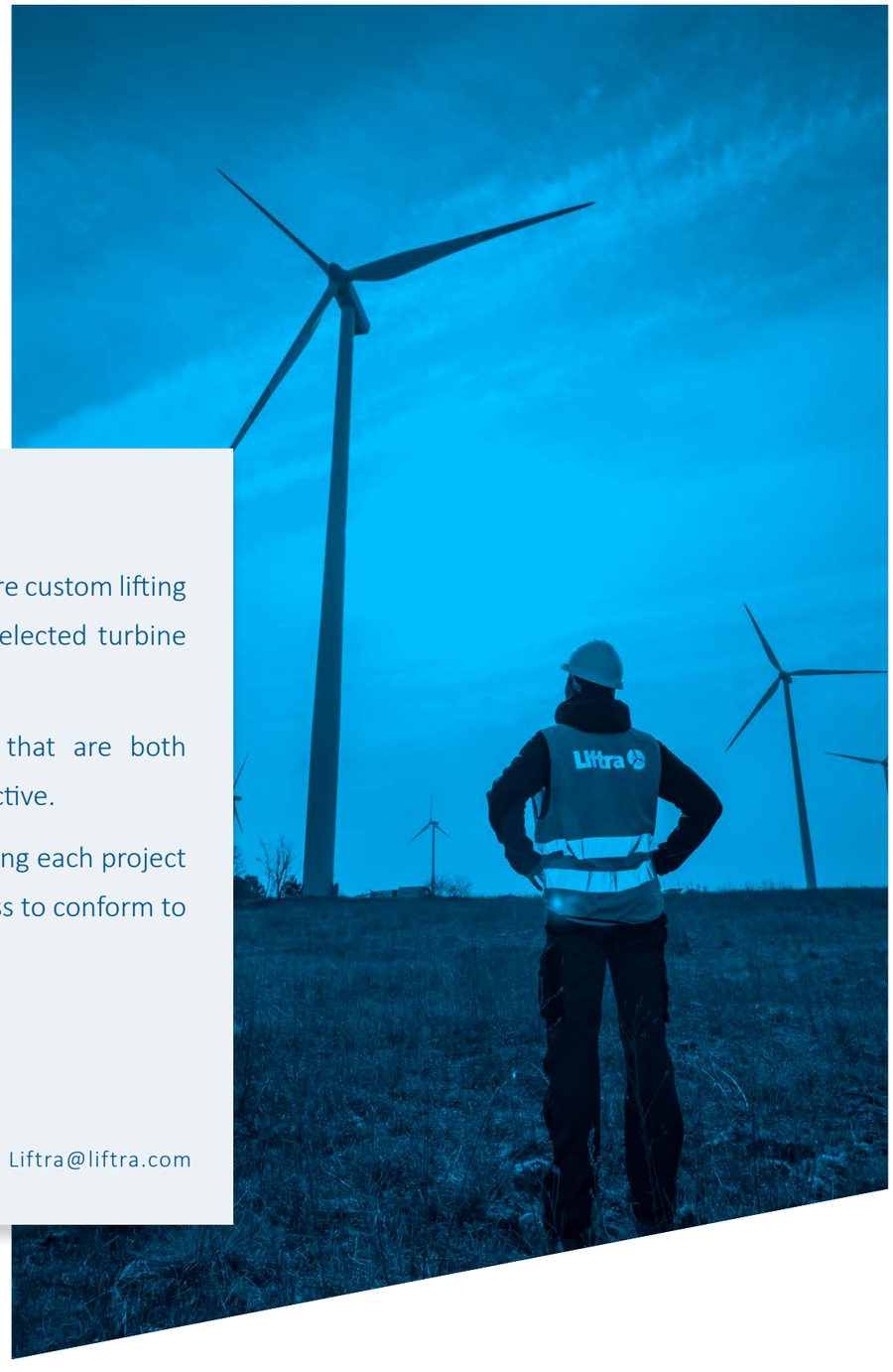
Liftra

SELF-HOISTING CRANES

MAJOR COMPONENT EXCHANGE WITHOUT THE USE OF CONVENTIONAL CRANES

WWW.LIFTRA.COM

Liftra



WHAT WE DO

At Liftra, we design and manufacture custom lifting and transportation solutions for selected turbine models.

We strive to develop solutions that are both technically and economically attractive.

Liftra accomplish this by approaching each project with an agile mindset and readiness to conform to the specific needs of the client.

FIND OUT MORE

www.liftra.com | Liftra | Liftra@liftra.com

INDEX

LIFTING TO NEW HEIGHTS

Innovative engineering has positioned Liftra as a pioneer in the new paradigm of wind turbine maintenance without the use of conventional cranes. The Liftra Self-Hoisting crane has been the front runner in up-towner crane technology since its launch in 2013. Today, Liftra's self-hoisting cranes facilitate low-emission major component exchange on close to half of the worlds operating MW wind turbines, with more still in development.

PROVEN TECHNOLOGY

FIRST LAUNCHED IN

2013

MORE THAN

2000

MAJOR COMPONENT REPLACEMENTS

MORE THAN

50

CRANES SOLD

IN USE ON 6 CONTINENTS

BASE SYSTEMS DEVELOPED IN COLLABORATION WITH OEM'S

CRANES OWNED BY BOTH OEM'S, ENERGY COMPANIES AND ISP'S

SYSTEM OVERVIEW

LIFTRA SELF-HOISTING CRANE (LSHC)

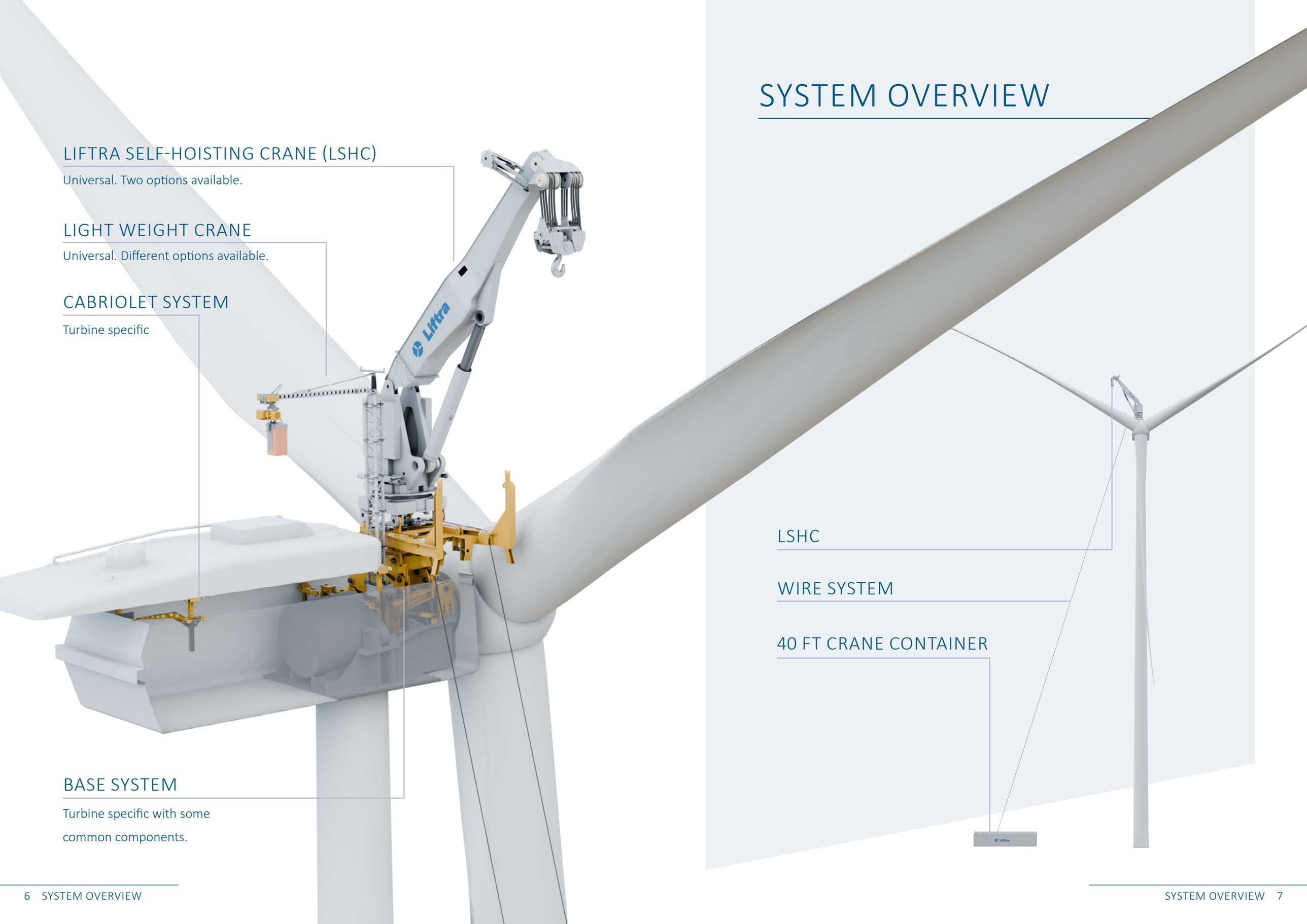
Universal. Two options available.

LIGHT WEIGHT CRANE

Universal. Different options available.

CABRIOLET SYSTEM

Turbine specific



BASE SYSTEM

Turbine specific with some common components.

LSHC

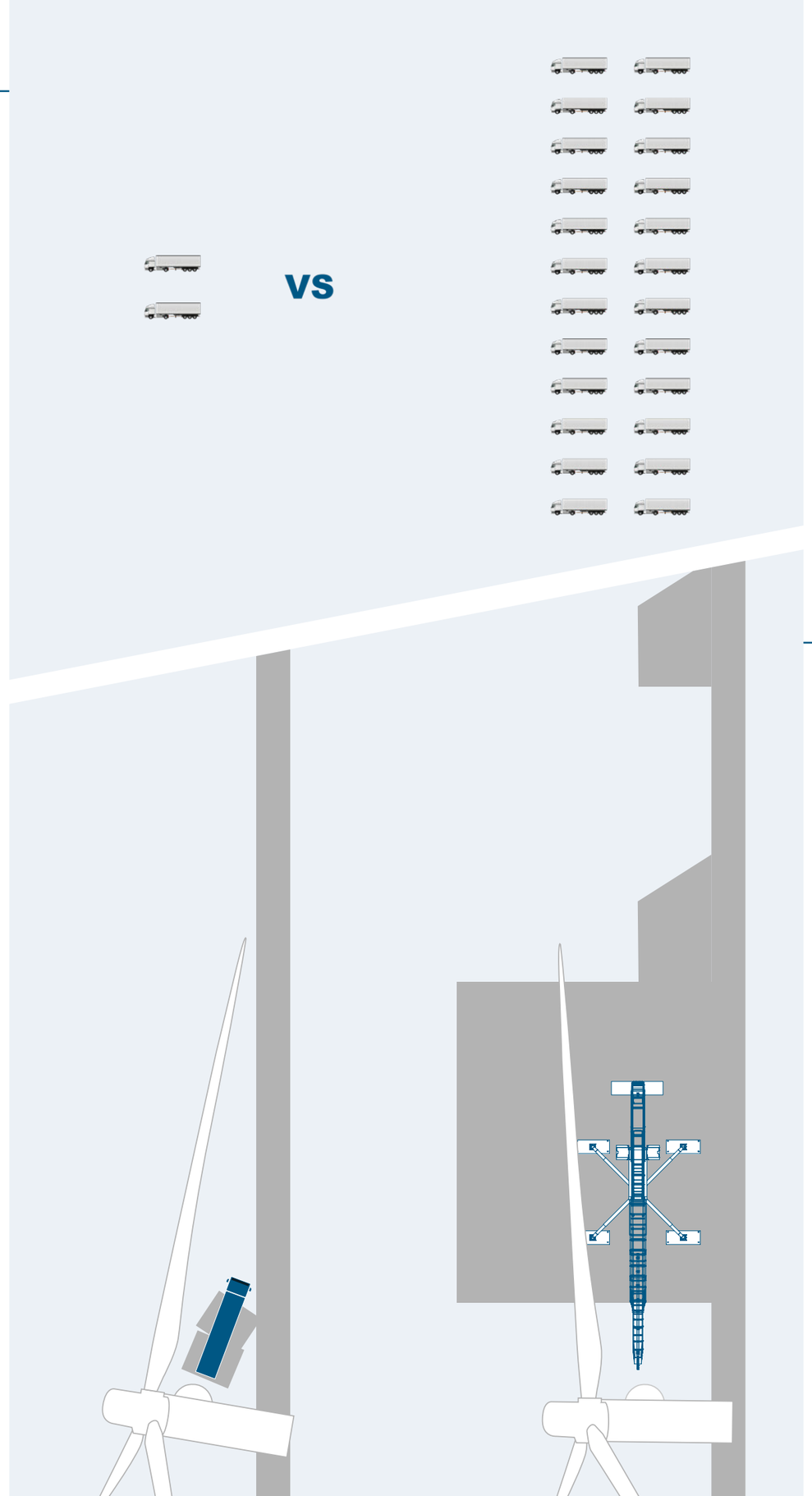
WIRE SYSTEM

40 FT CRANE CONTAINER

MINIMAL MOBILIZATION

Liftra's universal technologies are easily mobilized and require no civil works.

- Transported in a single standard 40-foot container.
- Significant savings on mobile cranes.
- Only 2 vehicles required on-site: 40-foot crane container and Custom tool transport solution.
- No special permissions needed for crane transportation.



MINIMAL ON-SITE FOOTPRINT

The LT1200 Liftra Self-Hoisting Crane (LSHC) including its container weights just 24 tons. The small size and weight of the crane eliminate the need for road and site modifications. In a worst-case scenario driving mats are the only site alteration needed.

This makes the LSHC ideal for use:

- On a small barge offshore.
- On a site with small pad area.
- In remote locations.
- In locations with lower soil bearing capacity.

This enables significant savings in regard to time, cost and emissions.

EMISSION FREE SOLUTION

The LT1200 Liftra Self-Hoisting crane is fully electrical. The powerful battery cells enable completion of a full crane operation without additional need to stop and recharge.

The batteries are designed to:

- Eliminate risks associated with cables or diesel-gen.
- Provide emission free power.
- Harvest regenerative energy.

BIGGER WEATHER WINDOW

Operating in winds up to 18 m/s gusts, the Liftra Self-Hoisting Crane expand the weather window for service operations compared to conventional solutions.

IMPROVED SAFETY

Technicians using Liftra technology are in full control of the crane while also having full visibility of the operation from atop the turbine.

LT1000 LIFTRA SELF-HOISTING CRANE

WLL

24 TONS

WEIGHT

24 TONS

MAX HUB HEIGHT

145

PEAK WIND SPEED

18 m/s peak

DIESEL POWERED

<100L / job

REACH

5 m

LT1200 LIFTRA SELF-HOISTING CRANE

WLL

78 TONS

WEIGHT

24-26 TONS DEPENDING ON TOWER HEIGHT

MAX HUB HEIGHT

170

PEAK WIND SPEED

18 m/s peak

FULLY ELECTRIC

REACH

7 m

COMPATIBILITY

Major component exchange capabilities by wind turbine platform*.

More turbines can be developed by request.

The matrix is under constant development, so this version might be outdated.

YOU CAN ALWAYS FIND THE LATEST VERSION HERE:

	Wind Turbine	LT1000 (WLL 24 t)	LT1200 (78 t)
Vestas	**Vestas / NEG Micon** V82 NM72 NM82		
	Vestas 2 MW platform V66 (1.75 MW) V80 V90 V100 V110 V116 V120		
	Vestas 3/4 MW platform V105 V112 V117 V126 V136 V150 V155 V163		
	Vestas Enventus MK. 0		
SIEMENS Gamesa RENEWABLE ENERGY	**Gamesa 2 MW Platform,** G8x G9x		
	SWP 2.3 MW - G2		
	SWP 2.625 MW - G2-Mk4		
	SWP 3.6/4MW		
	SGRE 2.9-129		
	SGRE 2.x Not for G114-STD1		
	SGRE 3.x		
	SGRE 4.x		
	SGRE 5.x		
NORDEX acciona Windpower	**Acciona AW3000**		
	Nordex 2.5 MW Gamma		
	Nordex Delta		
	Nordex Delta4000		

	Wind Turbine	LT1000 (WLL 24 t)	LT1200 (78 t)
GE VERNOVA	**GE 1.5** - 70.5 77 82.5 87 **GE 1.6** - 77 82.5 87 **GE 1.68** - 82.5 **GE 1.85** - 82.5 87		
	GE 1.6 - 100 103 **GE 1.7** - 100 103 **GE 1.79** - 100		
	GE 2.x Platform - F1		
	GE 2.x Platform - F2-US		
	GE 3MW Sierra		
	GE Cypress		
SENVION wind energy solutions	**Senvion MM82/MM92**		
SUZLON POWERING A GREENER TOMORROW	**Suzlon S88**		
MITSUBISHI HEAVY INDUSTRIES, LTD.	**Mitsubishi MWT1000a**		
HITACHI Inspire the Next	**Hitachi HTC 2.0-80 2MW**		

MATRIX KEY

- Currently possible
- In development
- Can be developed

- Gearbox
- Generator
- Main shaft
- Transformer
- Rotor, all blades**
- Hub, no blades
- Blade, horizontal**
- Blade, vertical

* Some of the above-listed wind turbine models might have variants that require modification - Please contact Liftra for clarification. Certain variations of the same platform might require extra equipment or be out of scope for the Liftra Self-Hoisting Crane. - Details can be found in specific data sheets.

** Horizontal blade and rotor lift requires a tailing crane for blade tip lifting.

MAJOR COMPONENT EXCHANGE ALL OVER THE WORLD

With the Liftra Self-Hoisting Crane (LSHC), major component replacements of any kind are possible anywhere on the globe. Whether dealing with difficult terrain or small crane pads, the LSHC excels in versatility and practicality. Its innovative design allows for efficient operation in the most remote areas, ensuring reliable maintenance worldwide.

PREVIOUS AND ACTIVE COUNTRIES

COMING SOON

GEARBOX

ROTOR

TRANSFORMER

HUB

MAIN SHAFT

BLADES HORIZONTAL

GENERATOR

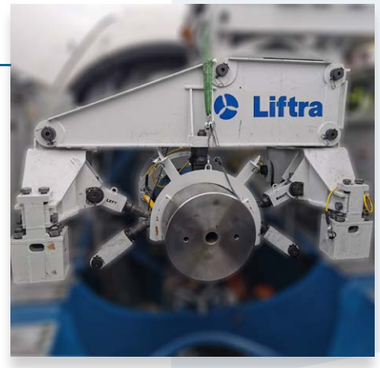
BLADES VERTICAL

AUXILIARY PRODUCTS

The following products are required to use the Liftra Self-Hoisting Crane (LSHC) and have to be bought separately.

BASE SYSTEM

The base system is a turbine specific interface, allowing the installation of the LSHC in the nacelle. Depending on the turbine the system can come with built-in main shaft fixture, ejector system and rotor lock.



CABRIOLET SYSTEM

This Cabriolet System enables installation of the base system and LSHC before grounding the nacelle cover. The cover is raised and slid backwards by the system into a “parking” position. The crane is installed in the open area of the nacelle.

LIGHT-WEIGHT CRANE

The Lightweight Crane (LWC) is used for assembly of the base system. The lattice pieces weigh below 25 kg and can be handled and installed by 2 technicians without any special tools. The LWC can also be used for some up-tower repairs as a stand alone solution.

WLL: 1000 Kg

REACH: 2.8 m

WEIGHT: 300 Kg

ACCESSORIES

Liftra provides accessories to enable a wider range of major component exchanges with the Liftra Self-Hoisting Crane:

LSHC EXTENDER TOOL

The extender increases the reach of the crane from 7 to 11 M, and enables exchange of lighter components further from the crane i.e.: Transformers, coolers, electric cabinets etc.

MOVING BASE CENTER

Adaption to the base systems for maximizing the capacity of the LSHC by moving the crane 2m forward. This enables for lowering of heavy rotors as well as vertical blade lifts.

LT1297-1 AUXILIARY CRANE

WLL: 3000 Kg

REACH: 3m

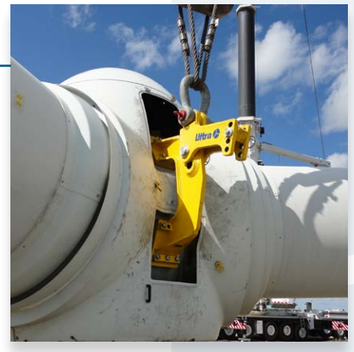
The LT1297-1 auxiliary crane offers increased lifting capacity for hoisting Liftra’s base system parts to the nacelle. This allows for quicker base installation and enables use of moving base center.

GEARBOX RIGGING

Custom, lightwight gearbox rigging for easier handling of the gearbox during operations with the Liftra Self-Hoisting Crane (LSHC).

ROTOR YOKE

Yokes enabling full rotor lifts, customized to the individual rotor.



ROTOR STAND

Universal rotor stands, configurable to several bolt patterns and rotor sizes.

BLADE TIP CLAMPER

Blade tip clampers for rotor lifts. Lift capacity from 5-16 ton.

BLADE SKYLARK

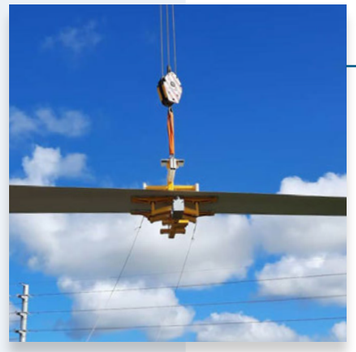
Blade yoke for vertical replacement of blades and blade bearings. The yoke enables blade exchange with the LSHC on its own, without the need for a secondary crane.

COUNTERWEIGHT YOKE

Yoke for extending the reach of the LSHC, and enables exchange of lighter components further from the crane i.e.: Transformers.

BLADE TIP CARRIER

Yoke for supprting the blade tip end during horizontal blade echange with the LSHC.



MAIN SHAFT YOKE

Liftras main Shaft Yoke enables exchange of main shafts on a range of turbines with a LSHC. The yoke can lift both a single main shaft and two at once, enabling exchange in one lift.

INSTALLATION OF THE LSHC

Before installation of the Liftra Self-Hoisting Crane (LSHC), the following steps are required to prepare the turbine for the crane:

1. Turbine is shut down and cabriolet system is installed.
2. Nacelle roof is pulled back with the Cabriolet system.
3. Light-Weight Crane is installed.
4. Base system is installed.

The whole process takes 1-2 days and requires 3-4 technicians for up tower and groundwork. Completing this before the LSHC and Liftra certified crane operator arrives at the site ensures most efficient use of the crane.

5. The LSHC and Crane operator arrives.
6. The hoist block is hoisted and mounted at the base system.
7. The LSHC climbs its wires.
8. The LSHC arrives at the nacelle and is installed on the base system.
9. The LSHC is ready to perform Major component exchange.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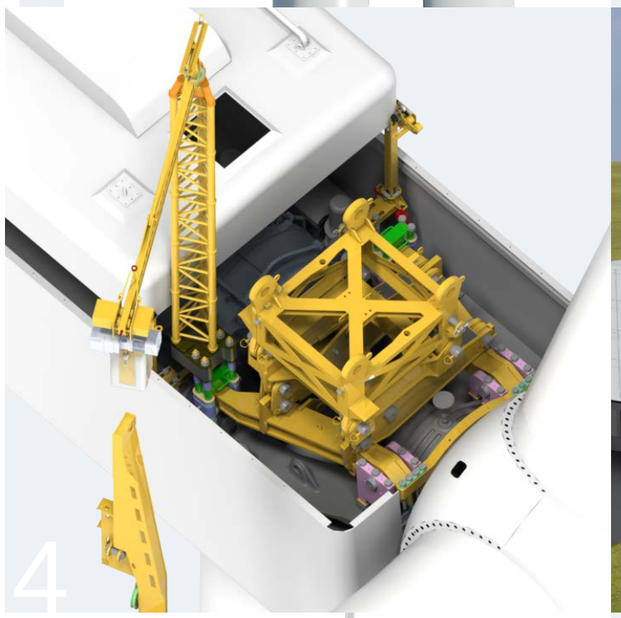
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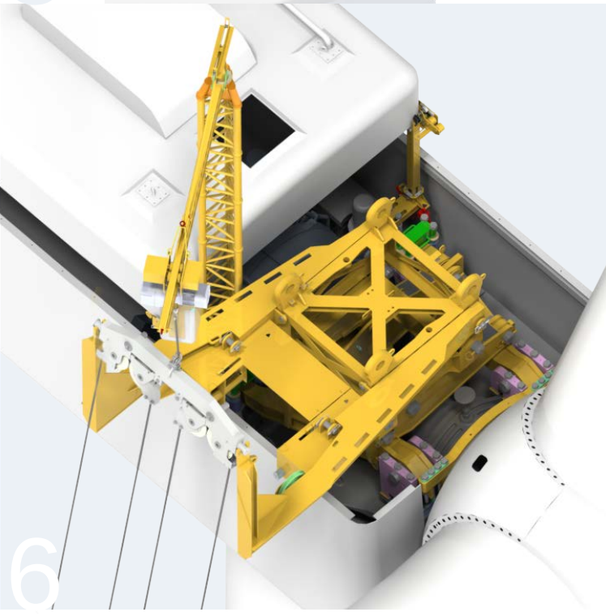
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TRAINING

At Liftra, we are dedicated to ensure that our Self-Hoisting Crane (LSHC) operators are fully equipped to handle all aspects of crane operation.

Over the course of 3 weeks, trainees gain in-depth knowledge and hands-on experience in installing, uninstalling, and operating the LSHC. Our training program combines theoretical instruction with practical learning, ensuring operators are prepared for any scenario they might face.

Training is conducted primarily in Aalborg, Denmark and Cincinnati, USA. We're open to other locations upon agreement. Our courses cater to small groups of up to 6 people, guaranteeing personalized attention and optimal learning.

Upon completion, participants receive a 2-year certified LSHC license.

Liftra ACADEMY

SERVICES

We provide services throughout the entire product lifetime, whether it be product maintenance, annual inspections, spare parts or product support.

Our product specialists ensure that your Liftra tool remains in good condition.

For product service or spare parts request please make use of our Online portal:

Liftra.com/product-support

OFFSHORE APPLICATION

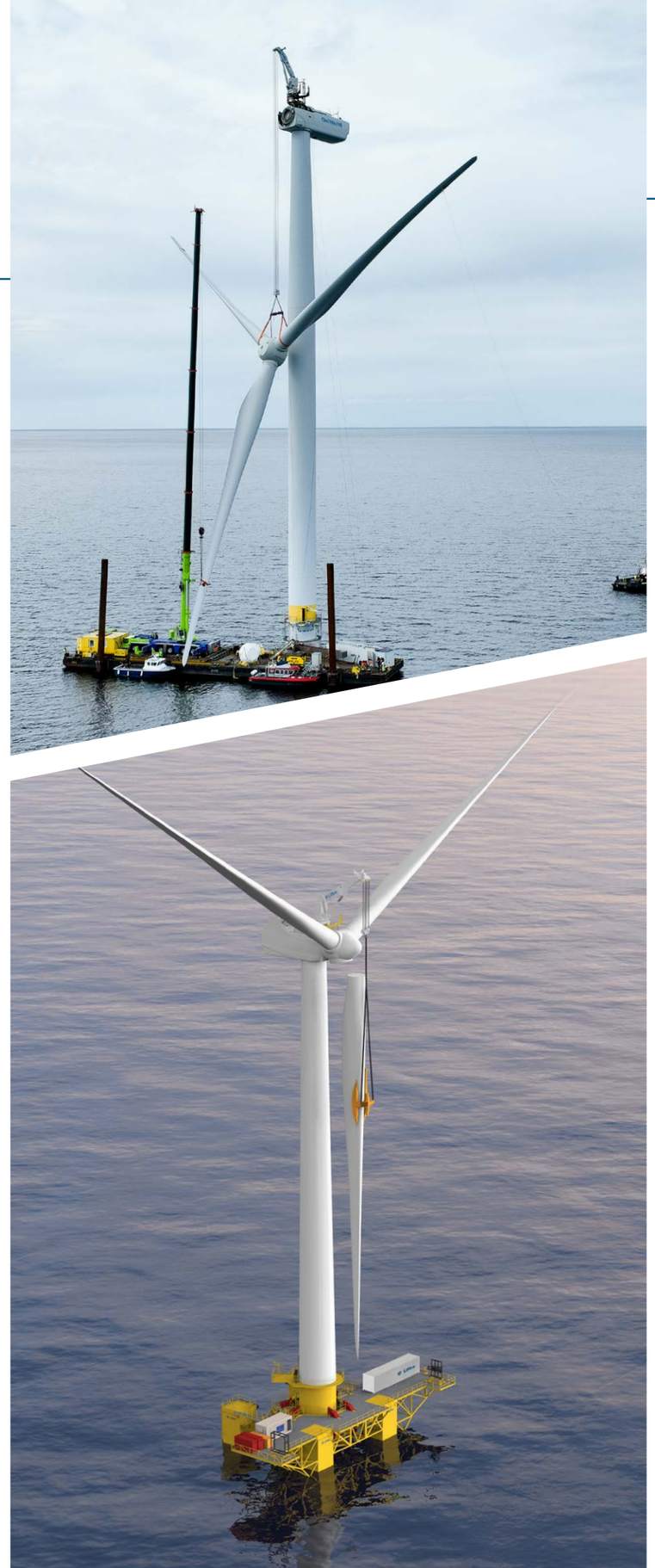
The Liftra Self-Hoisting Crane (LSHC) successfully completed its first offshore job in August 2022, demonstrating its effectiveness and reliability.

Key benefits of using the LSHC offshore include:

- Major component replacement without jack-up solutions
- Availability of smaller barges leading to lower mobilization costs
- Allows operation at higher wind speeds by attaching to the nacelle
- Low emission solution

Combining The LSHC with SOLVE Winds innovative, semi-submersible ATOMS barge technology creates an integrated technology solution. This enables offshore major component exchange without the need for jack-up vessels, offering:

- Significantly reduced offshore O&M costs
- Compatibility on both fixed bottom and floating turbines
- Elimination of hub height as a cost factor



OTHER LIFTRA PRODUCTS

Liftra provides equipment for the whole turbine life cycle, from transport to installation and maintenance.

THE LIFTRA LT1500 INSTALLATION CRANE

The LT1500 Installation Crane enables Full Turbine installation.

BLADE INSTALLATION AND EXCHANGE

Liftra supplies blade handling equipment for both installation and blade replacement.

TOWER AND BLADE TRANSPORT

Liftra offer a wide range of solutions for efficient transportation of towers, blades, and nacelles. The universal Tower Stacking System is available both for purchase and rental.

DOWNLOAD
SALES MATERIAL

Liftra

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