Sailing. With foil windsurfing promoted with this concept we see lower sustained peak loads to the body bringing in a certain fun factor attracting both more female and youth windsurfers.

The complete package in our proposal would be very well suited to any racing format. This equipment would work very well in the racing format currently used by the RS:X Class with some slight alterations to starting configuration in the extreme light wind. At the same time this concept would also thrive in a concept as proposed by the Dutch Sailing federation. A format we believe to bring a little more marketing value to the sport, but a format that would need to be developed and proven before implementation. What ever racing format is preferred by World Sailing we can be sure that the adaptability of our gear will match the format's needs and will easily perform in the large variety of conditions seen at world sailing events.

Wind and Sea State Consideration

This equipment is best suited for upwind-downwind racing. With the right technique and rider expertise it can fly in as little as 5 knots making light wind racing fast and exciting. On the foil the top end windrange should be about 25 to 28 knots. However the Fin option further extends the windrange up to 35 knots while also adding handling in the rougher sea state. On the fin you can expect top performance starting at 13 knots all the way up to 35 knots. The Fin option is there to be able to guarantee racing in rougher sea states. Usually the sea state below 14 knots is manageable on the foil. Then depending on the venue and wind direction in the stronger winds the rougher sea might limit the use of the foil. In this case with our package the race director can choose the fin option and racing can commence.

The BOW-4Z is currently not a class used, the BOW sails are competing at the top level in the PWA as well as other world class windsurfing events with great success.



5. MANUFACTURERS AND AVAILABILITY

THE FOLLOWING CHAPTER WILL LIST THE SINGLE EQUIPMENT ITEMS AND INTRODUCE THEIR PRODUCTION FACILITIES.

SAIL BOW-4Z

Sizes 8.3 for Woman and 9.3 for Men.

Both these sails are produced at Aqua dynamics in Sri Lanka.

Aqua Dynamics is one of the leading manufacturers of windsurfing gear and they have been producing Gunsails now for more than 20 years with basically no major warranty issues. Thanks to their skilled workers, effective quality control, low manufacturing tolerances and production flexibility they deliver an excellent and reliable quality. Their quality control is certified with the ISO 9001/2015 norm and does apply at every step of the manufacturing process. The Aqua Dynamics Windsurfing department currently produces 13000 sails per year, however it has the capacity to scale up to 18000 sails. Next to the windsurfing gear, Aqua is manufacturing Boatsails, Kites, Bags and Paragliders. In their production of paragliders there were already certified to produce the competition paragliders for the Asian Games in 2018. That is another indicator for their precision and production quality.

Please find company details below:

Aqua Dynamics (Pvt) Limited
Bol Registration No 142/5-2-88
GST Registration No 114041734-5000
222 Kimbulapitiya Road , Aluwatta
Negombo 11500
Sri Lanka

MAST

GUNSAILS BOW FLEX 70 490cm

This mast produced by Proxima. Proxima has expertise in mast production for well over 15 year. Throughout the development of our new BOW sail they where our partner and always thinking with us and reacting quickly to bring this from a concept to a finetuned product. Like in any development we faced some challenges, but with quick response and problem solving skills we realized a unique and reliable product.

Using 100% Toray sourced carbon fibers is made in a prepreg mechanically rolled construction where each plotter cutted sheet is applied to a steel mandrel. The capacity of the production is currently 150 Masts per day.

Please find the company details below:

PROXIMA d.o.o.
PDV IDENTIFIKACIJSKI BROJ
52470 UMAG , UNGARIJA 39 G,
CROATIA
HR33788590689
tel.00385/52/726-462 fax 00385/52/726-463
OIB:33788590689

BOOM

GUNSAILS SELECT 200 – 260CM CARBON BOOM

TECHNIC DEVOTION CORP.

Technic devotion is the go to OEM if you are looking to make a solid, strong and affordable boom. They are producing for the majority of industry and with a great track record for quality and durability.

Please find company details below:

China office:

BUILDING 2, NO.6 FUWAN ROAD,
QIANWU TOWN, DOUMEN, ZHUHAI,
GUANGDONG PROVINCE, CHINA
TEL: 756-6127368 FAX: 756-6127367

BOW-4Z BOARD

BIC SPORT

BIC Sport is the only windsurf manufacturer whose production facility is in Europe, and the only manufacturer to have mastered the technological art of thermo-forming in aluminium moulds, guaranteeing 100% faithful reproduction of the original prototype shapes approved by the shaper and riders. Due to the proximity of BIC to our warehouse we can guarantee quick production cycles and overall flexibility.

Please find company details below:

BIC Sport
58 Rue Alain GERBAULT
ZI du PRAT CP 3716 / CS 23716
56037 VANNES Cedex
FRANCE
Tel: +33 (0)2 97 43 75 00
Fax: +33 (0)2 97 43 75 01

FOIL, FIN AND TRACTION DAGGERBOARDS

HOLLAND COMPOSITES

At Holland Composites there is a strong passion for development in high end composites. They are involved in the development and production of complex composite parts. Holland Composites prides itself on quality, constancy and achievable solutions. A great testimony to their expertise is their experience in successfully producing the Foils for the Nacra 17 World Sailing approved Olympic class.

Please find company details below:

Holland composites
De Serpeling 10
8219PZ Lelystad
The Netherlands
+31320281877

DIRECT WORLD WIDE DISTRIBUTION

THE GUN SAILS VON OSTERHAUSEN GMBH

GUNSAILS is one of the worldwide established Windsurf Brands and can rely on 32 years of experience in the scene. With an agile group of Engineers, Managers and passionate Windsurfers the company can rely on a skilled, reliable and versatile team. Gunsails is to date the only Windsurfing company who has mastered to achieve a direct distribution network which can easily reach into the whole world. This ability does not only relate to a diverse mix of forwarders but also to a very skilled and friendly service team that can immediately answer any question or solve whatever problem there is.

On a day we can scale our distribution up to more than 200 (windsurf sized) parcels to be send out.

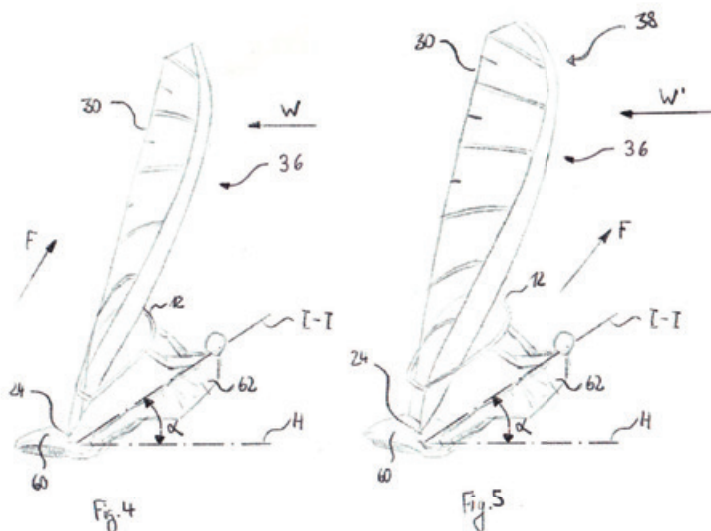
The direct distribution network with all its related assets will provide a huge benefit in case of a successful application as the Olympic Equipment can be delivered immediately and efficiently straight to every Association or any Athlete, no matter where he or she is situated in the world. A successful application will allow us too employ an addition to our service team and we can position an experienced employee for the sol communication and coordination of the Olympic Equipment.

Gunsails products are well known for unique quality and durability. With precise quality control and continuous development including customer and athlete feedback Gunsails achieves those levels of quality and durability.

In the rare case of a quality issue we are known to be very fair and provide immediate solutions or replacements for our customers. No matter if they are at home, work or somewhere in the world on vacation. Internally we have defined mechanisms to organize and compensate those issues within the close and tranperent relationship to our production partners.

Interlectual Property

In terms of interlectual property the BOW 4Z concept is based on a patent pending on the unique rigg concept. In the very likely case of a successful patent we are open to license the concept within common licensing terms.



RETAIL PRICES

Retail prices, availabilities and delivery times are listed in Annex 2.

Below you find an outline of the suggested retail price for each piece of equipment with each component to the complete set quoted separately per gender discipline

GUNSAILS BOW-4Z Woman*

Complete package price at EUR 6000,-. Individual woman-package component price below.

PART	PRICE
Complete Foil (Mast, Fuselage, 1x front wing 800 cm ² , tail wing 220 cm ²)	EUR 2450,-
Fin 56 cm	EUR 245,-
Side traction rudders 25 cm	EUR 200,-
Board BOW4Z	EUR 1500,-
Mast Bow-Flex 70 490	EUR 330,-
Boom Select 200 – 260 cm Carbon	EUR 600,-
Extension including universal 48 cm	EUR 110,-
Sail BOW4Z 8.3 m ²	EUR 550,-
Adjustable Outhaul Trim	EUR 60,-
Board-bag	EUR 120,-
Gear-bag for Sail, mast, boom, foil and fin	EUR 110,-
TOTAL	EUR 6275,-

*All prices without VAT.

GUNSAILS BOW-4Z Man*

Complete package price at EUR 6000,-. Individual man-package component price below.

PART	PRICE
Complete Foil (Mast, Fuselage, 1x front wing 900 cm ² , tail wing 220 cm ²)	EUR 2500,-
Fin 60 cm	EUR 250,-
Side traction rudders 25 cm	EUR 200,-
Board BOW4Z	EUR 1500,-
Mast Bow-Flex 70 490	EUR 330,-
Boom Select 200 – 260 cm Carbon	EUR 600,-
Extension including universal 48 cm	EUR 110,-
Sail BOW4Z 9.3 m ²	EUR 560,-
Adjustable Outhaul Trim	EUR 60,-
Board-bag	EUR 120,-
Gear-bag for Sail, mast, boom, foil and fin	EUR 110,-
TOTAL	EUR 6340,-

*All prices without VAT.

6. SUSTAINABILITY

With perspective to our environment, sustainability is a highly important aspect within our supply chain aswell as in our choice for manufacturers. In the following we will explain the efforts for sustainability rooted within the BOW-4Z concept.

Board (BIC SPORT)

«BIC Sport has been manufacturing watersport products for over 30 years. Long before 'eco-friendly' was a buzzword they began developing "clean" manufacturing processes by recycling wherever possible, eliminating gas emissions and conserving energy and water. From start to end of life-cycle, BIC Sport products are thoughtfully produced with preserving the environment we all share in mind. And perhaps least recognized but most important, BIC Sport products are BUILT TO LAST - meaning fewer boards and boats taking up residence in your local landfill.»

Sail (Aqua Dynamics)

As mentioned before the BOW sails gives this amazing performance with more then 20% less down-haul tension. The reduction in down-haul tension translates directly to a longer lasting rig that holds its shape better and there for will have an estimated 20% longer life. The sail has minimal printing and for the printing that is there we use high end water-based inks to avoid the use of solvents. The sail comes in a super light sailbag made from recycled PET Bottles. Also there is no plastic packaging around the sailbag as the sail and bag are protected by a recycled carton box.

Mast (Proxima)

As the mast is a critical part to the sails performance and durability we used 30% glass in the critical areas of the mast. Also the mast is made with an off excess fiber orientation completely different than all other masts on the market. This will ensure even loading of all the fibers simultaneously and prevent overloading of individual fibers that causes deterioration of the mast. From an engineering perspective and by our experience this will give the mast top performance even after extensive use.

Foil (Holland Composites)

In our philosophy, quality products can only be realized in a clean and organized environment. As a consequence, we invested in a state-of-the-art facility where each of our staff have a decent workplace with ample room and light, where a highly skilled and motivated workforce work efficiently in harmony on technically challenging products. And it is clean; we fight mess in the same way as we fight waste. We minimize waste, and whilst doing so we strive for a minimum impact on the local environment too.

Centralized distribution (GUNSAILS):

A centralized distribution system can drastically reduce the amount of shipping and transport the equipment has to go through. As a majority of the equipment manufacturers are within Europe the first step of needed transport is already very efficient and sustainable. When the gear is then transported to the athlete or association it is only one direct shipping operation without any dealer or distributor in between. That not only reduces its environmental impact or shipping cost, but also the risk of the material causing any damage during transport.

7. OTHER CONSIDERATIONS

EXISTING PATHWAY EQUIPMENT

As already mentioned the BOW 4Z Rigg is the current 2020 BOW Fly model of the Gunsails Sailrange. It has already been successfully competing in 3 PWA Foil events and has proven its performance speed and suitability for foil and windsurf racing.

THE BOW CONCEPT

In the following chapter we want to explain the exact functionality of the BOW rig in order to present its outstanding capabilities and efficiency.

THE FUNCTIONALITY OF THE BOW-4Z RIGG

The following section will explain in detail every aspect and mechanism which is enabling the unique abilities of the sail.

«The BOW sails have a unique capability to perform extremely well in a very wide scale of wind strength without losing performance unlike many other wind-foil sails.»

Dorian van Rijsselberghe NED 8 - 2 times Olympic Gold Medallist

a) Rotation of the mast

The basis for the Bow sails unique and adaptive performance is the ability of the mast to rotate inside the sail. Conclusively the the upper area of the sail can easily twist and bend away leading to the specific adaptation of the profile. The motion is a mixture between rotation, torque and bending.

To accommodate the mast rotation in the boom head we have developed a special friction bearing. This friction bearing is a simple mast shim made from a special material to reduce the friction. The rotation of the mast is possible due to top of the mast being rather far back in the sail creating a positive leverage to allow the rotation to take place during lateral loading. When the loading is reduced, the sail can dynamically rotate back in its initial position. This means that the mast is doing a range of rotation through torqueing and with that loading the carbon fibers placed on an off axis orientation which causes a responsive torque, while for the greater rotation the mast will rotate as a whole inside the boom head. With this gusts and chops are absorbed and responded to by the torqueing of the mast. Where during the large changes in general wind strength or side loading the mast will actually rotate inside the friction bearing.

b) Adaptation of the profile

In contrast to the Loose Leech concept, where only a small part of the leech twists, the BOW has a much larger area to adapt to the strength of the wind.

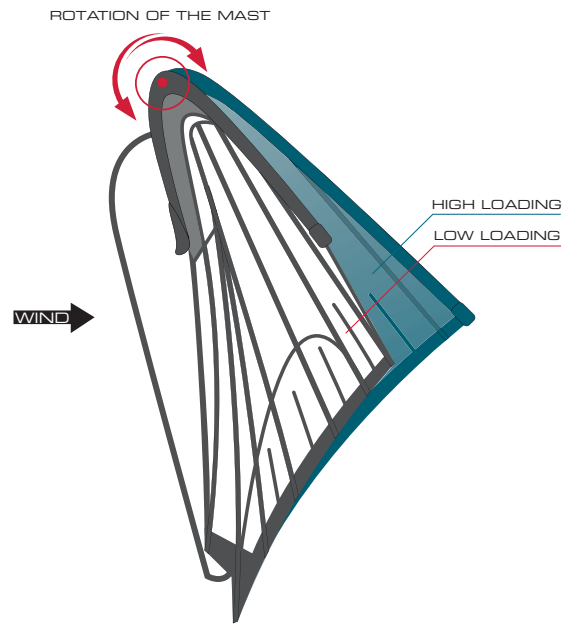
When the wind strength and thus the wind load in the sail increases (high loading), the upper part of the sail turns leeward and the profile adapts dynamically. The holding forces on the boom remain the same. Only the profile adapts to the higher loading.

When the wind force and thus the load in the sail decreases (low loading), the sail turns back to its original position. Now, the lower wind energy is compensated by the more efficient profile and larger effective surface area.

The drive as well as the holding forces remain the same. This ability facilitates handling enormously and also improves performance on all angles of attack as the side bending is 100% initiated by the lateral pressure in the sail.

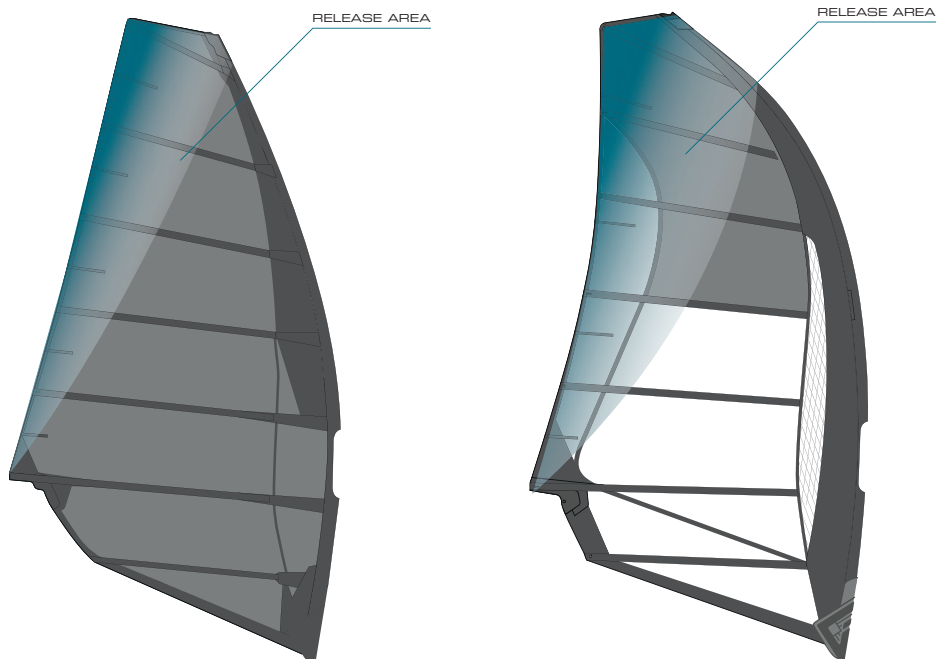
Please see the explained reaction of the bow sail on two different loadings in the below pictures.

The described adjustment of the BOW is more effective and dynamic compared to the one of the Loose Leech mechanism. Due to the defined and firm edge at the leech, there is no fluttering and the associated small stalls causing turbulences towards the end of the profile.



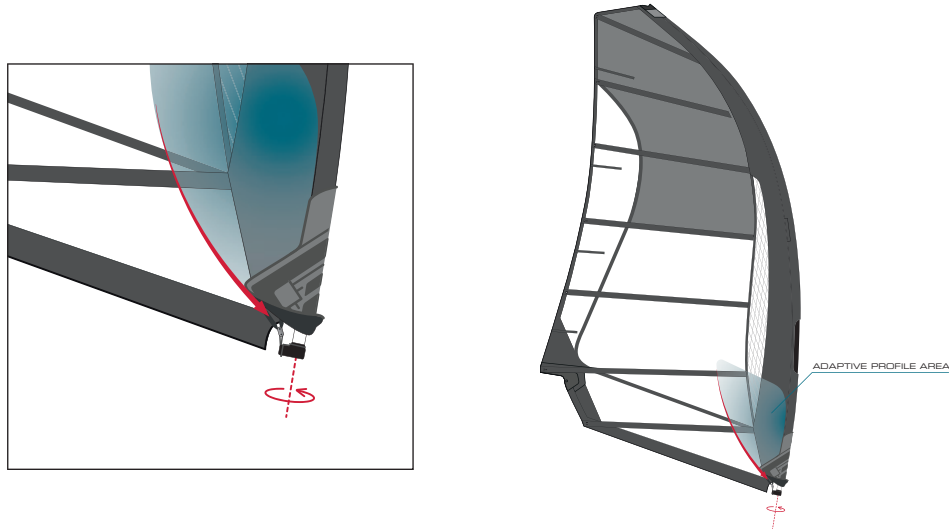
c) Release Area

Common sail concepts have the ability to adapt to a certain degree to the prevailing wind force. That ability is created through the loose leech which is tensioned under load. The area that allows the load to be redirected from the sail is called the release area. Marked in blue in the drawing below. The adaptation of the BOW sail, caused by the rotating and torquing action of the very flexible mast top section, enlarges the release area considerably and lets it extend far into the sail profile. In the marked area, the profile changes depending on the wind force. It is precisely this relatively larger area that makes the unique adaptability of the sail possible.



a) Adaptive profile area

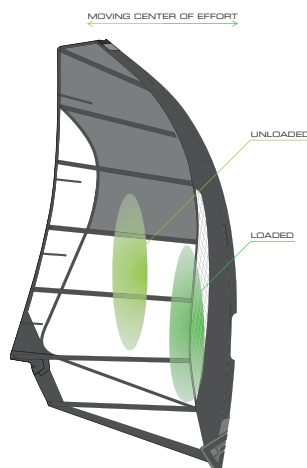
Another mechanism related to the rotating mast is found at the foot of the sail. Mast and extension form a connection and cannot rotate within each other due to the downhaul forces. That means that once the mast rotates, the extension is rotating in the same way and is therefore pulling the tack leeward and forward. That increases the tension towards the tack (indicated with the red arrow in the drawing) and does therefore increase the profile in the blue area, thus bringing the center of effort forward where it is most easily controlled in the high-wind.



That means that in a high loading situation of the Bow sail, not only the top and its connected release area is working to adjust the profile but also the lower profile area is helping to accommodate to the sailor's needs. Both mechanisms work quickly and dynamically without a change in the holding forces and without active trimming input of the sailor.

a) Moving center of effort

Now if we look at the rotation of the mast, the adaptation of the profile in the release area as well as in the adaptive profile area towards the tack we see that the combination of both mechanisms creates a moving center of effort. Please see the picture below

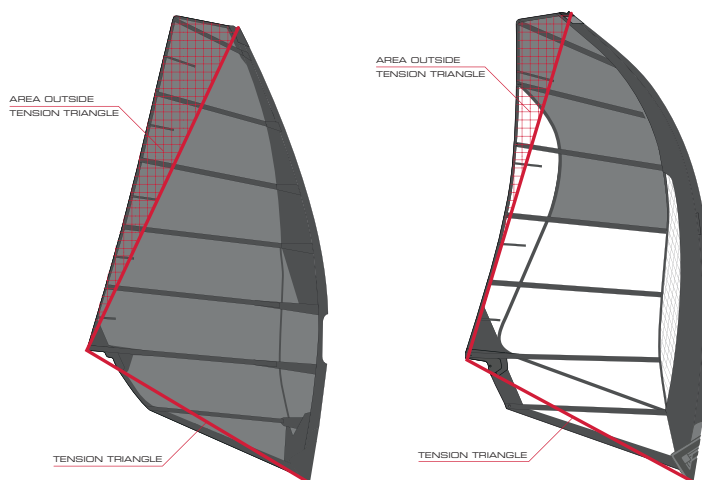


If the sail is in a low loading or unloaded situation the sail's center of effort is towards the middle of the profile and is therefore creating lift and the needed drive to accelerate. Ideal to get up on a foil or get planning.

If the loading in the sail increases the upper profile area bends away and the lower area tightens the profile. Therefore the center of effort is moving down and forward. That repositioning makes the sail even easier to control which is ideal for the high loading situation.

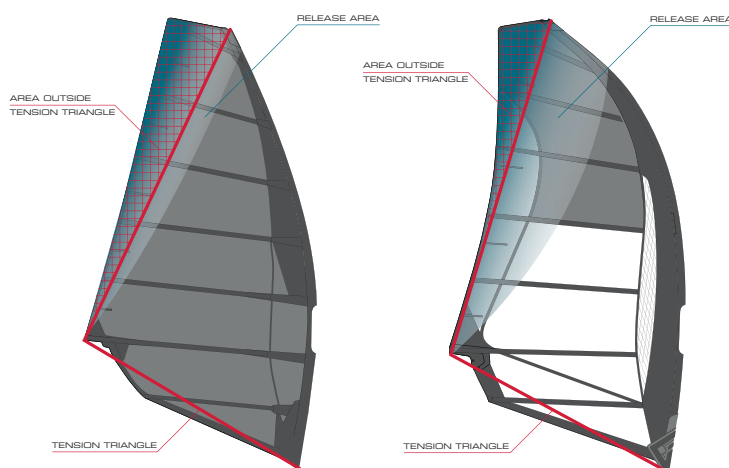
a) The Tension Triangle

If we want to understand why the bow sail shows such a unique control and the easy handling we have to go back to the very basics of sail design. Every sail design is based on a tension triangle formed by the top, clew and mast. The area inside this triangle can be actively controlled by the sailor. The picture below illustrates the concept.



If we assume the same surface of both sails, we can see, that through the BOW sails special geometry the area outside this controlled triangle is a lot smaller than on a conventional sail. Conclusively that means that the percentage of controlled area is significantly higher in the BOW sail.

If we now look again at the previously explained release area, we can see that even-though the profile is dynamically adjusting, the major part stays within the tension triangle and conclusively within the control of the sailor. That is not the case for a conventional sail design.



That is the secret behind the Bow sails unique handling and effortless control.

All the explained mechanisms exceed any kind of adaptability or functionality we have seen in any kind of sail to date. That is why we strongly believe that the BOW sail is a new chapter in windsurfing sail design. Also Surf magazine reports about “ the potential for a revolution” after their first test in October.

The unique adaptability combined with its astonishing performance will make windsurfing finally more appealing, more accessible to women and younger athletes and will finally allow to let the most skilled athlete and sailor stand out from the competition.

PERSPECTIVE ON FUTURE OLYMPIC CYCLES

In case of successful application Gunsails will be more than happy and willing to continue future Olympic Cycles. We will also offer to include future developments of the components to be updated within the equipment.

SUMMARY

In this Document we presented the unique advantages that come along with the BOW-4Z concept in combination with the distribution of the Gun Sails von Osterhausen GmbH. In the following passages we will give a brief overview of the most important benefits.

1. Accessibility of the Class

The suggested class is more accessible to a vast group of athletes as well as private users due to the following reasons

- Financial accessibility through few needed components and fair pricing through direct and centralized distribution structure.
- Physical accessibility due to very easy handling, rigging and compact overall size of the material while travelling
- Geographic accessibility through a sustainable and centralized distribution system. We can ensure fast and reliable delivery of the gear into the whole world.
- Accessibility in numbers due to only one party to plan orders and ensuring availability within a giant warehouse.
- In case of problems, warranty cases or orders of spare parts, we can offer quick and efficient solution thanks to our skilled service team.

2. Quality and durability of the Material

Controlled through single manufacturers and with the benefits of unique production mechanisms, 32 years of experience and beneficial sail construction the BOW-4Z Equipment will be of unique quality and durability.

- Constant local and centralized quality control
- durable construction
- Sustained Sail shape due to overall lower sail tension reducing the load on all components
- Unique and durable thermo forming board construction within Europe
- High performance composite technologies by certified Producer

3. Simplicity and variety at the same time

Even though the class is equipped with a very small amount of gear it shows a unique variety.

- Vast and unique wind range with one sail
- Possibility to race on almost every sea state
- Perfectly combine Windsurfing and Foiling in one equipment
- Low equipment size for travelling

4. Attractiveness of the class

As the look and feel of the BOW-4Z concept differs from all other windsurfing gear to date, the class will provide a much higher entertainment and attraction to the spectators. In combination with foiling it will give a new and innovative image to windsurfing .This forecast has already proven in the first PWA Foil races of the current season as spectators and even commentators have continuously been amazed by the stand out sail of the race – the Bow Fly.

We see the future of the Olympic, professional and even private sport in the BOW concept. The Windsurfing Sport of the 21st century we want to promote in the Olympics should be accessible, variable and exciting as well as a stand out attraction for all the spectators.

LAST WORDS

As we see the windsurfing world has been in constant change in the past years, which was possibly also resulting in this second round of application for the Olympic Windsurfing Equipment.

Therefore we want to underline our flexibility towards the outcome of this application. We don't see ourselves in the position to exactly define Classes or Race formats. We see that our suggested concept is very well suitable for almost every format but in the end that decision should be taken by World Sailing. We don't feel that we should interfere with your politics or force our opinion onto the committee.

While leaving world sailing as well as this committee to do their jobs, we continue to do what we do best – developing and producing high quality and innovative windsurfing gear to be best suited to the demands of today.

To whatever solution or decision the board will come and even if that will result in a combination of Equipment from different applicants, we want to state that we would offer our centralized and sustainable distribution system to provide the selected equipment to a world wide group of athletes.

In the end we should keep our mutual goal in mind, create an accessible class for the windsurfing world and use the powerful platform of the Olympics to promote not only the outstanding athletes but also the windsurfing sport itself.



8. IDENTIFICATION

The Gun Sails von Osterhausen GmbH will be the Tenderer for the application.

The company is represented by Thilo von Osterhausen and Pieter Bijl.

Further identification of the Tenderer itself aswell as all the listed manufacturers will be provided in Annex 1.