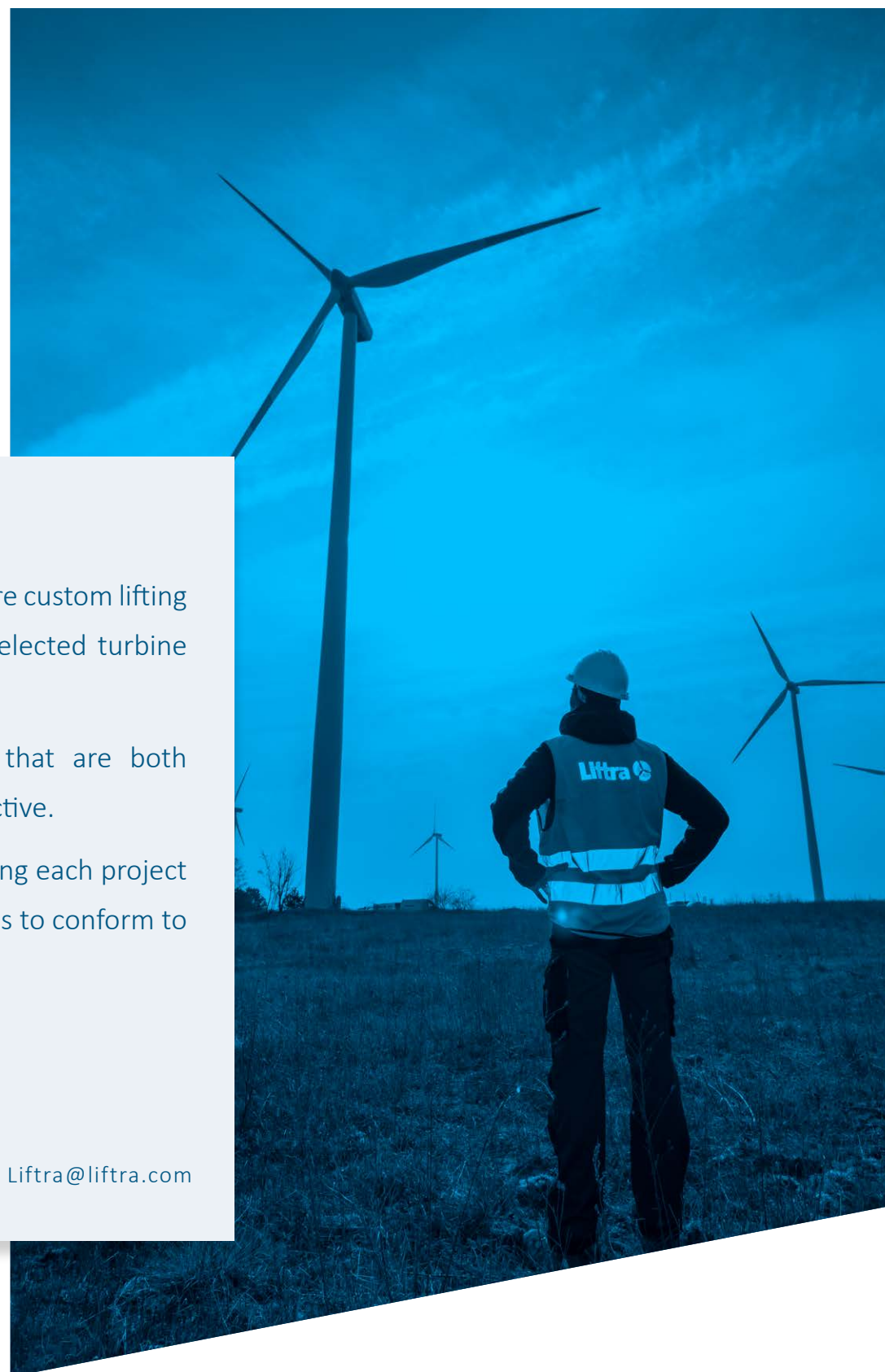




SELF-HOISTING CRANES

MAJOR COMPONENT EXCHANGE WITHOUT THE USE OF CONVENTIONAL CRANES

WWW.LIFTRA.COM



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

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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.



VS



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

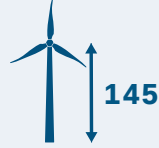
Operating in winds up to 18 m/s gusts, the Liftra Self-Hoisting Crane expand the weather window for service operations compared to conventional solutions.

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 DEPENDENT 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.

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			 	   		
	Gamesa 2 MW Platform, G8x G9x	 	  	 	    		
SIEMENS Gamesa	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	Acciona AW3000	 	 	 	  	
		Nordex 2.5 MW Gamma	 	 	  	   	
Nordex Delta			 	   	  		
Nordex Delta4000 N135 N145 N163 N175				   	  		

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)									
	GE 1.5 Platform															
	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 Platform															
	GE 1.6 - 100 103															
	GE 1.7 - 100 103															
	GE 1.79 - 100															
	GE 2.x Platform - 107 116 120 127 132															
GE 3MW Sierra																
GE Cypress																
	Senvion MM82/MM92															
	Suzlon S88															
	Mitsubishi MWT1000a															
	Hitachi HTC 2.0-80 2MW															

MATRIX KEY

-  Currently possible
-  In development
-  Within spec of LSHC
(Pending investigation)
-  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. Full scope for blade and rotor lift pending confirmation of weight and COG of components.

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.



GEARBOX



ROTOR



TRANSFORMER



HUB



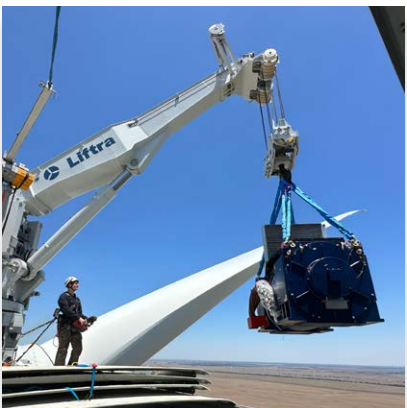
MAIN SHAFT



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.



MEDIUM WEIGHT CRANE

The medium weight 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.



WLL: 3000 Kg
(at 3m reach)
REACH: 5m

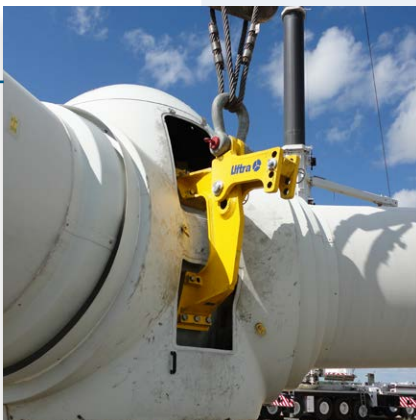
GEARBOX RIGGING

Custom, lightweight 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 clammers 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 supporting the blade tip end during horizontal blade exchange 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.



BASE SYSTEM INSTALLATION

Before installation of the Liftra Self-Hoisting Crane (LSHC), the turbine is prepared for the crane. This 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.:

- 1) Turbine is shut down
- 2) cabriolet system is installed.
- 3) Nacelle roof is pulled back with the Cabriolet system.
- 4) Light-Weight Crane is installed.
- 5-6) Turbine specific components installed
- 7-8) Jib & base center is installed.

INSTALLATION OF THE LSHC

From crane arrival, it takes less than a day to begin the major component exchange.

- 9) The LSHC and Crane operator arrives.
- 10) The hoist block is hoisted and mounted at the base system.
- 11) The LSHC climbs its wires.
- 12) Hoist block is repositioned.
- 13-15) The LSHC is installed on the base system.
- 16) The LSHC is ready to perform Major component exchange.



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.



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](https://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



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