

# XL SAFETY





## **PROFESSIONAL RAILWAY RESCUE SERVICE.** WITH US, SAFETY COMES FIRST.

The Kirow Multi Tasker is the ultimate lifting machine for clearing up after an accident.

#### LIFTING HEAVY LOADS IN RAIL NETWORKS

Kirow railway cranes excel with their extremely high load moment capacity. It is the only machine that can work in the rail environment that can lift and manoeuvre any kind of rolling stock into the neighbouring track and, in the case of the strongest cranes, even lengthways in front of its buffers.

#### EASY ACCESS TO THE ACCIDENT SITE

Accident sites in the middle of large railway stations, on tracks alongside rivers, in cuttings or in the mountains are difficult for rubber-tyred vehicles to access. But the Multi Tasker can reach them quickly and easily as it can be moved, just like a normal carriage, to the site by a locomotive and is immediately ready for action.

#### XL SAFETY

The Kirow railway crane is also extremely safe. Its electronic load moment limitation system, which always keeps the crane within a safe working range, is integrated into the crane's control system. All of the crane's movements are monitored by this proven electronic control system.

This safety feature is complemented by the exceptional visibility which the Multi Tasker's cabin offers its operator. This cabin's big safety glass windows provide a perfect all-round view and outstanding vision. This is supported by a camera for the rear, whose image is displayed on a high-resolution screen. It is easy to concentrate when working in the Multi Tasker.

Only high-quality components, mainly made by German manufacturers, are used to build it. This quality and the finely tuned compatibility of the components give the crane operator confidence and assurance even in tricky situations.

#### PERFECTLY SUITED TO RAILWAY CONDITIONS FOR EFFICIENT OPERATION AND VERSATILE USAGE:

#### DUAL ROTATING ASSEMBLY – A KIROW INVENTION

The Multi Tasker can slew its jib without its counterweight turning at the same time. This means the Multi Tasker can work without restriction even when there are obstacles such as pylons, tunnels and noise barriers behind it. It requires only one outrigger, which saves an enormous amount of time and speeds up accident clearing.

#### DRIVING UNDER LOAD

Unlike a mobile crane, the Multi Tasker can drive while carrying heavy loads. This means that rolling stock and bogies can be placed back on their tracks and moved away from the site of the accident.

#### WIDE RANGE OF ACTION

The Multi Tasker has a long telescopic jib with which scattered parts – for instance, 20 metres away from the tracks – can easily be recovered and taken away.

#### SENSIBLE INVESTMENT

Network operators who acquire a Kirow Multi Tasker are making an economically sound decision. After all, the more quickly an accident site can be cleared, the smaller the losses caused by track closures. Furthermore, recovering costly rail vehicles carefully can save on repair costs as well.

With a service life of more than 30 years, a Kirow crane is a lasting investment.



with just one outrigger without disturbing the neighbouring track



↑ Strong Kirow cranes can lift a locomotive lengthways in front of its buffers



↑ The Multi Tasker can easily reach an accident site, even on uneven and steep terrain

### HEAVY-LOAD TRANSPORT FOR RAILWAYS. LOW BRIDGE LOADS ARE THE KEY.

#### → MULTI MOVER C

The Kirow Multi Mover C is our flagship for the construction of railway lines using prefabricated bridge sections. These sections can be loaded safely and gently onto the Multi Mover at a concrete plant and taken to the place of installation more than ten kilometres away.

#### SYNCHRONISED WITH LAYING CRANE

Perfect coordination with the laying equipment used on location guarantees that prefabricated parts can be installed safely and precisely. The size and geometry of bridge sections can vary depending on external factors. The vehicles we have built to date have been designed for the transport of 35-metre-long bridge sections with a mass of 900 tonnes.

#### REDUNDANCY FOR EXTREME RELIABILITY

Construction equipment used to carry prefabricated bridge sections, some of which are extremely large, must be very reliable indeed. The Kirow Multi Mover C is therefore equipped with two redundant power packs. Each of these two power packs can on its own perform all of the movements of a complete working cycle such as lifting, steering and driving. This guarantees absolute reliability.

All of the Multi Mover's movements are monitored by comprehensive diagnostic systems. These tools even enable the operator to detect potential operating errors early and correct them quickly, because despite its enormous dimensions the Multi Mover C is remarkably mobile. Its electronic steering includes three steering programs for cornering and one for driving sideways.

#### EASY TO TRANSPORT IN CONTAINERS

Although the Kirow Multi Mover C is very big, it is highly flexible on account of its modular structure. Transported to the building site in standard containers, it is quick and easy to assemble and after a brief test phase is soon ready for action. Once its work is finished it is just as easy to dismantle and pack efficiently into containers, in which it can be taken to the next building site.

#### → <u>HERKULES</u>

Increasing restrictions on road transport are making rail-borne heavy-load transport more and more attractive. Massive loads such as transformers, generators and equipment for rolling mills with weights of up to 500 tonnes and more are dealt with easily by Kirow heavy-load vehicles.

#### **CUSTOM SOLUTIONS**

Kirow heavy-load vehicles are customised products optimised on the basis of customer requirements, taking technical and administrative factors into account. There are three loading methods:

- Self-supporting loads which can be harnessed beneath a supporting structure
- Loads that can be placed on load-through supports
- Loads that can be loaded onto flatbeds

#### YEARS OF EXPERIENCE

When Kirow builds heavy-load vehicles, it taps into Krupp Ardelt's years of experience. Its product range extends from simple vehicles all the way to highly complex units which possess numerous hydraulic adjustment systems. This allows loads with very different geometries to be loaded up and obstacles en route to be avoided.

#### MINIMISED BRIDGE LOADS

To date, we have constructed heavy-load vehicles with up to 36 axles able to carry up to 800 tonnes. The design of these vehicles ensures that the load is distributed evenly across all the axles, which minimises the load on the road.



Herkules: Rail-borne heavy-load transport with and without load, side view



↑ Multi Mover C building a high-speed line in China



↑ Multi Mover C: Heavy duty vehicle for the transport of prefabricated, reinforced concrete members

### WORLD MARKET LEADER IN SWITCH RENEWAL MACHINERY. QUICK REPLACEMENT, PERFECT LOGISTICS.

Kirow can offer the perfect switch renewal solution for any topography and rail network density.

#### → <u>MULTI TASKER</u>

With the benefits it offers, the Multi Tasker is perfectly cut out for working on rail networks featuring numerous stations and/or tunnels, railways and mountains:

#### UNIQUE WORKING METHOD

Its unique method of moving heavy segments in front of its buffers (even below overhead lines) enables it to carry loads on a crane hook over long distances. This is a big benefit since assembly sites can be hard to find in dense rail networks. Using the Multi Tasker, assembly sites can be chosen up to two kilometres away from the actual place of installation. The Multi Tasker can of course transport heavy loads around superelevated curves since it balances itself automatically in every situation. The Multi Tasker's automatic superelevation compensation enables heavy loads to be transported safely under the most difficult circumstances.

#### MAKING HEAVY, BULKY LOADS EASY TO MANOEUVRE

The Multi Tasker is highly manoeuvrable on rails. It doesn't just transport loads, it can also swing them to the side with its jib and rotate them using its hook. This makes it easy to elegantly manoeuvre segments up to 40 metres long and eight metres wide around typical railway obstacles such as pylons, platforms, railway roofs and so on.

#### THE NEIGHBOURING TRACK REMAINS OPEN

<u>The counterweight can be retracted using a telescopic</u> <u>arm or, on cranes with a double rotating assembly, it</u> <u>can remain on the track axis</u> so that traffic on the neighbouring track is not affected by the crane.

#### MAKING THE MOST OF POSSESSIONS

Switches can be disassembled in multiple large segments in just an hour and reinstalled within the next hour. <u>The Multi Tasker represents the fastest method</u> <u>of switch renewal</u>. It achieves this extraordinary efficiency because of the logic of its modular working method: time-consuming pre-assembly activity is done in a place independent of the track. The assembled element can be installed in just a few minutes.

#### HIGH LOAD CAPACITY ENABLES NUMEROUS APPLICATIONS

Multi Taskers are extremely high-performance cranes. Not only can they easily lift and move every size of concrete switch element, they can also often be used to assemble railway station roofs, substations and all kinds of bridges. <u>The Multi Tasker's versatility ensures</u> it will be kept busy by its operators, making it an investment which pays off.

#### → <u>SELF-LEVELLING BEAM</u>

Motorised traverse systems eliminate the need to search manually for the centre of gravity. The Self-Levelling Beam is the ideal companion to the crane. Its motorised traverse system moves the crane hook under load. This enables the centre of gravity to be found quickly – simply by pressing a button on a remote-control unit. No longer does a rigger have to climb around on the switch wagon or search for the mass centre – a bothersome and time-consuming procedure. This makes work significantly safer and additionally saves around five minutes per lift.

#### IMPROVED LOAD POSITIONING

The Self-Levelling Beam makes positioning easy. The ends of segments that have to be placed down first can be lowered with precision. This is particularly advantageous when installing very long segments of switch.



↑ Self-Levelling Beam with hook sliding system



#### → <u>DESEC TRACKLAYER</u>

The DESEC Tracklayer is the ideal unit if you need to vacate the track quickly after replacement – in other words in more rural areas or on single-track sections. It is extremely flexible and performs outstandingly when lifting, transporting and laying long, heavy track and switch sections.

#### ALL-TERRAIN

The DESEC Tracklayer travels on caterpillar tracks and is therefore independent of the rail tracks themselves, making it fully flexible and autonomous in its transport tasks. It picks up the part anywhere alongside the track and brings it to its place of installation, regardless of the terrain.

#### REQUIRES JUST ONE TRACK

The DESEC Tracklayer requires just one track for installing sections of track and switch. This means that traffic on the neighbouring track can continue uninterrupted. The DESEC Tracklayer picks up the part from where it is being stored, carries it to the installation location and inserts it precisely into position.

#### REMOTE CONTROL

The operator can control everything from a safe distance and with excellent visibility using radio remote control. Installation can take as little as ten minutes per part, depending on the distance between storage and installation sites. The track is then quickly ready for traffic again.

#### REQUIRES JUST ONE TRACK, EVEN WITH SWITCH WAGON

The DESEC Tracklayer is unbeatable when combined with our Switch Tilter switch wagon which can carry track and switch sections to the place of installation as and when needed. The DESEC Tracklayer simply picks a part off the switch wagon, carries it to the place of installation and positions it there safely and precisely, returning soon afterwards to collect and install the next part.

All of this happens on just one track. Traffic can continue as normal on the neighbouring track while replacement work goes on. And, of course, pre-assembled large parts remain in whole pieces when you work with a switch wagon. This allows complete switches to be assembled quickly and accurately, and brought quickly into operation.

#### FLEXIBLE TO TRANSPORT

The DESEC Tracklayer can be brought to the construction site on a low-loader or flat wagon, it can then unload itself using its four outriggers.

#### SAFEST METHOD

The DESEC unit is the safest method of replacement: it stands firmly and safely on four wide caterpillar tracks. It is inherently free from the kind of load swinging and slewing which can impede traffic.



↑ The caterpillars of the DESEC Tracklayers can be turned through 90 degrees



↑ Excellent teamwork: the DESEC Tracklayer above Switch Tilter



↑ Only one track is required: the DESEC Tracklayer and Switch Tilter working together

#### → <u>SWITCH TILTER</u>

The Kirow Switch Tilter carries fully pre-assembled switch segments to the construction site as they are needed, in <u>factory-assembled quality</u>. There, they are lifted and installed by the Multi Tasker or DESEC Tracklayer.

#### OPTIMUM USE OF CLOSURE PHASE

Using the Switch Tilter and DESEC Tracklayer or Multi Tasker together reduces construction time. The switch wagon can be driven straight to the place of installation, thus removing one working stage and saving the time it would take to drive there.

#### NO WORKING AT HEIGHT

Kirow has developed a special load-securing system which can be locked and unlocked using the radio control <u>without</u> a rigger having to climb onto the switch wagon. This way the switch wagon complies with the strict occupational safety regulations prevalent on railways.

The load-securing system consists of cross and connecting beams which can be locked and unlocked to and from each other by the Kirow Self-Levelling Beam. The connecting beams remain on the wagon while the compact cross beams replace rigging straps. This means significantly more lifting height.

#### SWITCH SECTIONS HANDLED CAREFULLY FOR HIGH INSTALLATION QUALITY

Both the DESEC Tracklayer and a crane with the Kirow Self-Levelling Beam, manoeuvre switch sections while they are hanging freely. This means no shearing, flexion or torsional forces on the segment, ensuring outstanding installation quality.

#### EXTREMELY ECONOMICAL

The replacement method known in the United Kingdom as 'modular switch' has led to average replacement cost savings of 30%. Contrary to the standard practice elsewhere, pre-assembled switches can be transported directly by the Switch Tilter in large segments: the removal and the assembly site are no longer required.

#### PERFECT INTERPLAY,

#### ALL FROM A SINGLE SOURCE

There are many very different kinds of switch wagons around, but there is only one switch wagon perfectly matched with working processes in the replacement system so that the processes are genuinely efficient and safe – the Kirow Switch Tilter. Just one example: the Kirow Switch Tilter is the switch wagon with the lowest platform height. For you, that means easy unloading.

#### → TRACK DIGGER

The Track Digger is the ideal excavator when it comes to excavating ballast or the entire trackbed.

#### WORKING ON SINGLE-TRACK STRETCHES

The special advantage of the Track Digger is that excavated material can be loaded along the track axis. The slewing action performed by conventional excavators is eliminated. This significantly increases excavating performance.

#### FLEXIBLE EXCAVATION

Its highly mobile excavating arm enables this machine to adhere precisely to the excavation area cross section along the entire length. The Track Digger responds flexibly to unexpected situations and can easily remove obstacles in the ground.

#### → BALLAST TILTER

The Ballast Tilter skip system is the most efficient method of transporting ballast to and from a site. Ballast Tilter skips are simply attached to standard container wagons using twist-locks and can therefore be categorised as cargo. This eliminates costly, timeconsuming approval procedures. Thanks to their low load ledges, loading and unloading is quick, even beneath overhead lines. A whole Ballast Tilter train can be emptied in just five minutes – and a single person can operate it, controlling the skips using a cable remote control.



↑ The Track Digger achieves up to 300 m³/h



↑ Ballast Tilter: a simple, quick and absolutely safe system



Switch Tilter in the United Kingdom



▲ Lowering down a switch section quickly and safely using Self-Levelling and connecting beams

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