



RAILWAY PRODUCTS



Clamps . Tensioning Systems . Signalling . Measuring & Simulation . Testing

KRUECK

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HANGER CLAMP HKL-01

Hanger clamp for flexible catenary hangers/droppers with thimble

Depending on the thimble used and the configuration chosen this clamp is suitable for non-conducting, conducting and spark-free conducting hangers.

Advantages

- Quick and easy installation
- Clamp consists of only two symmetrical parts plus screw and nut
- Same clamp for contact wire and messenger wire
- No disassembly of the clamp required during installation
- Significant cost reduction due to reduced installation time
- Integrated nut lock

Versions

Name	Material	Nut and Bolt	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Contact Wire (mm ²)
HKL-01.1	Cu-ETP	M10, stainless steel	10, 12, 16	25 - 150	80 - 150
HKL-01.2	CuNi2Si	M10, stainless steel	10, 12, 16	25 - 150	80 - 150



HANGER CLAMP HKL-02

Hanger clamp for flexible catenary hangers/droppers without thimble

This hanger clamp's unique design enables a permanent spark-free electrical connection. Apart from that the clamp allows a continuous adjustment of the hanger length.

Advantages

- Hanger length is adjustable
- Quick and easy installation
- Same clamp for contact wire and messenger wire
- Hanger wire is not crimped
- Clamp is re-usable
- Significant cost reduction due to quick installation
- Clamp consists of only one part plus screw



Versions

Name	Material	Nut and Bolt	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Contact Wire (mm ²)
HKL-02.1.10	Cu-ETP	M8, stainless steel	10	25 - 150	80 - 150
HKL-02.1.12	Cu-ETP	M8, stainless steel	12	25 - 150	80 - 150
HKL-02.1.16	Cu-ETP	M8, stainless steel	16	25 - 150	80 - 150
HKL-02.2.10	CuNiSi	M8, stainless steel	10	25 - 150	80 - 150
HKL-02.2.12	CuNiSi	M8, stainless steel	12	25 - 150	80 - 150
HKL-02.2.16	CuNiSi	M8, stainless steel	16	25 - 150	80 - 150

CONTACT WIRE CROSSING CLAMP HKL-03

Contact wire crossing and hanger clamp combined

The clamp is connected to the main track's contact wire. The diverting contact wire can slide freely on top of the main contact wire. The hanger wire is fixed with a thimble connection.



Advantages

- Innovative replacement for long and heavy crossing rods
- Suitable for all grooved contact wires
- Ideal hanger position to support the crossing
- Suitable for all crossings >12° crossing angle
- Quick and easy installation
- Great weight reduction
- Great cost reduction

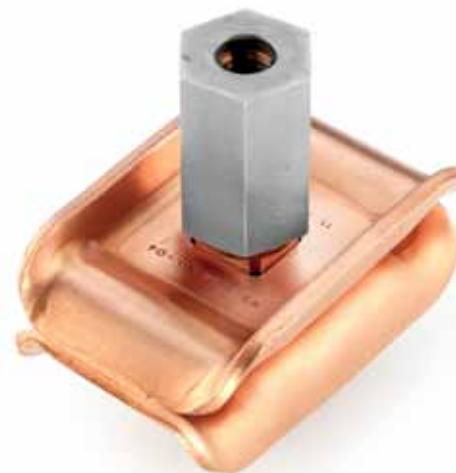
Versions

Name	Material	Nut and Bolt	Hanger Wire (mm ²)	Contact Wire (mm ²)
HKL-03.2	CuNiSi	M10, stainless steel	10, 12, 16	80 - 150

HANGER CLAMP FOR DOUBLE MESSENGER WIRE HKL-04

Hanger clamp for catenary droppers/hangers with twin messenger wires

This clamp is ideally suited for contact systems where full adjustability of the hangers is required and where quick installations are of paramount importance. The hanger wire is not pressed but gripped in a clamping nut. Therefore the full adjustability can be combined with a perfect electrical connection.



Advantages

- One clamp for all messenger wire sizes from 95 mm² to 150 mm²
- Continuous adjustability due to clamping nut
- Quick and easy installation, no premanufacturing required
- Great time saving during installation
- Permanent spark-free electrical connection
- The hanger wire is not crimped

Versions

Name	Clamp	Split Collet	Nut	Hanger Wire (mm ²)	Messenger Wire (mm ²)
HKL-04_10mm ²	Cu-ETP	CuNiSi	stainless steel	10	2x95 - 2x150
HKL-04_16mm ²	Cu-ETP	CuNiSi	stainless steel	16	2x95 - 2x150

CABLE SPACER WITH ONE SCREW FKL-02

For the mechanical and electrical connection of parallel running wires

KRUCH spacer clamps are used for the electrical and mechanical connection of parallel running wires. The clamps define the distance between the wires and reduce the pendular motion. The clamps are easy to install in a one tool operation, as it is not necessary to fix the screw while tightening the nut. The range of application varies from tramways up to high-speed lines. Available for wire distances 50mm, 70mm and 80mm.



Advantages

- Perfect electrical connection
- Light-weight
- Easy installation
- High mechanical properties
- No crimping required

Versions

Name	Wire Cross Section (mm ²)	Material	Comment
FKL-02.1.50mm	2x70 - 2x150	ECu-ETP	one screw
FKL-02.2.50mm	2x70 - 2x150	CuNiSi	one screw
FKL-02.1.70mm	2x70 - 2x150	ECu-ETP	one screw
FKL-02.2.70mm	2x70 - 2x150	CuNiSi	one screw
FKL-02.1.80mm	2x70 - 2x150	ECu-ETP	one screw
FKL-02.2.80mm	2x70 - 2x150	CuNiSi	one screw



SPACER CLAMP WITH TWO SCREWS FKL-03

For the mechanical and electrical connection of parallel running wires

KRUCH spacer clamps are used for the electrical and mechanical connection of parallel running wires. The clamps define the distance between the wires and reduce the pendular motion. The clamps are easy to install in a one tool operation, as it is not necessary to fix the screw while tightening the nut. Available for wire distances 50mm, 70mm and 80mm.



Advantages

- Perfect electrical connection
- Light-weight
- Easy installation
- High mechanical properties
- No crimping required



Versions

Name	Wire Cross Section (mm ²)	Material	Comment
FKL-03_150mm	2x70 - 2x150	ECu-ETP	two screws wire distance 150 mm
FKL-03_150mm	2x70 - 2x150	CuNiSi	two screws wire distance 150 mm

Other wire distances on request

FEEDER CLAMP FOR FOUR WIRES SKL-02

For feeding into double feeder systems

KRUCH feeder clamps are used for the electrical and mechanical connection of parallel running wires. The clamps define the distance between the wires and reduce the pendular motion. The clamps are easy to install in a one tool operation, as it is not necessary to fix the screw while tightening the nut. The range of application varies from tramways up to high-speed lines.

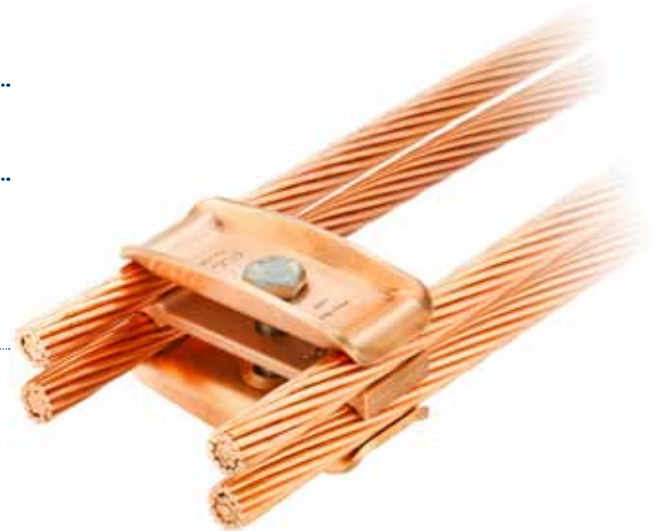


Advantages

- One screw fixes four wires
- Perfect electrical connection
- Low weight
- Very high mechanical properties
- No crimping required

Versions

Name	Wire Cross Sections (mm ²)	Material	Comment
SKL-02.1.80mm	4x 70 - 4x 150	ECu-ETP	one screw
SKL-02.2.80mm	4x 70 - 4x 150	CuNiSi	one screw



CATENARY HANGER WITH THIMBLE

With thimble, conducting or not conducting

The KRUCH catenary hanger with thimbles consists of two clamps HKL-01 and BZ-II hanger wire.

Advantages

- Low weight
- Long life-cycles
- Same clamp for contact wire and messenger wire
- Quick and easy installation

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Version	Clamp Material
FLH-01.1.10.N.X	10	25 - 150	non-conductive	ECu-ETP
FLH-01.1.10.SFX	10	25 - 150	current carrying with feedback loop	ECu-ETP
FLH-01.2.10.NFX	10	25 - 150	non-conductive	CuNiSi
FLH-01.2.10.SFX	10	25 - 150	current carrying with feedback loop	CuNiSi

X ... Please define hanger length when ordering



CATENARY HANGER WITHOUT THIMBLE

Adjustable and spark-free conducting

The KRUCH catenary hanger with thimbles consists of two clamps HKL-02 and BZ-II hanger wire.

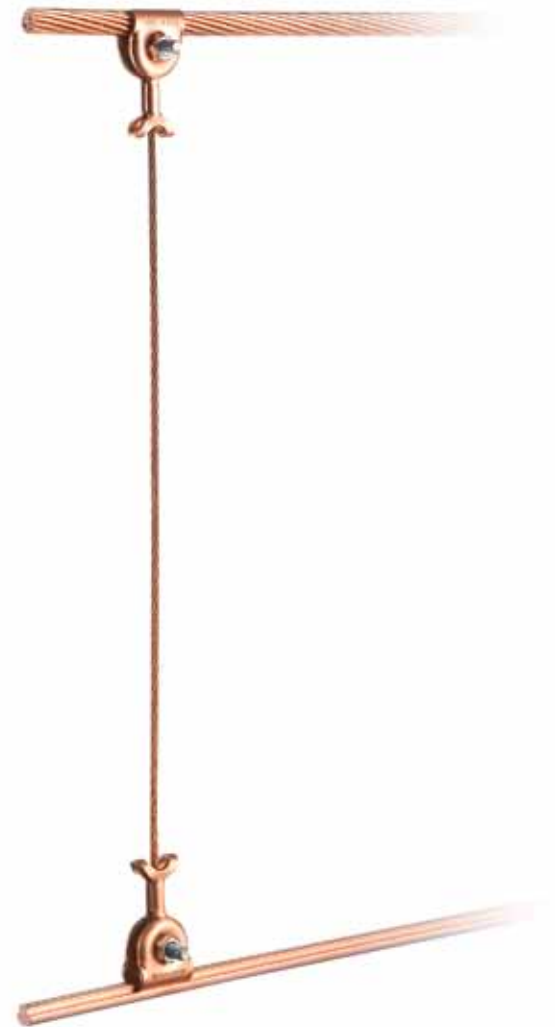
Advantages

- Adjustable length
- Ideal electrical connector
- Same clamp for contact wire and messenger wire
- Quick and easy installation

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Clamp Material
FLH-02.1.10.X	10	25 - 150	ECu-ETP
FLH-02.2.10.X	10	25 - 150	CuNiSi
FLH-02.1.12.X	12	25 - 150	ECu-ETP
FLH-02.2.12.X	12	25 - 150	CuNiSi
FLH-02.1.16.X	16	25 - 150	ECu-ETP
FLH-02.2.16.X	16	25 - 150	CuNiSi

X ... Please define hanger length when ordering



CATENARY HANGER FOR CONTACT WIRE CROSSINGS

For high-speed and conventional tracks

The KRUCH catenary hanger with thimbles consists of a hanger clamp HKL-02 on the messenger wire, a HKL-03 crossing clamp and BZ-II hanger wire.

Advantages

- Replaces heavy crossing rods
- Height is adjustable
- Serves as a hanger and a contact wire crossing
- Crossing angles up to 12°
- Enables very small crossing angles

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Version	Clamp Material
FLH-03.2.10.N.X	10	25 - 150	current-carrying	CuNiSi
FLH-03.2.10.SF.X	10	25 - 150	current-carrying with loop	CuNiSi
FLH-03.2.12.N.X	12	25 - 150	current-carrying	CuNiSi
FLH-03.2.12.SF.X	12	25 - 150	current-carrying with loop	CuNiSi
FLH-03.2.16.N.X	16	25 - 150	current-carrying	CuNiSi
FLH-03.2.16.SF.X	16	25 - 150	current-carrying with loop	CuNiSi

X ... Please define hanger length when ordering



CATENARY HANGER FOR DOUBLE MESSENGER WIRES

Adjustable, current carrying

The KRUCH catenary for double messenger wires consists of a hanger clamp HKL-04 on the messenger wire, a HKL-02 on the contact wire and BZ-II hanger wire.

Advantages

- Height continuously adjustable
- Permanent current-carrying
- Hanger wire is not crimped but gripped
- Long life endurance
- No pre-manufacturing required

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Hanger Length (mm)
FLH-04.10.500	10	2x95 - 2x150	150 - 500
FLH-04.10.1000	10	2x95 - 2x150	400 - 1000
FLH-04.10.1500	10	2x95 - 2x150	900 - 1500
FLH-04.10.2000	10	2x95 - 2x150	1400 - 2000
FLH-04.16.500	16	2x95 - 2x150	150 - 500
FLH-04.16.1000	16	2x95 - 2x150	400 - 1000
FLH-04.16.1500	16	2x95 - 2x150	900 - 1500
FLH-04.16.2000	16	2x95 - 2x150	1400 - 2000



INSULATING GLIDING HANGER WITH ROLLER

For systems with low heights

The insulating gliding hanger by KRUCH is delivered in two versions: for insulating messenger wires as well as for conducting messenger wires. The hanger consists of reliable standard clamp components as well as proven Teflon wire.

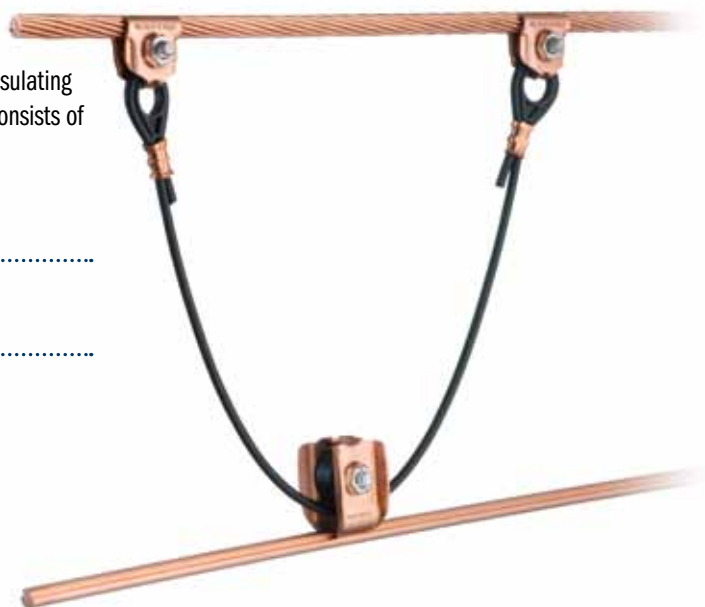
Advantages

- For very low systems heights down to 100mm, e.g. under bridges
- Quick and easy installation
- Life span >5.000.000 according to EN50119
- Height continuously adjustable
- Very light, no hard spot for pantographs
- Insulating for applications in tunnels, under bridges etc.

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Version	Clamp Material
FLH-05.2.28.BT.X	28	25 - 150	for blank messenger wires	CuNiSi
FLH-06.2.28.IT.X	28	25 - 150	for insulating messenger wires	CuNiSi

X ... Please define system height when ordering



HANGER FOR SETRA DATA CABLES

Support for data cables in traffic systems

The insulating hanger for Setra data cables replaces previously used complex hangers consisting of three clamps and an insulator ring. The high pull-out forces of the hanger allows a wide range of applications in traffic and catenary systems.

Advantages

- Replaces complex and heavy bracket solution
- Quick and easy installation
- Very light-weight
- Insulating for use in traffic and catenary solutions

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Clamp Material
FLH-07.1.28.X	28	25 - 150	ECu-ETP
FLH-07.2.28.X	28	25 - 150	CuNiSi

X ... Please define system height when ordering



ELECTRICAL FEEDER

For the electrical connection of contact wire and messenger wire

The electrical feeder is delivered complete and pre-manufactured.

Advantages

- No pressing on building site required
- Wide range of applications (feeding, earthing, etc.)
- Ideal electrical connector
- Quick and easy installation

Versions

Name	Hanger Wire (mm ²)	Messenger Wire (mm ²)	Clamp Material
SVH-01.1.X.Y	28	25 - 150	ECu-ETP
SVH-01.2.X.Y	28	25 - 150	CuNiSi

X ... Please define system height when ordering
 Y ... Please provide wire diameter when ordering



THIMBLES

Available in different materials – depending on application

Thimbles protect wires from abbreviation and ensure that the correct bending radius is applied.

Versions

Name	Material	Appl. Wire Cross Sections (mm ²)	Shape
SKU-01.5.10-12	stainless steel	10 - 12	open
SKU-01.5.16	stainless steel	16	open
SKU-01.5.25-35	stainless steel	25 - 35	open
SKU-01.1.25-35	Cu-ETP	25 - 35	open
SKU-02.4.10-12	plastic PA6	10 - 12	closed
SKU-02.4.16-25	plastic PA6	16 - 25	closed



CRIMPING AND PRESSING SLEEVES

For the connection of two wires with identical diameters

Versions

Name	Material	Wire Diameter (mm)	Dimensions (mm)
SPH-01.1.10	Cu-ETP	4,5-5	5x 20
SPH-01.1.16	Cu-ETP	6-7	7x 20
SPH-01.5.10	stainless steel	4-4,5	5x 33
SPH-01.6.16	galvanized steel	6-6,5	6,5x 40
SPH-01.6.16	galvanized steel	8-8,5	8,5x 60



CABLE LUGS

Cable lugs according to DIN 60228 and cable lugs according to DIN 46235

Ideal material and crimping properties due to annealed primary material. Precise manufacturing and easy detectable markings ease the use of these high-precision lugs.



Advantages

- Adapted diameters to fit highly flexible wires
- Press area is marked
- Material according to EN 13600
- Straight or 90° angle
- Tin-plated

Versions

Type	Wire Diameter (mm ²)	Connecting Bolt	Comment
PKS	6 - 300	M5 - M20	also available without tin-plating
RKS	10 - 300	M5 - M20	available with inspection holes

TOOLS

Wire cutter for hanger wires

- Suitable for wires up to 12mm²
- Ideal cutting results due to special cutting technique
- Prevents the wire from unwinding after cutting
- Cut wire can therefore easier be used



Fourfold ratched wrench

- Four sizes on one tool
- Compact and light
- Sizes 10mm, 13mm, 17mm and 19mm
- Hexagonal bolt for M6, M8, M10 and M12



TENSIONING SYSTEM 1:3

Automatic tensioning device for common or separated tensioning

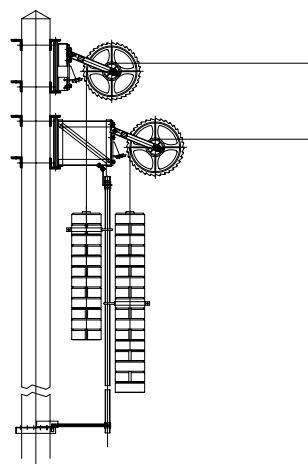
Wheel tensioning systems are time-tested and have many advantages compared to other tensioning systems. The improved system by KRUCH has been used for 15 years on conventional and high-speed tracks and has proven its reliability.

Advantages

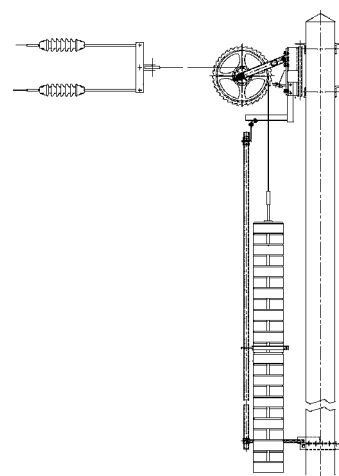
- Best life-cycle-costs (practically no maintenance)
- Best function (automatic self-aligning)
- Best safety (safety wheel catches weight)
- Highest accuracy
- Longest section length achievable
- Reduced skewing of the hangers
- Great versatility (nearly all catenaries)

Technical Specifications

- Life endurance: >60 years
- Weight: 50,5kg - 66,5kg
- Tensioning force: max. 23kN
- Tensioning length: ~ 900m
- Material: aluminium casting, stainless steel, galvanized-steel
- Cables: high flexible stainless-steel
- Tension hysteresis <3%
- Catenary-cable and contact-wire are kept exactly one above the other
- Separated or common tensioning



seperate tensioning



common tensioning

LED RAIL SIGNALS

Complete track signals, station signals and shunt signals

Designed for 250km/h, equipped with the best light technology (Power-LED, SIL-4) and executed as a modular system - this makes the KRUCH signal a reliable investment for all rail operators. The modular system offers a variety of possibilities to suit every operator's specific specifications.

For more than a decade KRUCH has been producing high-speed signals on automated production lines for the Austrian Federal Railways ÖBB and other rail operators.

Advantages

- Modular concept
- LED spots according to SIL-4
- Steel construction according to EN1090-cl3
- Signal shield black anodized
- Galvanized steel mast
- Life endurance +30 years
- Minimal maintenance (LED's)
- No maintenance (mast)

Delivery options

Components

- Signal mast
- Mast accessories
- Signal shields
- LED spots

Pre mounted, ready for installation

- Complete signal masts, wired
- Signal shields with wired LED spots



SAFEPLUG

Rail bonding system for one-sided as well as double-sided electrical connections to rails

During the development of SafePlug® it was a key concern to find a solution with the lowest possible transfer resistance. To reach this, the corrosion between cable lug, bushing and rail had to be reduced to a minimum. The patented double-bushing system as well as the use of high-strength bolts helped achieve this goal, as the penetration of water even during large temperature fluctuations has become impossible.

Therewith SafePlug® bonding systems fulfil the highest possible standards required by rail operators.



Advantages

- Unique, high strength, acid proof, stainless steel bolts
- High torque, better performance in changing ambient temperatures
- Silver plated contact surfaces
- Double contact surfaces
- Simple to install - no special training needed
- Can be installed in any kind of weather
- Installation with standard hydraulic tool

Versions

Name	Size	Torque	Version
SafePlug M10 Single	M10	70 Nm	one-sided
SafePlug M10 Twin	M10	70 Nm	double-sided
SafePlug M12 Single	M12	120 Nm	one-sided
SafePlug M12 Twin	M12	120 Nm	double-sided



EARTHING CONNECTORS

Custom made earthing and feeder connectors

The company KRUCH is equipped with a professional assembly line for electrical connectors with crimped cable lugs. Our customized production produces the exact connector wire you need. The cables are cut, crimped, bundled, labelled and then delivered directly to your building site.

All types of cable lugs can be processed - DIN cable lugs as well as other crimped types. Due to the modern crimping and cutting tools used, KRUCH can offer electrical wiring and connectors at very competitive prices - it is well worth asking us for a quote!

Current references: ARGE 16,7 Hz Transtec Gotthard



Advantages

- Free choice of wires
- Free choice of cable lugs
- Wires from 10mm² up to 300mm²
- Connectors, ready to install, are delivered directly to your building site

Temporary Rail Bonds

For safety on building sites and blocked tracks

The Safetrack short circuit device is a highly reliable and mobile device to short circuit the track circuit in order to simulate a "stop" position. The unique design cannot be loosened accidentally and is suitable for almost any rail profile. The pliers can easily be fixed to the rails and provide an ideal electrical connection. The bright orange colour is an additional safety factor.

Each maintenance team should carry along this safety device.



WELDING AND WORKING TENTS

Professional working tents for perfect protection when working outdoors

KRUCH working tents have been designed, tested and manufactured for working outdoors in any weather conditions. The materials used are non-conductive and flame retardant, all poles are rubber covered.

Advantages

- Quick and easy tent erection
- Extremely robust materials
- 100% waterproof
- Maximum natural light ingress
- Different versions and finishes for all applications

Versions

Model	Description	Material	Sizes
RAIL	working and welding tents for railway applications	PVC and PVC translucent	2,5x2,5x2,1m
WELD	robust welding tents with ideal glare shield	PVC and PVC translucent	2,1x2,1x2,1m 2,5x2,5x2,1m 3,0x3,0x2,1m
TRANSLUCENT	working tent with maximum light ingress	PVC and PVC translucent	1,5x1,5x2,1m 1,8x1,8x2,1m 2,1x2,1x2,1m 2,5x2,5x2,1m 2,7x2,7x2,1m 3,0x3,0x2,1m
LIGHT	well-priced working tents in competitive quality	polyester-nylon	1,8x1,8x2,1m 2,1x2,1x2,1, 2,5x2,5x2,1m 2,7x2,7x2,1m 3,0x3,0x2,1m
ECO	well-priced working tents in a very simple finish	polyester	1,8x1,8x2,1m



RAIL



WELD



TRANSLUCENT



LIGHT

GAS BOTTLE HEATERS

Professional freezing protection for gas bottles

KRUCH gas bottle heaters function as a reliable freezing protection for gas bottles in all weather conditions and for different gas bottle sizes.

Advantage

Easy handling

- Quick and easy to mount
- Light weight
- Available in three sizes
- Fits all gas bottles

Convincing quality

- Robust silicon cover
- Double insulation
- Thermostat controlled
- Thermal cut-out

Increased working quality

- No freezing of liquid gas
- No working interruptions
- Working with constant gas pressure
- Great work safety

Less costs

- Increased working speed
- Use of complete bottle content
- Less gas bottle are required



Versions

Name	Dimensions (mm)	Power	Voltage	Safety class
GFW-01_500W	600x250	500 W	230 VAC	IP64
GFW-01_1000W	860x330	1.000 W	230 VAC	IP64
GFW-01_1500W	910x460	1.500 W	230 VAC	IP64

LOAD-CYCLE TESTS FOR CATENARY HANGERS

10-Hertz-testing machine for fatigue tests

This new fatigue testing device for catenary hangers reaches testing cycles of up to 10 Hertz. It allows unmatched possibilities to test and evaluate wire connections in overhead contact lines. Due to the high frequency it is possible quickly predict the life span of a hanger connection. The device is ideal to analyse hanger connections for high-speed lines.

Features

- Variable test frequency up to 10Hz
- Variable force in the specimen
- Variable compression of the hanger

KRUCH offers a high-speed testing service – contact us today.



WITHDRAWAL TESTS FOR CATENARY HANGERS

Tensile and compression testing in KRUCH's laboratory

Tensile and compression tests are done during our R&D work. We also offer them as a service – contact us today.



ENERGY SIMULATION SERVICE FOR DC-NETWORKS

Optimising tram and trolley bus networks

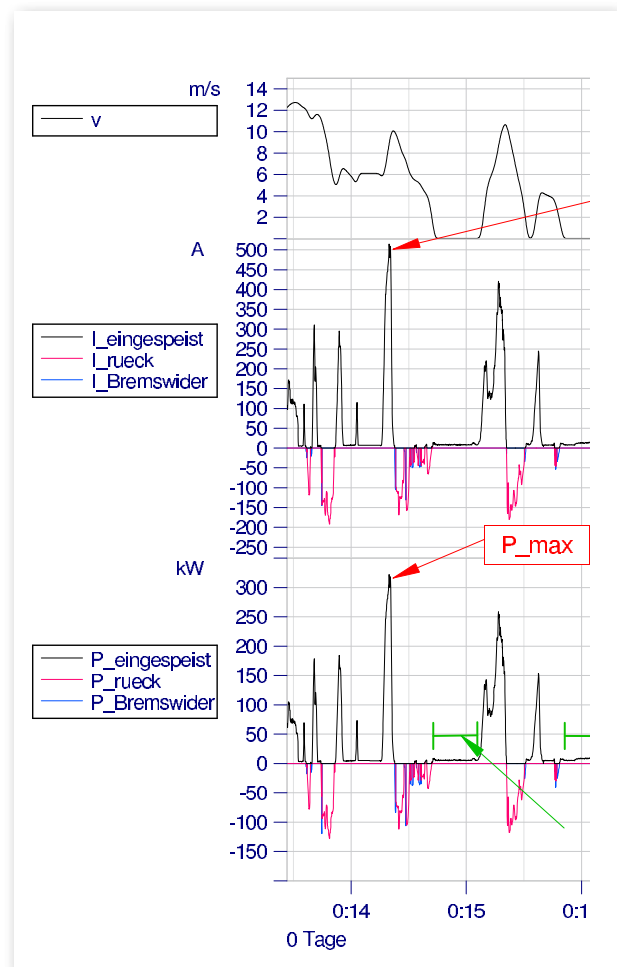
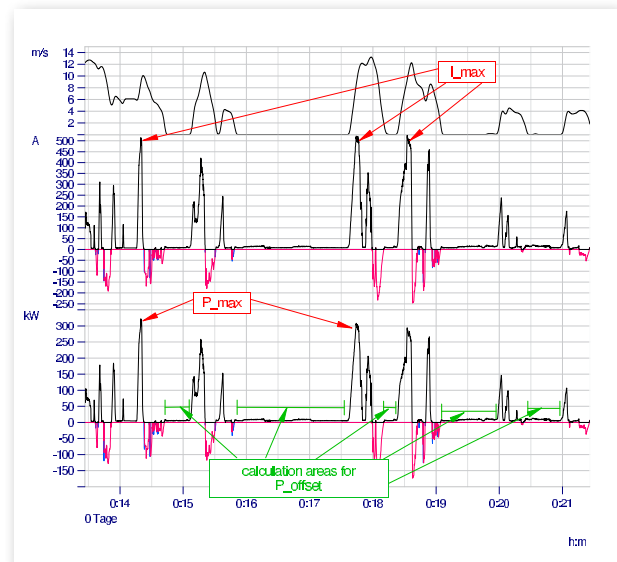
Since 2010 KRUCH offers a network simulation service for DC-networks, which can be used for tram and trolley bus networks. Herewith following can be achieved:

- Precise determination of all energy users in the network
- High-lighting possible energy saving methods
- Energy consumption calculation for new rolling stock before purchase
- Increasing the network reliability by calculating the actual maximum load
- Simulation of short circuits at any given point in the network
- Realisation of customized simulations for specific customer interests

Project process

- Preliminary introduction meeting
- Offer in accordance to network size und customer specific interests
- Measurement of traction vehicles
- Measurement of substations
- Implementation of all data into the simulation system
- Verification: Simulated data vs. measured data
- Network evaluation

Please contact us for more information!



CONTACT WIRE MEASUREMENT DEVICE

Measurement device to determine the contact wire position

This contact-free measurement system determines the vertical and horizontal position of contact wires by means of LASER distance measurement. Depending on device version the reading is displayed optically or digitally. The contact wire height reading is displayed, the horizontal position can be read on the bar.

Advantages

- Easy handling
- Robust finish
- Suitable for use on building sites
- Measurement and reading by one person
- Different versions with accessories available

Versions

Model	Description
FM 3	device with mounted laser measurement device
FM 1.4	device with optical display and integrated laser measurement device
FM 5	device with integrated laser measurement device, digital finder, colour display, tilt sensor



FM 3



FM 1.4



FM 5

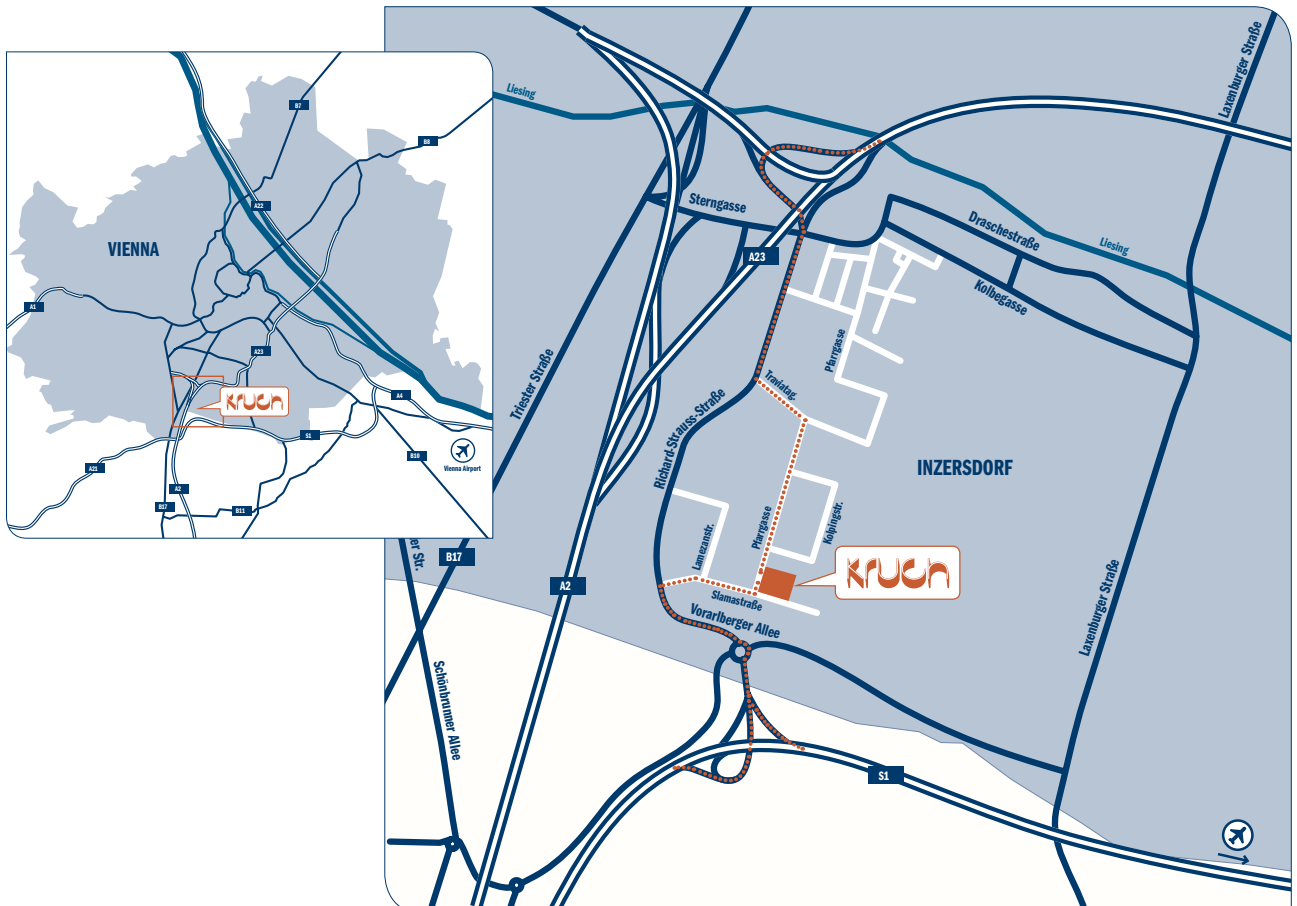
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GENERAL TERMS AND CONDITIONS OF SALE AND DELIVERY

of Messrs. Ing. Karl und Albert KRUCH GmbH & Co KG
(hereinafter referred to as KRUCH),
1230 Vienna, Pfarrgasse 87
FN [Business Register Number] 8084 p
of the Business Register of Commercial Court Vienna

1. Applicability

These Terms and Conditions of Sale and Delivery shall apply to all, including future, contracts, deliveries and other services, unless they are amended or excluded upon our express written consent. We expressly object to the purchaser's terms and conditions of purchase. They shall not be accepted either if we do not expressly object to them again after receipt. Our terms and conditions shall definitely be deemed accepted if and when our delivery or service is received.

These Terms and Conditions of Sale and Delivery shall only apply to customers who are consumers as defined in the Austrian Consumer Protection Act [Konsumentenschutzgesetz/KSchG] to the extent that mandatory statutory provisions do not provide otherwise.

Modifications of or amendments to these Terms and Conditions of Sale and Delivery shall be agreed in writing in order to be valid.

2. Offers and conclusion of contracts

Offers and cost estimates shall be non-binding.

A contract between KRUCH and the customer shall be deemed concluded after receipt of the purchase order by KRUCH sending a written acknowledgment of order to the customer or by delivery of the goods or provision of the service.

KRUCH shall be free to reject purchase orders without giving any reasons and without having to reimburse any expenses incurred by or to compensate the customer for any damage suffered.

KRUCH is entitled to only accept parts of purchase orders placed by the customer if delivery/rendering of that/those part(s) is acceptable for the customer, and KRUCH will notify the customer thereof in the acknowledgement of order. In the case of delivery/rendering of part(s) the customer will only have to pay the price for the goods delivered/services rendered.

3. Information; Prices

Any and all information, including but not limited to prices, quantities, descriptions/specifications, illustrations, data, etc. shall be non-binding and subject to errors, including printing and typographical errors, if any.

All prices stated are based on the current cost of material, energy and wages and, unless stated otherwise, they shall be deemed net prices ex works exclusive of statutory value added tax and shipping, packaging and COD costs.

If the order is executed quite some time after it was placed or if a master agreement on regular supply or processing exists and if the prices change during such period, in particular due to an increase in taxes, charges, customs duties, raw material prices, wages subject to collective bargaining agreements or energy costs, KRUCH shall be entitled to raise the prices accordingly at the time of delivery.

Additional costs resulting from unsuitable materials provided by the customer will be charged separately by us.

4. Delivery periods; Delivery

Delivery periods advised shall be non-binding, however, KRUCH shall observe the same as precisely as possible subject to the following provisions.

A delivery period advised shall commence on the date of our acknowledgement of order, provided that all commercial and technical issues have been clarified by then and that the customer has fulfilled all of his duties, e.g. provision of the necessary official certificates or permits or a down payment. Otherwise the advised delivery period shall only commence after all prerequisites stated above have been fulfilled.

Observance of the delivery period shall also be subject to the condition that we are supplied correctly and timely. If a delay is to be expected, KRUCH shall notify the customer thereof as soon as possible.

An advised delivery period shall be deemed met if by the end of that period the delivery item has left our works or if the purchaser has been notified that the goods are ready for shipping.

KRUCH shall be entitled to effect delivery by instalments, where reasonable. Short shipments or excess deliveries of up to 10% of the agreed quantity shall be permitted.

5. Shipping; Passing of risks; Acceptance

The contracts concluded with KRUCH shall be deemed fulfilled by delivery of the goods on the premises or by delivery to the carrier.

Unless agreed otherwise KRUCH shall determine the transport route and the means of transport without any responsibility for choosing the most economical or fastest route.

The risk of damage to or loss of goods shall pass upon delivery of the goods to the purchaser or carrier but in any case when the goods leave KRUCH's premises, even if the delivery is effected to the purchaser freight paid. The delivered goods shall be checked for transport damage immediately upon delivery and any damage noticed shall be documented. KRUCH shall reasonably support the purchaser in asserting claims vis-à-vis the carrier, if any.

If the goods are ready for shipping and if shipping or acceptance is delayed for reasons which KRUCH has not caused by at least gross negligence, the risk shall pass to the purchaser upon receipt of the notice of readiness for shipping.

6. Terms of payment

The purchase price shall be paid within the agreed payment period without any deduction unless expressly agreed otherwise in writing. If the payment period is not observed, the purchaser shall pay default interest at a rate of 8% p.a. above the base interest rate unless KRUCH suffers more damage, e.g. because we have to take out a loan, in which case the purchaser shall compensate us for the same.

We reserve the right to effect delivery only against down payment or advance payment of the total price or COD.

If circumstances arise which reduce the purchaser's credit standing, we shall be entitled to rescind the contract if the purchaser is not willing to furnish sufficient collateral security or refuses to pay the total price in advance. In that case the purchaser shall have no claims vis-à-vis KRUCH.

7. Setoff; Right to withhold payment

The purchaser shall only be entitled to offset counterclaims alleged by him against claims of ours if his counterclaim has been ascertained by court in a non-appealable manner, accepted by KRUCH or is legally related to KRUCH's claim.

The purchaser shall, in principle, have no right to withhold payment unless mandatory statutory provisions provide for such a right.

8. Retention of title

KRUCH shall retain unrestricted title to delivered goods until full payment of the gross purchase price plus all default interest, ancillary charges and costs of legal action, if any. The purchaser shall not forward or pledge goods which have not been fully paid for yet to third parties without KRUCH's express prior written consent.

If goods are attached by a creditor of the purchaser or if insolvency proceedings are opened over the purchaser's assets, the purchaser shall be obliged to immediately notify KRUCH thereof in writing and include all relevant data. In the case of any violation of the obligations stated in this paragraph the purchaser shall indemnify and hold harmless KRUCH from and against all losses and expenses caused by such violation.

9. Packaging; Return delivery of refined goods

In general, the goods to be refined by KRUCH shall be delivered and returned in the customer's own packaging or transport containers.

If the purchaser does not provide suitable packaging material for return delivery, KRUCH shall be entitled to properly pack the goods for return delivery at the purchaser's cost.

10. Warranty

The purchaser shall immediately inspect the goods handed over/delivered or services rendered to him for defects and notify any defects in writing within a reasonable period of five (5) working days; otherwise all warranty claims, claims for damages on account of such defect and on account of mistake shall be lost. In the case of justified notifications of defects KRUCH shall at its option be entitled to repair the defects by improvement or replacement. If repair of defects is impossible or unreasonable or if KRUCH is unable to deliver equivalent goods that are free from defects/provide sound services, the purchaser shall be entitled to a price reduction or, if the defects are not merely minor defects, to cancel the contract. The statutory provisions of the Austrian General Civil Code [ABGB] and of the KSchG shall apply to purchasers who are consumers as defined in the KSchG.

11. Damages and liability

KRUCH shall only be liable for direct damage (except for personal injuries), including damage due to performance or non-performance of the contract, torts or omissions or defects if caused by gross negligence or wilful intent. Any liability of KRUCH for indirect damage, incidental damage or other damage shall be excluded in any case.

Unless otherwise provided by mandatory statutory provisions any claims for damages of the purchaser shall be limited to the order value.

Product liability claims shall not be affected hereby.

12. Collection, processing and use of personal data of the purchaser

The purchaser agrees that data on him stated in his purchase order/in the purchase contract may be used, stored and processed for the purposes of data processing, bookkeeping and customer documentation. Such data will exclusively be used to fulfil statutory requirements and for order and payment processing. Such data may only be passed on to third parties if absolutely necessary to perform the contract, if the purchaser has given his consent or if disclosure is required by mandatory statutory provisions.

The purchaser agrees to be informed about current products and services of KRUCH via e-mail; this consent may be revoked by the purchaser in writing at any time.

13. Place of performance; Place of jurisdiction

The place of performance for delivery and payment shall be KRUCH's registered office; the place of jurisdiction for all disputes shall be the court in Vienna having jurisdiction over commercial matters, however, we may also resort to any other court having jurisdiction over the purchaser. Austrian substantive law shall be applicable and the conflict of laws rules and UN Sales Law shall be excluded.

14. Consumer transactions

If a consumer transaction as defined in the KSchG is concluded on the basis of these GTC, the GTC shall apply in accordance with the provisions of the KSchG and ABGB. If any provisions of these GTC are in conflict with mandatory provisions of the KSchG, the relevant statutory consumer protection provisions shall apply; the validity of the remaining provisions of these GTC shall not be affected thereby.

15. Foreign customers

The provisions of these GTC shall, in principle, apply to customers whose purchase order is to be exported from Austria to another country, however, subject to the following conditions:

- the customer shall state his VAT number on the purchase order; if he fails to do so or if no taxation treaty exists KRUCH will invoice Austrian VAT and the customer shall pay the invoice amount including VAT;
- the customer shall bear all costs, taxes, charges and expenses related to export from Austria, transportation and import into the country of destination;
- in the case of shipments to be cleared by customs, the customer shall be solely responsible for customs clearance and shall also bear the related costs;
- if a certification is required for products purchased by the customer, the customer shall be solely responsible for obtaining the certificate and shall also bear the related costs. If necessary, KRUCH shall provide the customer with any product data and information that may be required to obtain the certificate against reimbursement of the additional expenses incurred;
- if an export licence is required for exporting goods, the customer shall obtain such licence at his cost or reimburse KRUCH the costs and expenses incurred in connection therewith;
- delivery to the customer and passing of risks shall be EXW (ex works) in accordance with the Incoterms 2010.

16. Severability clause

If any provisions of the contract with the purchaser including these General Terms and Conditions are or become ineffective in whole or in part, the validity of the remaining provisions shall not be affected thereby. The regulation which is ineffective in whole or in part shall be replaced by a regulation which comes as close as possible to the commercial purpose of the ineffective regulation.

Revised: 9/2012

CERTIFICATES

1999	ISO 9001	quality management system
2004	TransQ	transport utilities in Scandinavia
2004	KEMA	supplier for PRORAIL Netherlands
2008	ISO 14001	environment-protection management system
2008	OHSAS 18001	labour-safety management system
2010	DIN EN 15085-2	welding work on rolling stock
2011	DIN EN 1090-2	welding steel-structures, execution class 3
2011	DIN EN 1090-3	welding steel-structures, execution class 3



