

THINKING SOLUTIONS

02/26



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DANSK GUMMI INDUSTRI A/S
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BE INSPIRED!

Join us in developing the transport and handling equipment of tomorrow's wind industry

DANSK GUMMI INDUSTRI A/S

THINKING SOLUTIONS

OUR PURPOSE

We are passionate about creating value through the continued development and application of the infinite possibilities that the elastomer universe represents.

We are a company founded in 1915 that has managed to develop continuously through four generations. And we are proud that we have succeeded in developing increasingly complex and value-creating competencies. For the benefit of society, our customers and partners, and for ourselves.

Together with our many customers and partners, we create new industrial solutions to the many challenges facing the world. And we contribute, as far as possible, to transforming the industrial production of the Western world in a sustainable direction.

*We do this, among other things, by insisting on innovating and developing new ways of applying elastomers, so that the material's great potential for use is increasingly utilized. At **Dansk Gummi Industri A/S** we strive to become an even more responsible company and we try to reduce CO₂ emissions whenever possible.*

CUSTOMIZED AND MODULAR SOLUTIONS

For the wind turbine industry we offer customized and modular solutions for e.g. transport, storage and handling of wind turbine blades, towers and nacelles. Our wind business is based on production, construction and engineering.



PRODUCTION

Customized solutions in rubber and polyurethane



CONSTRUCTION

Turnkey solutions like steel constructions, racks etc.



ENGINEERING

Get access to our development department on an hourly basis. The team consists of engineers, designers and material specialists

DEAR INNOVATION PARTNER

At **Dansk Gummi Industri A/S** we have been delivering rubber and polyurethane solutions to the wind industry for more than 25 years. We strive to be a genuine value adding partner for our customers and partners. This through co-creation of best-in-class solutions for the industry.

Throughout the years our ingenuity, craftsmanship and dedication has resulted in several multi-brand solutions for the wind industry. Solutions that serve generic demands for safe and flexible handling and transportation, and yet at the same time serve very specific needs for individual customers.

As an example, our ongoing dialogue with industry partners has played a prominent role in understanding the importance and specific requirements of edge protection during transport and handling of wind turbine blades. The process prompted us to look broadly at the current solutions in the market.

It is our experience that, in order to develop new innovative solutions or to optimize existing ones, cooperation with various partners in the industry value chain is of great importance.

And in the spirit of collaboration it is our hope that you will become inspired. Inspired to seek new solutions for safe and intelligent handling and transport of wind industry elements. And, inspired to challenge us with your ongoing needs for clever, practical and cost reducing solutions.

In the following pages we will elaborate on the individual multi-brand solutions, their areas of application and respective properties. You will benefit from our thorough test data, innovation skills and solid know-how. And your next project will benefit from it from day one.

So, be inspired! And don't hesitate to contact us with your next challenge.

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PRO-PAD® 303-30P55

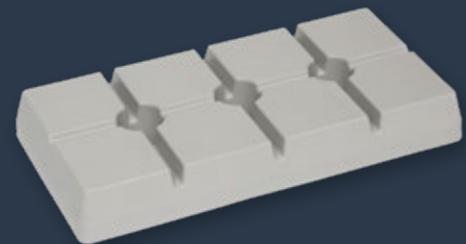
- CONTACT SURFACE (CM²) -----
- THICKNESS (MM) -----
- MATERIAL -----
- PU (P) Rubber (R)
- HARDNESS -----

CONTENTS

PRO-PAD® FRICTION 303-40R35	10
PRO-PAD® SIPED 303-40R35	12
PRO-PAD® LOAD 303-40P	14
PRO-PAD® FRICTION 420-20P55	16
PRO-PAD® HYBRID 303-40P	18
PRO-PAD® FLEX 290-30P	20
PRO-PAD® 75-25P	22
PRO-PAD® TIP 1	24
PRO-PAD® TE 600	26
PRO-PAD® LE 1050	28
PRO-PAD® LE & PRO-PAD® TE 300E SET	30
PRO-PAD® TE LIFT	32
PRO-PAD® PF 100 & PF 150	34
PRO-PAD® BRP 250, 500 & 1050	36
PRO-PAD® BRC 2700, 4300 & 5300	38
PRO-PAD® SLING	40
KNOWLEDGE SHARING	42
THINKING SOLUTIONS	44
WE ARE INSPIRED. JOIN US!	46

PRO-PAD® FRICTION 303-40R35

DIMENSION	VALUE
Height:	40 mm
Length:	300 mm
Width:	150 mm
Hole diameter:	Ø13,9 mm
Hole distance:	75 mm
Weight:	1900 g



The story behind the development of the **PRO-PAD®** products was a tendency in the industry, asking for custom rubber solutions for each clamp design. We acted on a need in the industry for more flexibility and modularity, while benefitting from the value of a standardised product.

The **PRO-PAD® FRICTION 303-40R35** is designed for easy and quick installation. The flexibility of the **PRO-PAD®** ensure adaptation to the contour beneath it when installed. The modularity secures fit for every design, makes it easy to install and cost effective to replace on site, rather than bringing the tool to a workshop.

Documentation of material properties and 3D files are ready for the development of new tools. Coefficient of friction, load capacity and lifetime analysis data, are of course available upon request. We constantly are focused on documenting any data that brings value to partners using the **PRO-PAD®**.



PRO-PAD®

PRO-PAD® SIPED 303-40R35

DIMENSION	VALUE
Height:	40 mm
Length:	300 mm
Width:	150 mm
Hole diameter:	Ø13,9 mm
Hole distance:	75 mm
Weight:	1900 g

The **PRO-PAD® SIPED** is a new addition to our proven and flexible **PRO-PAD® System**.

The **PRO-PAD® SIPED** is equipped with siping slits on the contact surfaces for improved friction in wet or humid conditions.

Siping is a process of cutting thin slits across a rubber surface, E. g. in tires. The siping slits helps guide the water away from the surface, while allowing the material to compress to achieve the desired contact and flexibility.

FEATURES

- Extremely high friction in wet conditions
- A modular system
- Equal load carrying capacity as **PRO-PAD® FRICTION**
- Low weight for easy installation
- Adaptation to mounting surface

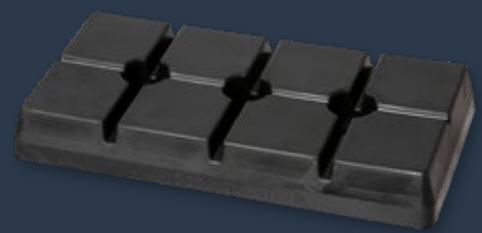


PRO-PAD® SIPED 303-40R35



PRO-PAD® LOAD 303-40P

DIMENSION	VALUE
Height:	40 mm
Length:	300 mm
Width:	150 mm
Hole diameter:	Ø13,9 mm
Hole distance:	75 mm
Weight:	1900 g



Transport and handling of tower sections, nacelles, turbine hubs and driveshafts has been the driver for developing the **PRO-PAD® LOAD 303-40P**.

Based on the research platform and technical/functional insights of the **PRO-PAD® FRICTION** solution, the **PRO-PAD® LOAD** was developed.

The **PRO-PAD® LOAD 303-40P** has the same dimensions as the **PRO-PAD® FRICTION 303-40R35** but with a higher load capacity. This can be customized for your specific need.

The **PRO-PAD® LOAD 303-40P** is available in non-permeable black, which ensures stain-free transport of the objects.



PRO-PAD® FRICTION 420-20P55

DIMENSION	VALUE
Height:	20 mm
Length:	250 mm
Width:	250 mm
Hole diameter:	Ø11.5 mm
Hole distance:	167 x 167 mm
Weight:	1600 g



We just can't help ourselves. When a customer comes to us with a challenge, we always rush to solve it.

The **PRO-PAD® FRICTION 420-20P55** was developed to have similar properties as the **PRO-PAD® FRICTION 303-40R35** but is used when the requirements for height clearance is smaller.

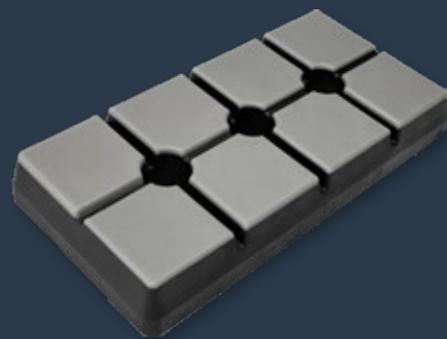
This also provides the solution with the ability to fit smaller concave and convex radii as well as a break in the curve.

As a consequence, this solution provides a higher design and application flexibility when constructing transport and handling rigs.



PRO-PAD® HYBRID 303-40P

DIMENSION	TOP: HARD BOTTOM: SOFT	TOP: SOFT BOTTOM: HARD
Height:	40 mm	
Length:	300 mm	
Width:	150 mm	
Color top layer:	No Stain Black	Light gray
Color bottom layer:	Light gray	No Stain Black



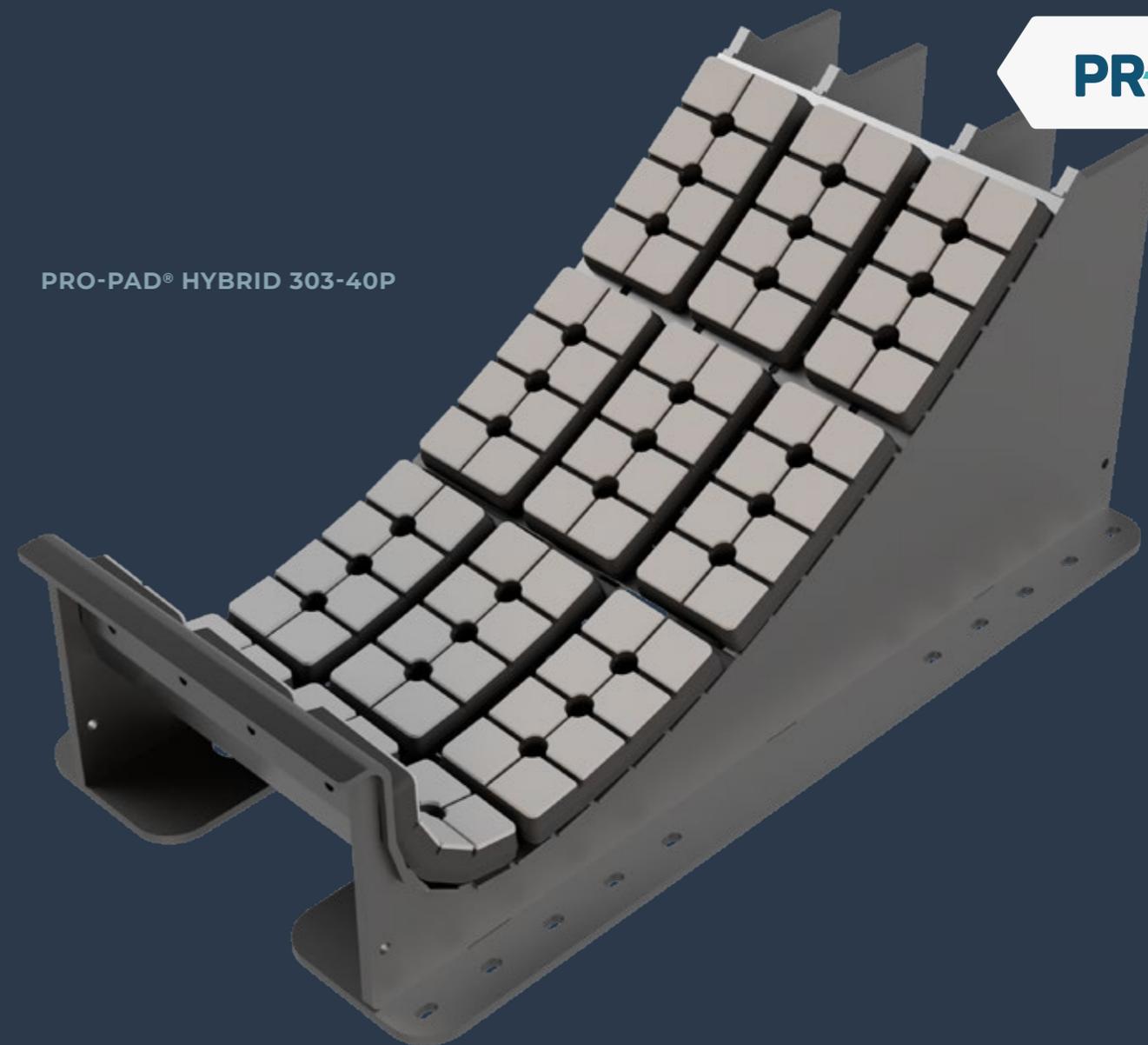
PRO-PAD® HYBRID combines the benefits from low friction (PRO-PAD® FRICTION) and load capacity (PRO-PAD® LOAD).

The PRO-PAD® HYBRID is a flexible system for protection and multiple tasks. It leaves no stains and is easy to install.

FEATURES

- A modular system
- Combination of low friction and absorbing effect
- Easy installation
- Easy replacement on site
- Adapts to base layer

PRO-PAD® HYBRID 303-40P

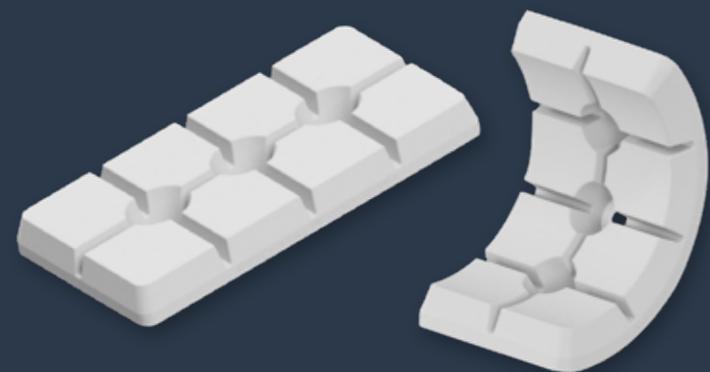


PRO-PAD® FLEX 290-30P

DIMENSION	VALUE
Height:	30 mm
Length:	300 mm
Width:	150 mm
Hole diameter:	Ø13,9 mm
Hole distance:	75 mm
Weight:	1150 g

The **PRO-PAD® FLEX 290-30P** is based on the **PRO-PAD® FRICTION 303-30P** with the same load capacity and characteristics but it bends easier (by hand) and allows access with tools for mounting bolts when bend.

The **PRO-PAD® FLEX 290-30P** can be produced and shipped flat and it doesn't introduce concerns on shear forces on the aluminum plate (offset in support material).



PRO-PAD®

PRO-PAD® 75-25P

DIMENSION	VALUE
Height:	25 mm
Length:	150 mm
Width:	75 mm
Weight:	340 g



Also available in grey.

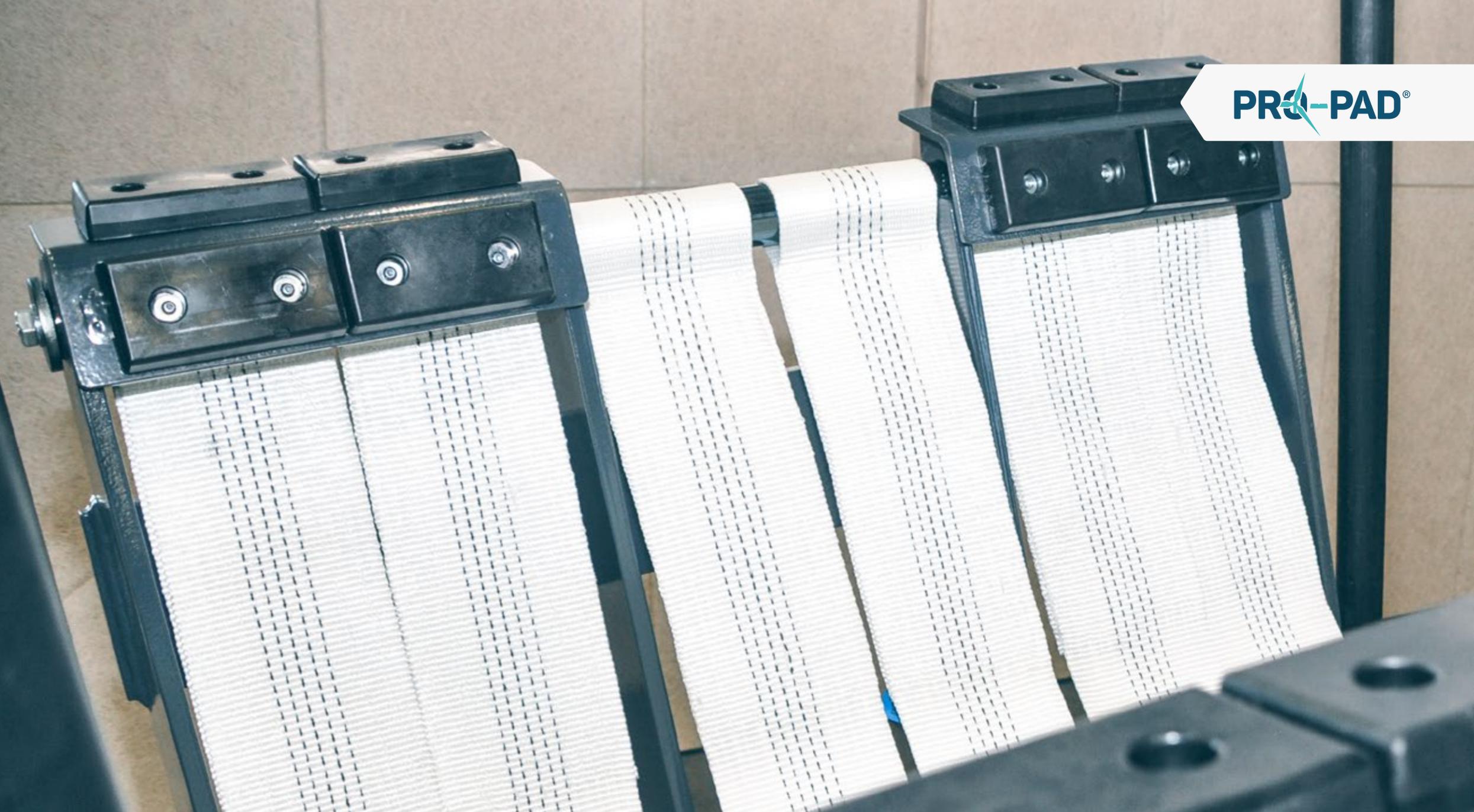
The **PRO-PAD® 75-25P** is versatile solution that serves a lot of different purposes. It is small and can easily be installed on a broad range of surfaces.

The **PRO-PAD® 75-25P** is made of polyurethane and the material properties can be customised for your specific need. The geometry of the pad, however, is locked.

Our number of our customers are using this solution to ensure no metal-to-metal or metal-to-object contact on their rigs and constructions.

In the softer editions from 55 SH A - 70 SH A the **PRO-PAD® 75-25P** is very flexible. The harder editions, from 75 SH A - 72 SH D, are chosen for continuous load functionality.

Please challenge us with any specific project you may consider the **PRO-PAD® 75-25P** feasible for.



PRO-PAD®

PRO-PAD® TIP 1

Increased visibility and protection of blade tip

PRO-PAD® TIP 1 is a flexible solution for protection of the wind turbine blade tip and for increased visibility during transport and storage.

Why choose PRO-PAD® TIP 1?

- High friction to interface with blade.
- Supplied complete with fastening/straps.
- High wear resistance.
- Versatile – for all blade sizes, on- and offshore.
- Prepared for extra add-ons.
- Fits blades with/without serrations/dinotails.



PRO-PAD® TE 600

DIMENSION	VALUE
Height:	265 mm
Length:	950 mm
Width:	128 mm
Thickness:	48 mm
Tagline mount:	Ø12 mm
Weight:	5500 g



We developed the **PRO-PAD® TE 600** to deliver the best possible solution for edge protection. A solution that could be handled by a single person and combined high flexibility with high durability.

The unique combination of materials used for our **PRO-PAD® TE 600** has resulted in a very lightweight product. The materials do not absorb water and are easy to clean for any foreign objects that might damage the blade when installing the **PRO-PAD® TE 600**.

The continuous development has so far resulted in 2 versions of the **PRO-PAD® TE 600**. One with holes for taglines, and one without holes for taglines. Both are developed to fit any blade size.

The **PRO-PAD® TE 600** adapts to the contour of the blade and protects from lashes and bumps, by distributing the pressure over a larger area.

FURTHER OPTION:

Integrated mounts for taglines during blade assembly hoist; Ø8 carabiner can be applied upon request.

PRO-PAD®

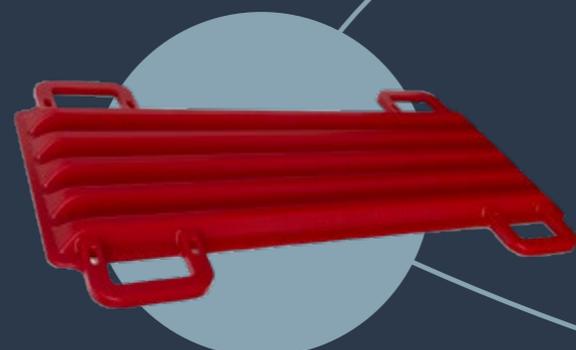


PRO-PAD® LE 1050

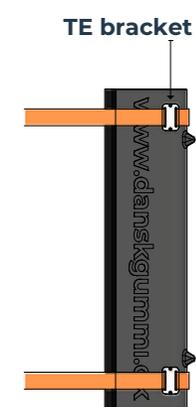
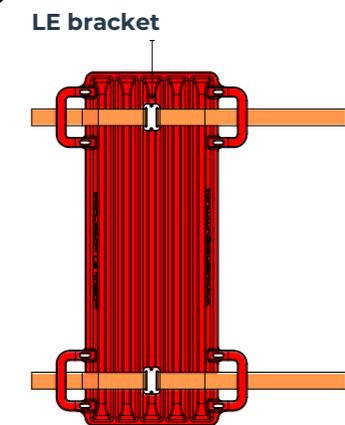
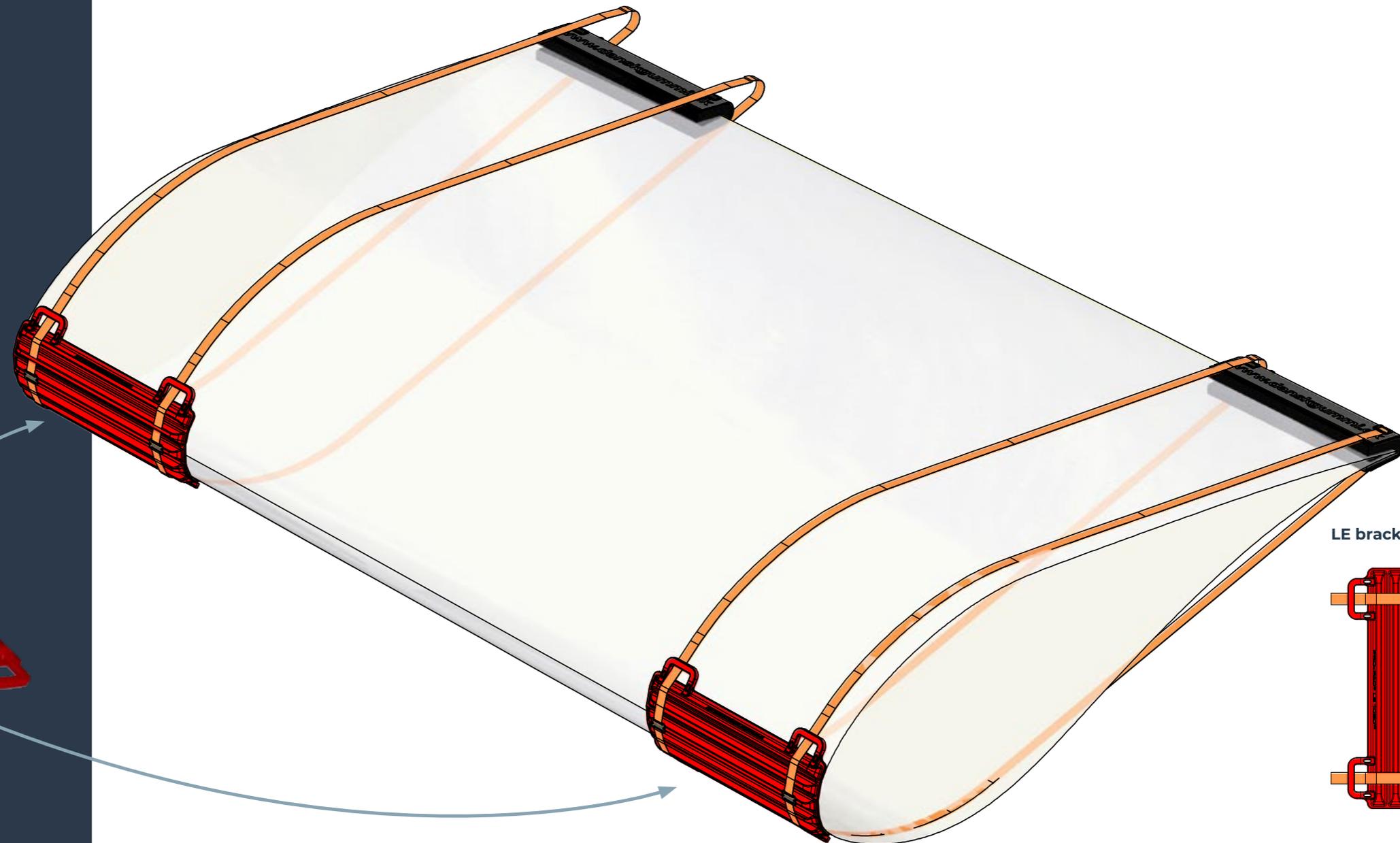
FEATURES INCLUDE:

- Low weight for easy handling and installation
- High durability
- Adapts to blade profile
- Lightweight
- Easily adapts to the curve of the blade
- High friction against the blade
- Low friction on the outside
- Brackets for straps can be attached as needed

DIMENSION	VALUE
Height:	38 mm
Length:	1050 mm
Width:	574 mm
Weight:	12 kg



PRO-PAD® LE 1050



PRO-PAD® LE & PRO-PAD® TE 300E SET

FEATURES INCLUDE:

- Low weight for easy handling and installation
- High durability
- Non-malleable
- Adapts to blade profile

DIMENSION	VALUE (LE)	VALUE (TE)
Height:	490 mm	450 mm
Length:	570 mm	590 mm
Width:	330 mm	160 mm
Weight:	8500 g	5500 g
Handle tensile strength:	150 kg	

- The **PRO-PAD® LE & PRO-PAD® TE 300E SET** is mounted mid-blade and protects against wear and tear from lashing straps during handling and transportation.
- Produced by composite elastomers together, the **PRO-PAD® LE & PRO-PAD® TE 300E SET** ensures low weight for easy installation and handling.
- Being produced only by elastomeric materials, the **PRO-PAD® LE & PRO-PAD® TE 300E SET** does not corrode in any environment.
- The polyurethane material ensure resilience against abrasion, and is also very flexible.
- Handlebars secure easier lift and mounting.
- The **PRO-PAD® LE & PRO-PAD® TE 300E SET** passes The Danish Working Environment Authority's guidelines for both manually lifting and carrying close to the body.
- Complete traceability with production date and lot number can be applied upon request.
- Handles are useable for mounting of taglines, and prevent straps from sliding.
- An incorporated feature of the **PRO-PAD® LE & PRO-PAD® TE 300E SET** is the lashing stops, which keeps the straps in place and won't break off.



PRO-PAD® TE 300E



PRO-PAD® LE 300E

PRO-PAD® TE LIFT

FEATURES INCLUDE:

- Low weight for easy handling and installation
- High durability
- Adapts to blade profile

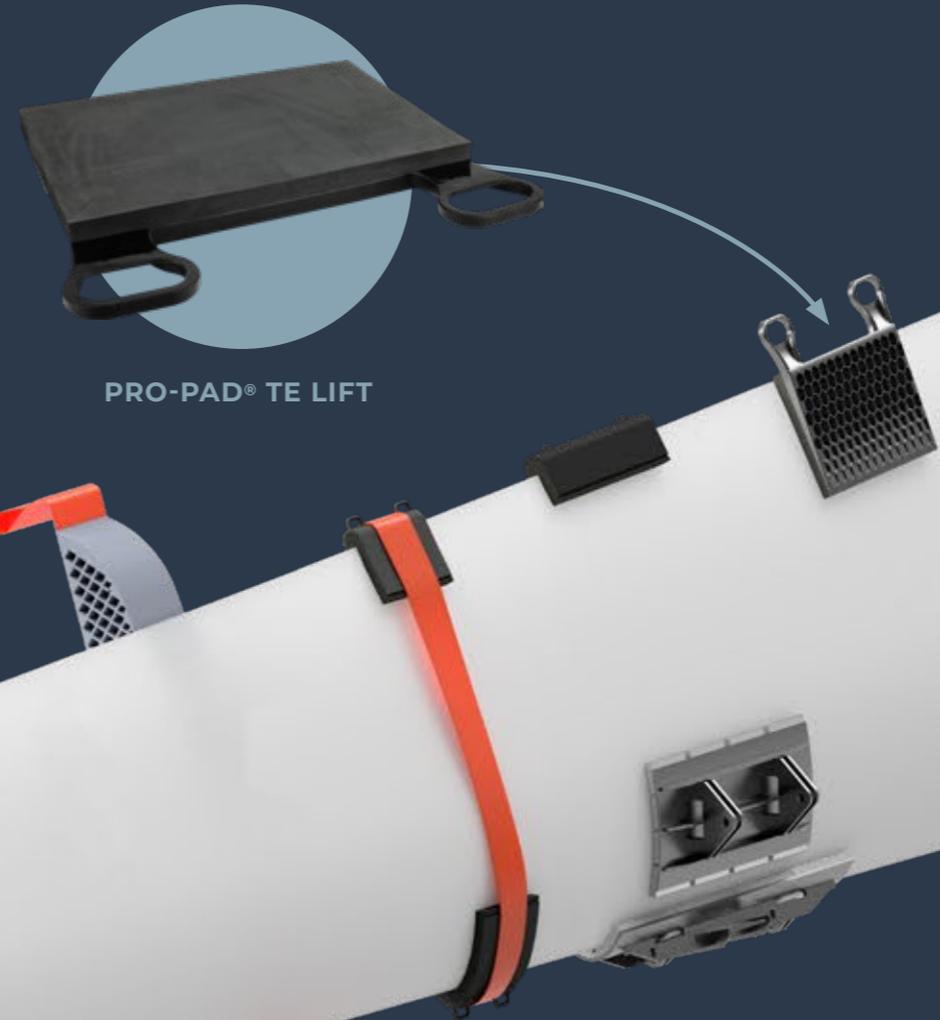
DIMENSION	VALUE
Height:	98 mm
Length:	1050 mm
Width:	850 mm
Foam:	50 mm
Weight:	10 kg

- The **PRO-PAD® TE LIFT** is mounted mid-blade and protects from the wear and tear of the lashing straps during lifting of the blade.
- Produced by composite molding solid and foam elastomers together, the **PRO-PAD® TE LIFT** ensures low weight for easy installation and handling.
- Being produced only by elastomers materials, the TE Protector does not corrode in any environment.
- The polyurethane materials ensure resilience against abrasion, and is also very flexible.
- An incorporated feature of the **PRO-PAD® TE LIFT** is the lashing stops, which keeps the straps in place and won't break off.

- The **PRO-PAD® TE LIFT** passes The Danish Working Environment Authority's guidelines for both manually lifting and carrying away from the body.

FURTHER OPTION:

- Complete traceability with production date and lot number can be applied upon request.



PRO-PAD® PF 100 & PF 150

DIMENSION	VALUE (100 / 150)
Height:	67 mm / 100 mm
Length:	1000 mm
Width:	100 mm / 150 mm
Weight:	2200 g / 3400 g



Our **PRO-PAD® PF 100 & PF 150** was developed for protecting both the turbine blade as well as the scaffolding equipment during repair operations.

This product is the result of a unique customer demand for a versatile solution, where it was essential that the hardness properties of the **PRO-PAD® PF 100 & PF 150** could be changed according to the specific usage situation. With our portfolio of material solutions this was achieved.

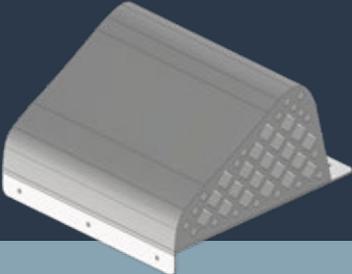
The cushioning effect, which the product provides, can be manipulated by selecting different combinations of geometry and hardness of the material. This gives the **PRO-PAD® PF 100 & PF 150** the ability to be soft and flexible for the very vulnerable operations as well as tough and firm for high impact. Still with high flexibility.

The versatility of the **PRO-PAD® PF 100 & PF 150** is virtually unlimited. The solution can be customised to fit any given length requirement. The modularity of the product ensures high adaptability for your specific need.

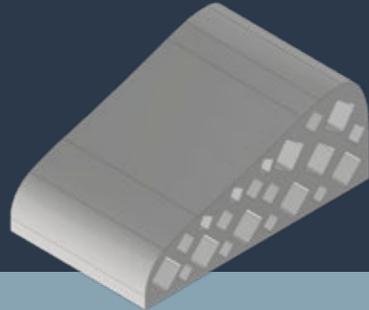
The PRO-PAD logo, featuring the brand name in a bold, sans-serif font with a stylized lightning bolt graphic integrated into the letter 'A'.



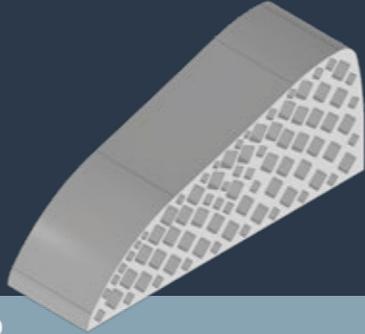
PRO-PAD® BRP 250, 500 & 1050



BRP 250	
Height:	185 mm
Length:	300 mm
Width:	300 mm



BRP 500	
Height:	210 mm
Length:	500 mm
Width:	300 mm



BRP 1050	
Height:	435 mm
Length:	1050 mm
Width:	300 mm

Blade Resting Pad (PRO-PAD® BRP) is a modular system, designed as part of the PRO-PAD® BRC series.

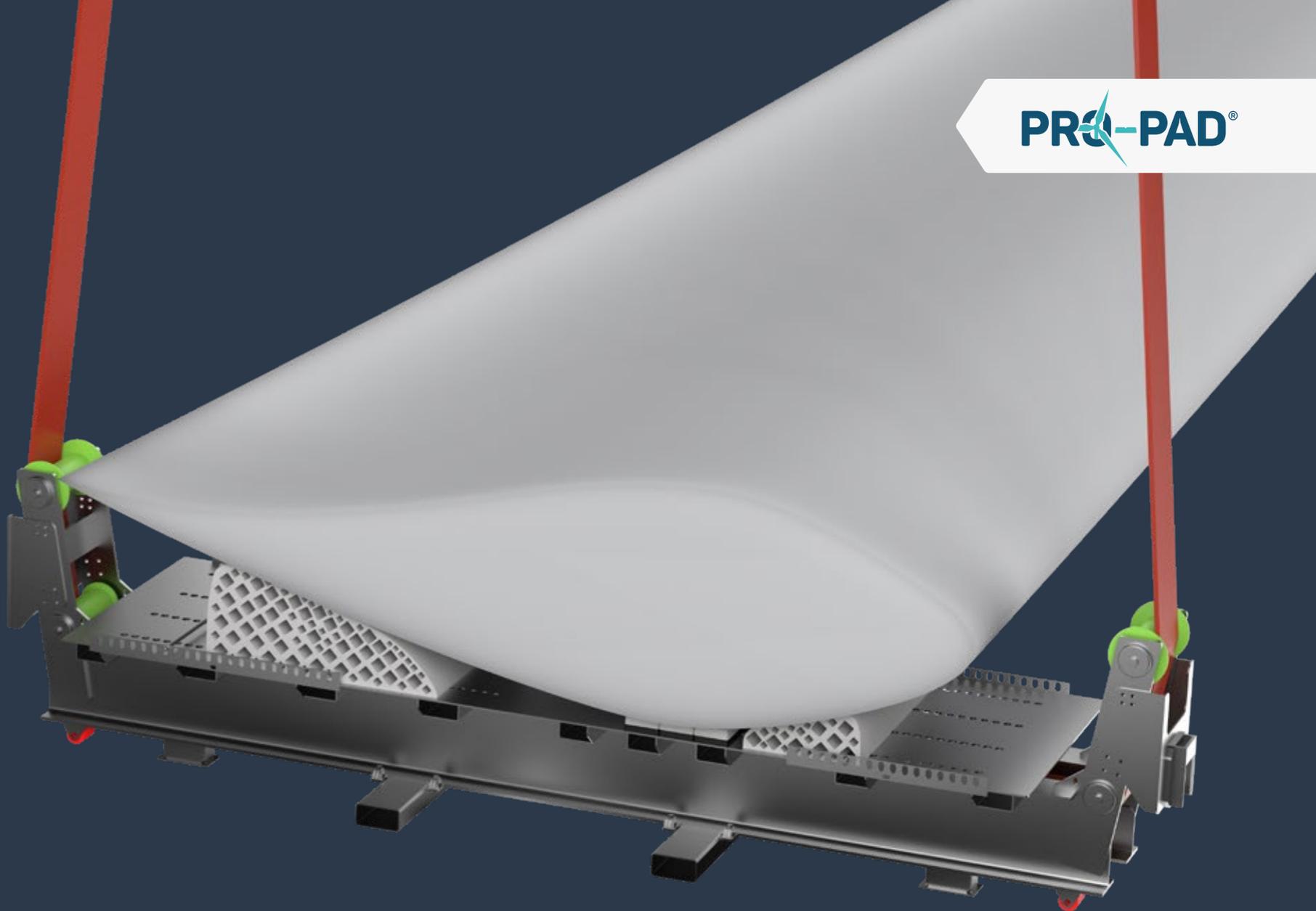
To be used with PRO-PAD® FRICTION and/or PRO-PAD® LOAD for carrying main load.

FEATURES INCLUDE:

- A modular system
- High friction
- Crane tool for easy installation
- Adaptation to blade curvature



WATCH THE VIDEO ON YOUTUBE



PRO-PAD® BRC 2700, 4300 & 5300

BRC 2700

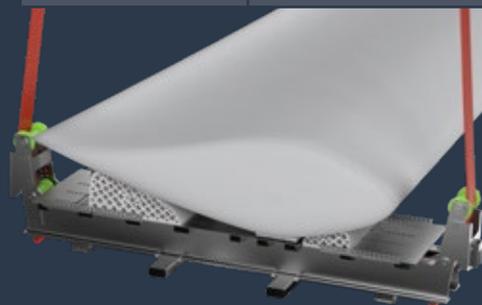
DIMENSION	VALUE
Blade width:	up to 2700 mm

BRC 4300

DIMENSION	VALUE
Blade width:	up to 4300 mm

BRC 5300

DIMENSION	VALUE
Blade width:	up to 5300 mm

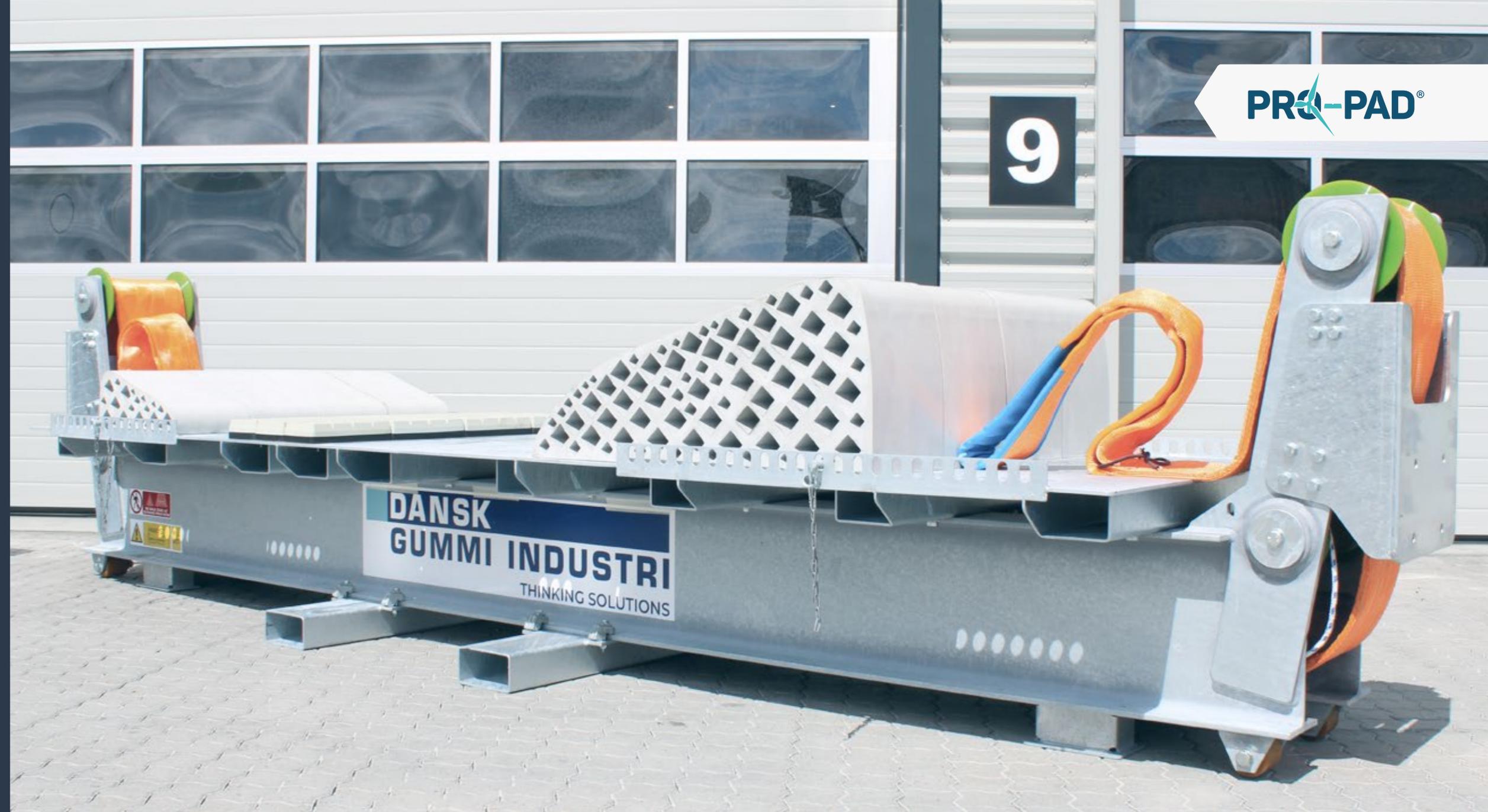


Blade Resting Cradle (PRO-PAD® BRC) for wind turbine blade handling

- High configurability for all blade cross sections
- Large compressible support area on LE/TE panels
- Configurable main spar support
- Applicable for internal transport and storage of blades
- Temp range from -20 to +100°C
- Adaptable for different types of ground based logistical solutions
- Maximum load WLL 30T (2700 + 4300)
- Maximum load WLL 40T (5300)



WATCH THE VIDEO
ON YOUTUBE



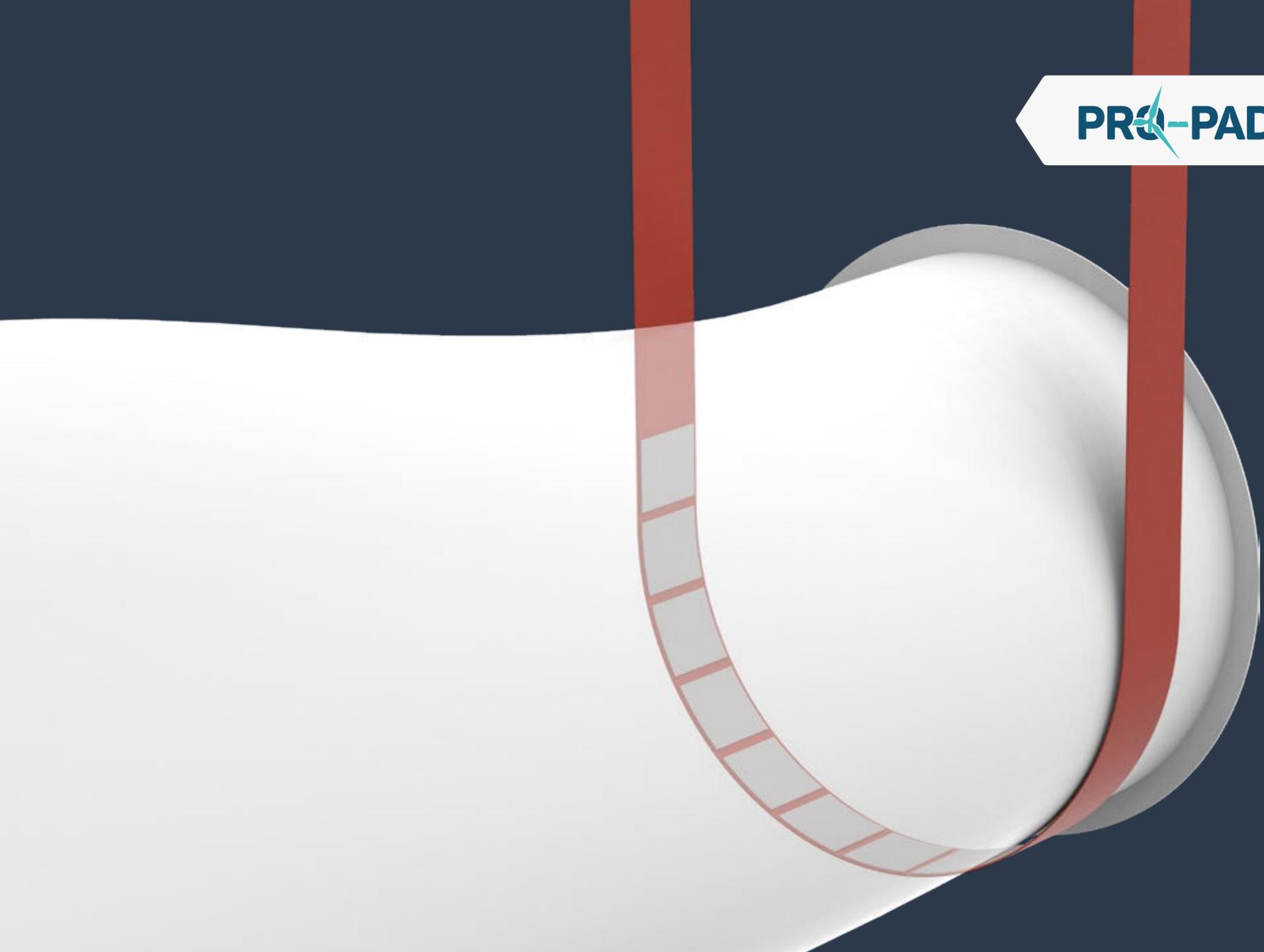
PRO-PAD® SLING

FEATURES INCLUDE:

- Very flexible product
- High friction
- High durability
- Resilience to wear

- **PRO-PAD® SLING** is bonded with molded polyurethane. This ensures very high friction and no movement between the components.
- The molded polyurethane ensures high durability.
- The placement of the friction areas on the sling can be customized to fit the customers specific need.
- The sling comes with complete traceability; production date and lot number.

- The slings come in a variety of lengths and widths. It is also possible to order molding on your own slings.
- The bond between the polyurethane and the sling ensures protection of both the component being handled and also the sling from sharp edges on the component.



KNOWLEDGE SHARING

Collaborating with **Dansk Gummi Industri A/S** you are guaranteed high quality and thorough documentation. Every solution you purchase from **Dansk Gummi Industri A/S** is documented with all essential data.

Data such as coefficient of friction, ageing, deformation, resistance etc. is made available to our partners depending on their product and individual documentation needs.

This documentation is especially valuable with our full traceability add-on feature. To every product you may wish. This full traceability feature allows you to trace our products in such a way that it meets your individual organizational requirements. **Dansk Gummi Industri A/S** also uses the traceability to evaluate and optimize on production, products and documentation, for continuous improvement of our market offerings.



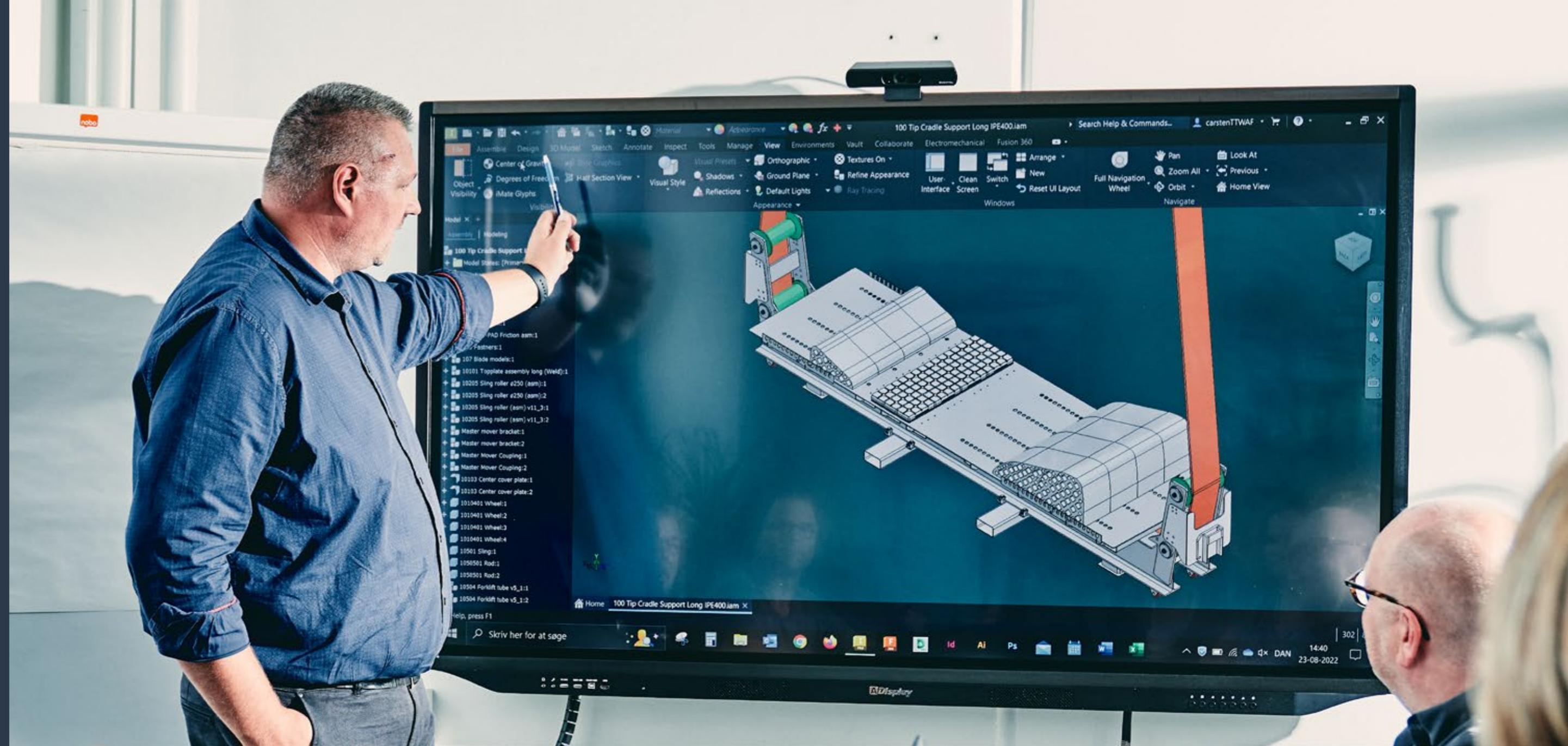
THINKING SOLUTIONS

Trust is a cornerstone of all collaboration. And confidentiality is essential in the wind industry. Especially when developing prototypes, exchanging proprietary drawings and 3D-files or conducting brainstorming and managing design processes.

Our 25-year track record of cooperation with several large customers in the wind industry, underlines our commitment to strict confidentiality and serves as a prerequisite for the valuable collaboration we have with our wind industry partners.

Ongoing development of new elastomer solutions demands extensive know-how. Either from trial-and-error processes, based on material knowledge and technical production expertise or imaginative design phase processes.

During new solution development and prototyping processes we offer full access to our knowledge base, production capabilities and collective material expertise. We support you as our partner and contribute with design input, drawings and development of prototypes all the way through to full scale production.



WE ARE INSPIRED. JOIN US!

Radical innovation in tomorrow's wind industry will largely be dependent on the ability of various industry collaborators to join forces in challenging existing solutions.

INNOVATION IS PART OF OUR DNA

Dansk Gummi Industri A/S was founded in 1915 and we have continuously managed to innovate and re-think our business through four generations. We are proud that we have succeeded in developing our increasingly complex and diversified capabilities for more than 100 years.

From humble beginnings selling and repairing bicycles in 1915 we moved on to selling, repairing and servicing an entire range of rubber tires for all sorts of vehicles through both world wars and well into the 1950's.

By the early 70's third generation Thomsen – Niels Holger Thomsen – had developed a thriving business manufacturing and renovating rubber rollers and other moving parts for industrial use.

In 2005 our innovative DNA again led us to branch out from the traditional rubber manufacturing business. The use of polyurethane as a versatile material for industrial flexibility, relevant friction and shock absorption was still in its infancy and yet we invested in a brand-new polyurethane facility, just across the road from the rubber manufacturing facility in our hometown of Kolding, Denmark.

With a new technology available we methodically challenged the use and application of traditional rubber material to develop new solutions with new application possibilities using PUR instead of rubber.

TOMORROW'S HYBRIDE SOLUTIONS

Today our innovation efforts are directed towards the unique capability of both merging and interchanging the functionalities of the rubber and polyurethane technologies. We harness our collective inhouse skill base and enable us to further develop the best application solutions in the industry with our partners.

Holger Thomsen founded a small shop in his native town of Kolding (Denmark) selling, repairing and tire patching bicycles. The automobile made its entry during this period and Mr. Thomsen soon followed suit and offered complimentary car tire repair services.



1915

Niels Holger Thomsen (3rd generation) had the factory premises in downtown Kolding expropriated by the city, and the company moved to brand new facilities on the outskirts of town. This also saw an end to the manufacturing of tire tread rubber and renewed focus on the booming industrial market for rubber parts.



1975

Fourth generation Thomsen – Peter (left) and Christian (right) – have leveraged the innovative 20th century rubber manufacturing skills and a customer focused corporate culture and applied it to tomorrow's polyurethane universe.

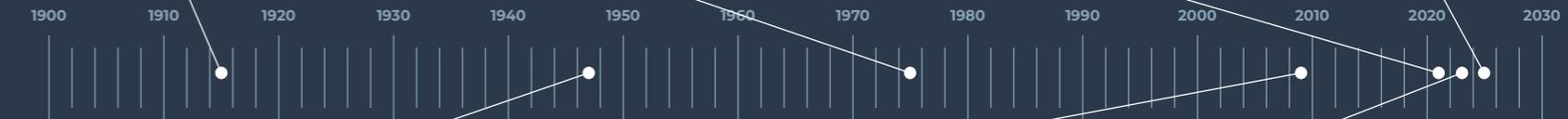


2021

USA subsidiary. USA office established to support the wind turbine market in North America.



2023



1947



In spite of acute post WW2 shortages of raw materials and supplies Mr. Thomsen continued to exploit his entrepreneurial mindset – now joined by his son Marinus Thomsen. In 1947 father and son expanded into manufacturing molded technical rubber parts for industrial use.

2009



By 2009 a brand-new polyurethane facility was established. Just across the road from the rubber manufacturing facility in our hometown of Kolding, Denmark.

2022



Establishment of a development department with elastomer experts and specialists within transport, storage and handling of wind turbine blades, towers and nacelles.