



*THE
GAME
CHANGER*

**ENERGY
RENEWING**



HYBRID EMPTY
CONTAINER HANDLER



With CVS FERRARI introducing HY-LIFT a new era has begun for container handling liftrucks. The redundancy of power hydraulics and their replacement with electric powered winches directly mounted on the mast, along with several other energy saving and power recovery technologies, has turned the unthinkable into reality. Thanks to this unique equipment destined to change the container handling industry, the **unconditional massive slashing of the Total Cost of Ownership** these machines is now possible. So is the drastic **reduction of the Environmental Impact** of Empty Container Handlers. HY-LIFT transforms otherwise wasted energy into major cash savings and borderline container handling businesses into sustainable, profitable ones. It miniaturizes maintenance cost icebergs and changes the focus of the equipment users from buying for less into making the business profitable. HY-LIFT is the **GAME CHANGER** of the container handling liftrucks sector.



THE RANGE

MODEL	CAPACITY	STACKING ABILITY	MAST TYPE
Single Stack Spreader			
HY08.6	9 ton	1 over 5 x 8'6" 1 over 4 x 9'6"	Single Stage
HY10.8	9 ton	1 over 7 x 8'6" 1 over 6 x 9'6"	Two Stage
Double Stack Spreader			
HY11.7DS	11 ton	2 over 6 x 8'6" 2 over 5 x 9'6"	Two Stage
HY08.8DS	8 ton	2 over 7 x 8'6" 2 over 6 x 9'6"	Two Stage





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MINIMIZED OWNERSHIP COST

–40%

LOWER TOTAL COST
OF OWNERSHIP

THANKS TO

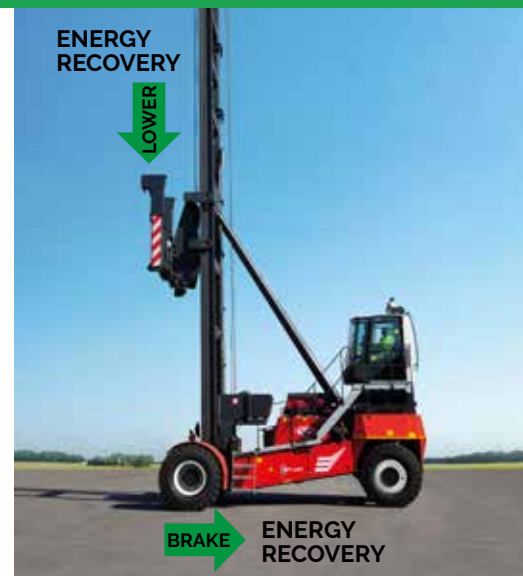


-40%

LOWER FUEL CONSUMPTION

HY-LIFT features many innovative energy saving design solutions and systems, but the hard-core of the extraordinary fuel efficiency of this machine is its ability to recover over 60% of the energy spent to lift the spreader and a great deal of inertial energy when breaking.

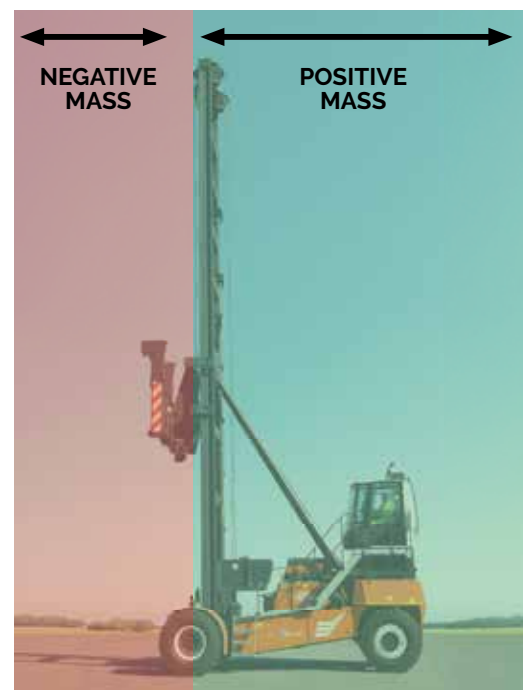
-60% for **HY08.6** model



-35%

TIRES EXPENDITURE

HY-LIFT is built on radically new structural concept that has transformed the mast into a "positive" (stabilizing) mass, as opposed to being a "negative" (destabilizing) mass as it is in any conventional container handling liftruck. That makes the machine a lot more stable and a lot mightier at the same time. The lighter weight enables HY-LIFT to use smaller size and sensibly cheaper tires than what is used on equivalent traditional trucks. That results in much smaller tires consumption cost.



-50%

INVESTMENT IN CONSUMABLES

- NO HYDRAULIC OIL REPLACEMENT
- NO HYDRAULIC OIL FILTER REPLACEMENT
- NO TRANSMISSION OIL REPLACEMENT
- NO TRANSMISSION OIL FILTER REPLACEMENT
- NO DIFFERENTIAL OIL REPLACEMENT
- MINIMIZED ENGINE OIL AND FILTER COST



-70%

EXTRAORDINARY MAINTENANCE

- NO TRANSMISSION REPAIR OR OVERHAULING COSTS
- NO DIFFERENTIAL AND HALFSHAFTS BREAKDOWN AND REPAIR
- NO HIGH PRESSURE HYDRAULICS MAINTENANCE COSTS
- NO HYDRAULIC OIL LEAKS
- SLASHED LIFT MECHANISM MAINTENANCE COST



A NEW TECHNOLOGY BREAKS THROUGH



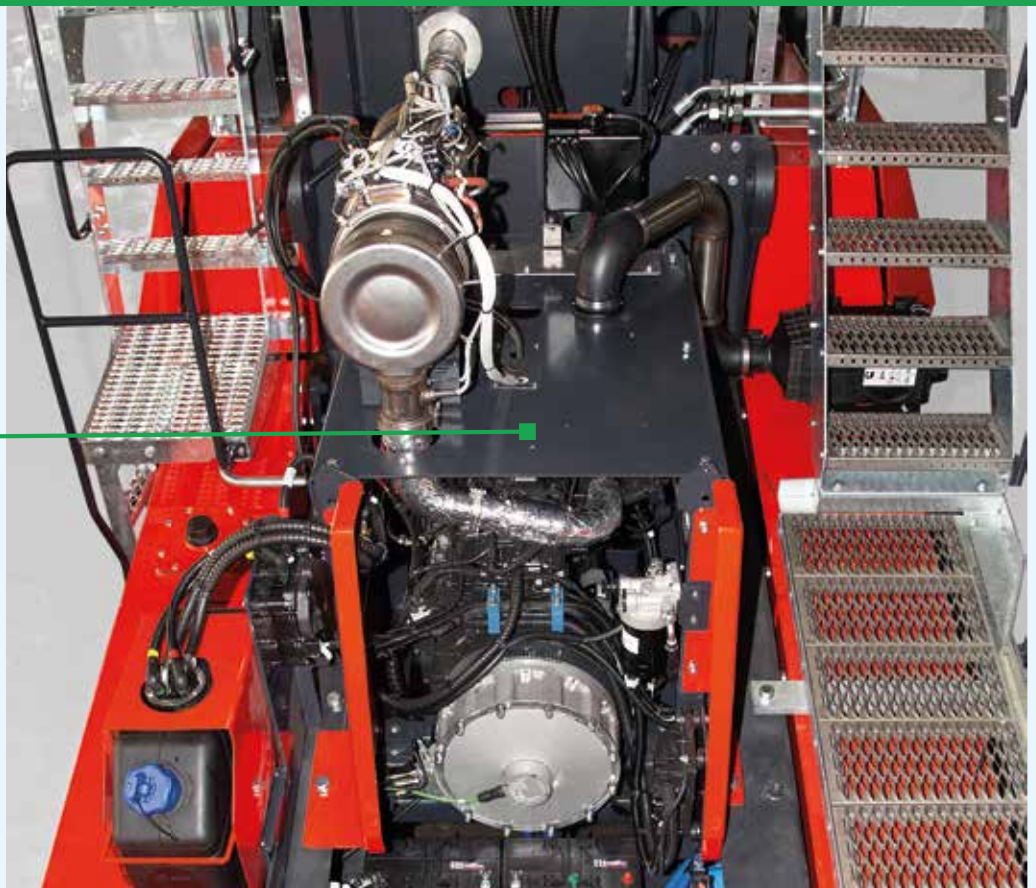
Lifting is achieved through **Electric motors** driven winches reeling steel ropes. No power hydraulics are involved. HY-LIFT delivers maximum efficiency in energy use and recovery, high lifting speeds, and total safety granted by three independent brake systems. This all along with drastically reduced maintenance costs and amazing reliability.



Drive is also electric motor operated. Motors are directly mounted at the wheels and are the same of those operating the winches. **Inverters** - one per each motor - provide responsive control and exceptional and progressive acceleration. The electric brake is supplemented by a wet disc brake system that renders the driver's feel the same of driving a conventional truck.



ENERGY RENEWING



The primary power source of HY-LIFT is a small **Electric Generator** actioned by a 115 kW Cummins engine. This power pack delivers excellent durability due to regulated engine revolving regime, plus low fuel consumption, reduced noise and lower emissions. The small size of the thermic engine brings with itself very inexpensive routinary maintenance and drastically reduced overhauling and replacement cost.

ELECTRIC MOTORS, ELECTRIC GENERATOR, INVERTERS AND SUPERCAPACITORS are MAINTENANCE FREE

A second source of power is delivered to HY-LIFT by a rack of **Supercapacitors**. Charged by the generator or by recovered energy captured when lowering and braking, the supercapacitors integrate the energy provided by the generator, thus boosting the performances of the machine to levels equivalent to or superior to those of conventionally powered trucks. The supercapacitors come with a manufacturer design life of one million cycles. Practically they last as long as the truck and allover this infinite time their maintenance cost is zero.



ENGINEERED FOR SAVINGS

CVS FERRARI

The first gain comes from saving. That is why HY-LIFT is designed to save energy even before recovering it. The **elimination of the power hydraulics and of the mechanical drive chain** is such that power transmission losses are minimized. The same happens when the recycled energy is transferred to the supercapacitors bank to be stored. The **Single Stage 6 High Stacking Mast** is a brilliant engineering solution that eliminates the energy expenditure for the lift of a heavy mobile mast section. The **Automatic Lift Height Selector**, whilst easing and speeding up operations, is improving the energy usage and the efficiency of the power regeneration system.



AUTOMATIC LIFT
HEIGHT SELECTOR



GREAT ENERGY REGENERATION AND RECYCLING



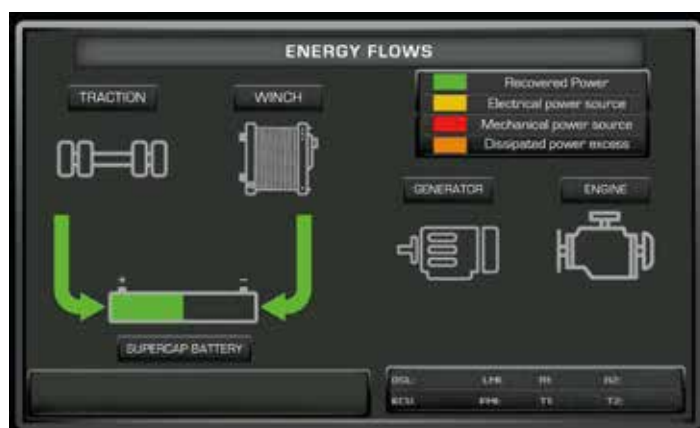
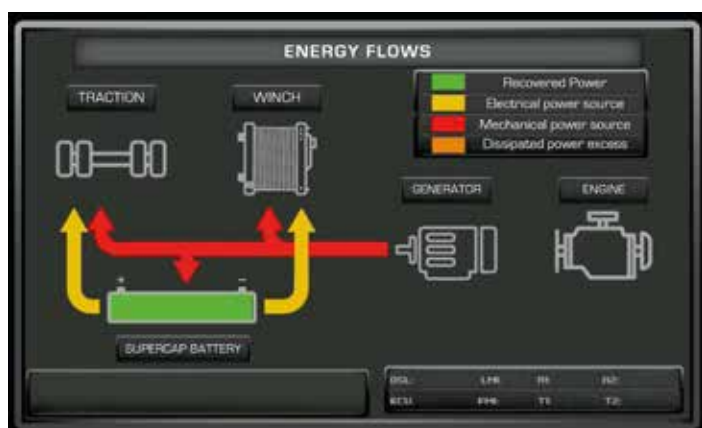
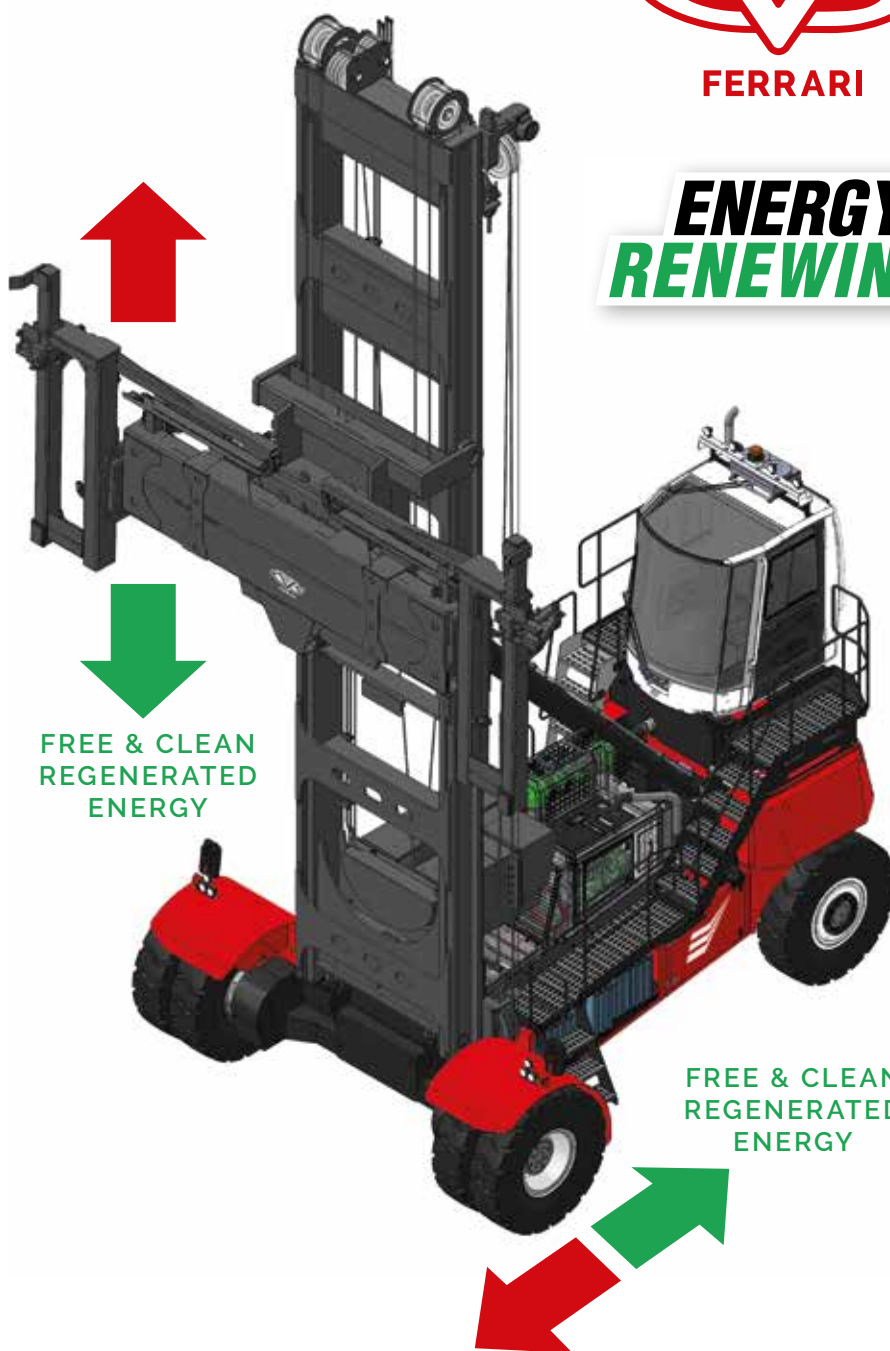
The energy used to lift and drive, is in large part recycled by HY-LIFT as its electric winch and drive motors generate electric energy out of the mast lowering and machine braking. The regenerated energy is stored in the supercapacitors. A sophisticated software managed by the machine on-board computer optimizes energy recycling, storage and usage, thus leading to major fuel savings.

**REGENERATED
ENERGY IS
CLEAN AND
FREE**

The on-board computer controls and shows the generated, spent and recovered energy flows; provides detailed evidence of consumed and saved fuel, as well as of state and level of supercapacitors charge.



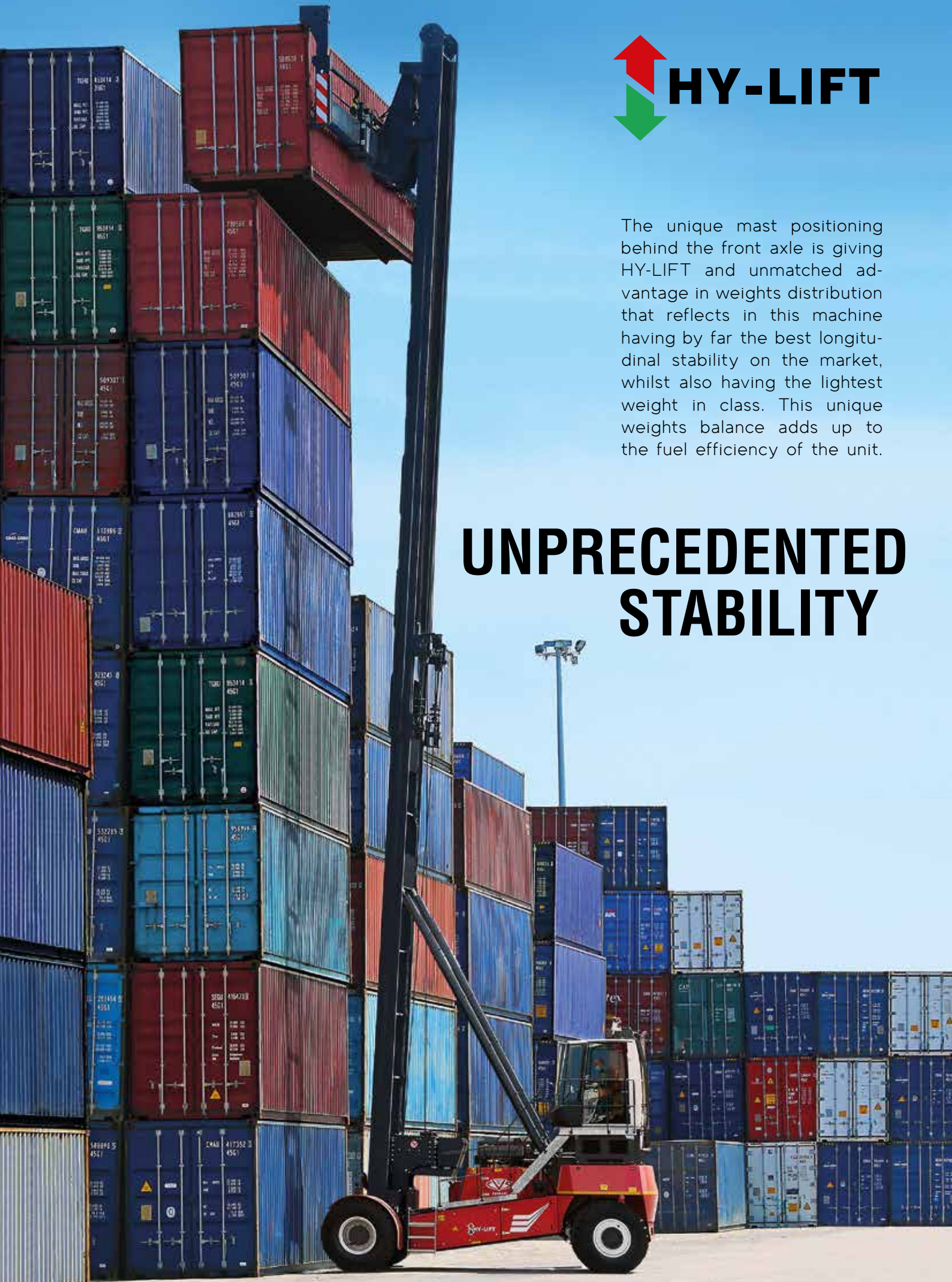
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The unique mast positioning behind the front axle is giving HY-LIFT an unmatched advantage in weight distribution that reflects in this machine having by far the best longitudinal stability on the market, whilst also having the lightest weight in class. This unique weight balance adds up to the fuel efficiency of the unit.

UNPRECEDENTED STABILITY

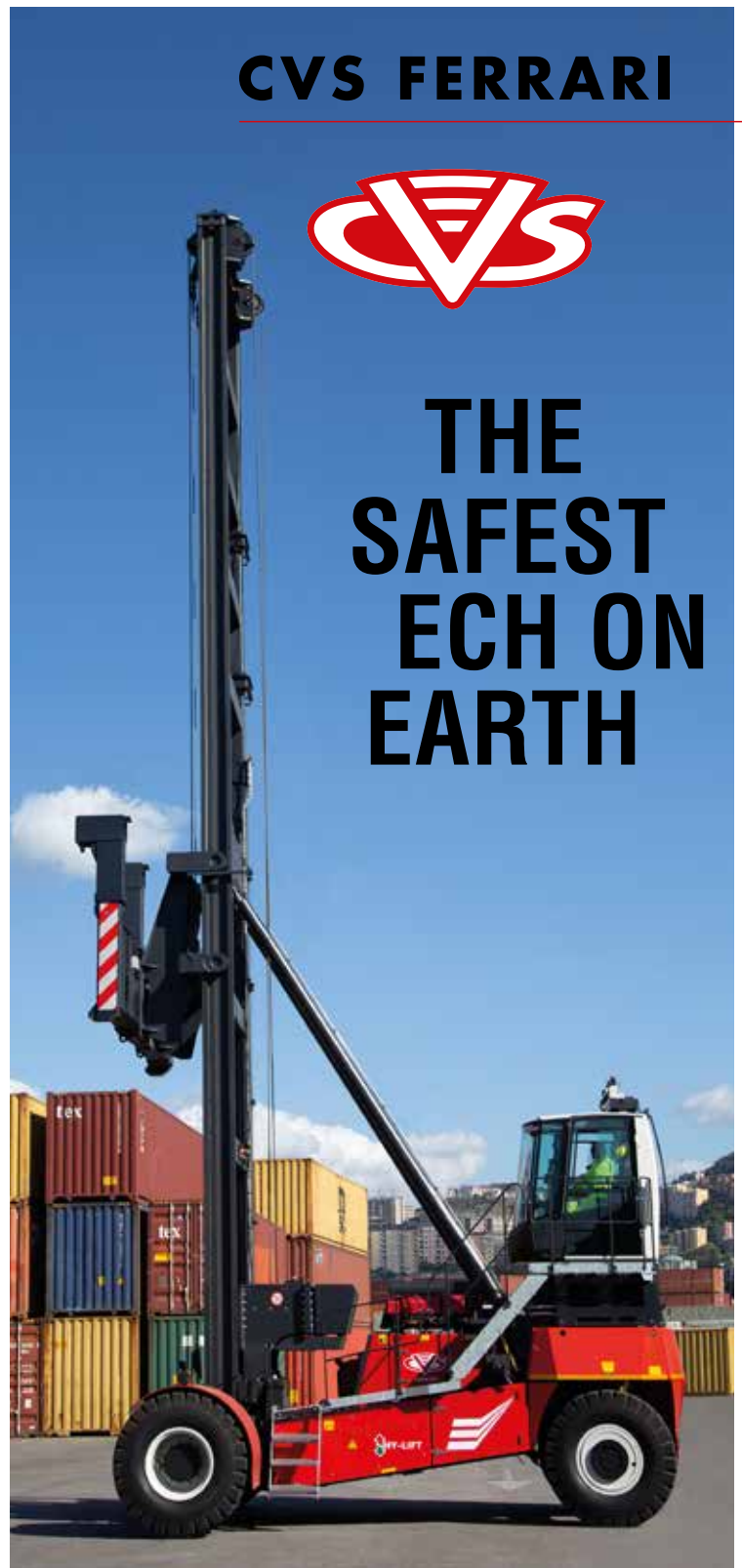




HY-LIFT features an extra wide front axle that, along its wide steer axle and extended wheel-base, deliver the **best lateral stability** ever retained by a dedicated empty container handler.

ENERGY RENEWING

The innovative positioning of the mast behind the front wheels center gives HY-LIFT a **superior longitudinal stability** over any comparable machine. An intrinsic safety feature further enhanced by the electronic Load Moment Indicator and Limiter that is a standard feature of the safest ECH truck ever built.



HY-LIFT is equipped with a longitudinal stability LMI. Drive speed, tilt range and speed as well as lift extension and speed are limited according to residual stability reserve. This system makes HY-LIFT the safest Empty Container Handling Liftruck on planet earth.





EXCEPTIONAL OPERATIONAL VISIBILITY

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The elevated position of the rear mounted cab and the wide and clear-view mast design grant the driver an ideal operational visibility pattern that is exalted by the CVS FERRARI industry famous ARIA cabin, whose spacious environment is defined by an ample and view unrestricted glass surface. The wide front screen has a glare deflecting tinted curved shape and is laminated for outmost safety. Optional rearview camera with color screen and integrated rear volumetric sensors are available options that enhance driver's control of the operational radius of the truck. A 360 degrees camera system is also an available option.



For Double Stack operations that require it, a Roll Bar responding to stringent ROPS standards is an available option. Emergency exit door, stair and ladder on the right side of the cab are a standard feature.



TWICE AS STIFF

HY-LIFT features a reverse section mast that has the peculiar characteristic to effectively contrast the torsional stress generated by the loads when lifted and carried at high heights. Furthermore, the ropes pull the mast from behind keeping it straight even under maximum load. The high hinged tilt cylinders contribute to the exceptional stiffness of its mast.



HY-LIFT

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The new HY-LIFT range of CVS FERRARI includes also Double Stack models that can handle two empty containers, with up to 11 ton combined capacity under a spreader featuring hydraulic powered pile slope. The powerful side locking clamps secure and align the two handled boxes, whilst a shooting pin is securing the single handled box, even when such container is a 45' one, in which case the side clamps are inhibited. Wireless Twist-Locks Cameras with color display in cab are an available option.



GREENER, CLEANER, QUIETER, SAFER

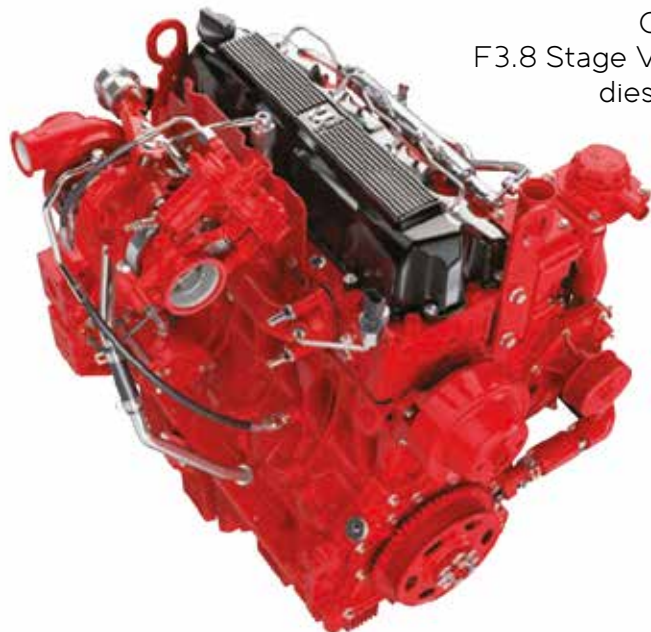
HALFED NOX EMISSIONS

ALMOST NO EXHAUSTED OIL
AND FILTERS TO DISPOSE

REDUCED NOISE PRESSURE



HY-LIFT is a gentle revolution in the container handling liftrucks world, because besides miniaturizing running costs this machinery massively reduces environmental impact. Noxious emissions are cut down proportionally to the reduction of burnt fuel. With HY-LIFT, exhausted oils and filters to dispose are decimated, whilst its running is the quietest ever and its small diesel engine is the most fuel efficient in its class. The electric motors powering HY-LIFT are permanent magnet type, the most efficient and silent breed of brushless motors that exist.



CUMMINS
F3.8 Stage V / Tier 4F
diesel engine.

CLEAVER, CONNECTED, INTERACTIVE

HY-LIFT is equipped with the most advanced Telemetry System in the industry, the CVS FERRARI Remote Monitoring System that ensures real time remote control of the machine operation and its main components.



REAL TIME EXTENSIVE
TELEMETRY

BI-DIRECTIONAL
SYSTEM DIAGNOSTIC

COMPLETE STATISTICAL
ANALYSIS

AUTOMATIC DETAILED
ACTIVITY REPORTING



Driving HY-LIFT is easy and natural. The electric drive is smooth and provides a very responsive acceleration. Maximum drive speed is proportional to the stability reserve condition. The ropes are elastically absorbing the vibrations induced on the load by the ground unevenness, thus making drivers experience utterly comfortable and pleasant. The electronic control of the wheel motors ease cornering maneuvers and improve braking control.

NATURAL TO DRIVE



CVS FERRARI



THE FASTEST LIFTING SPEEDS EVER

HY-LIFT is not only about incredible operational costs reduction, cleaner and safer operations. HY-LIFT is also the fastest truck on earth when lifting.

With lift and lowering speeds that are up to 30% faster than those of conventionally powered trucks, HY-LIFT sets new standards of productivity and further accelerates the return of investment of the user.

That is why HY-LIFT changes the speed gear of the Empty container businesses.

That is why HY-LIFT is the GAME CHANGER.



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