



Power Cables Offshore Service Products

Modular based service agreement including guaranteed mobilization time for high-voltage cable systems adapted to your needs.

A Service level agreement (SLA) gives you a guarantee that your cable service is delivered exactly as you would expect.



Minimize revenue losses in case of a fault

High preparedness with NKT's cable services – ensuring efficient repair in case of a fault

Cable failure rarely occurs. If it does, the main reasons are often external damage, such as anchor strikes or dragging fishing nets. To ensure a fast and cost-effective repair, it is important to plan for future support and spare parts management. By using NKT's cable services, you can reduce downtime and associated revenue losses in the event of a cable fault.

Your cable system supplies power to thousands, maybe even millions of people. A systematic approach to service is a cost-effective way to reduce downtime during a potential cable fault. A cable fault may never occur, but if it does – then NKT can be prepared to help you immediately.

Health and safety is always a primary concern in our service delivery and we offer a complete service portfolio, including several options of service support packages based on your specific needs. Let us take care of your cable system, so that you can focus on your core business throughout the life cycle of your cables.

Service level agreements, adapted to your needs

Signing a service level agreement (SLA) with NKT is the safest way to minimize cable downtime in the event of cable damage. SLA customers are prioritized and guaranteed agreed service performance under all circumstances.

The agreement ensures that maintenance and repair services are carried out in a rapid, safe and cost effective manner. It is designed as a framework for your service

activities and is flexible in terms of the extent of planned and unplanned service.

You can customize an SLA so that it contains some or all of our cable services. The agreement stipulates precisely what you can expect from our service delivery. Every component of a service is quantified by set parameters so that you can measure and follow up that we deliver according to agreement.

Fees, rates, scope of support, service provision and pre-agreed contracts are defined under a customer-specific framework. The SLA specifies the extent of each service, the frequency of service provision, the time to service provision and the resources allocated to perform service.

NKT's SLA is available for both onshore and offshore cable systems, worldwide.



Choose from a wide range of offerings for planned and unplanned service. The scope of each service is defined in the service level agreement (SLA).

Proper preparations shorten time to repair

Spare part management

If a cable problem should occur, it is important to know that all the necessary spare parts are readily available.

Every power cable system requires spare parts during repairs. Some parts are subject to ageing, causing their function to deteriorate over time, including tape and rubber parts.

NKT's Spare part management service provides you with a structured method to ensure spare parts are available at all times.

The NKT service team will inspect your spare part stock to make sure it is sufficient to carry out cable

repair, focusing mainly on cables, joints and cable accessories. If required, NKT will provide storage, efficiently maintained and fully allocated for each customer.

A yearly report will be submitted to you following inspection including recommendations and prioritizations for corrective action, for example the replacement of expired spare parts and consumables.

Depending on your preference, you can choose to carry out recommended replacements of parts yourself, or hand over this task to NKT.

Repair preparedness

Preparation is key to successful repair work. You may have all the necessary equipment, vessel and parts under control. But if drawings for equipment layout on board are missing, or if the personnel do not hold the necessary certificates, repairs will be delayed at best.

NKT's Repair preparedness plan outlines different possible scenarios. Is the cable located in deep or shallow water? Does it run close to or crossing a gas line? Factors such as these affect the choice of vessel, work method, procedures and what permits are required.

At landfalls, permits to dig may be required. Who issues a permit in the relevant country? How long will it take? The better the information, the easier to get a permit fast. NKT will assist you in applying for the necessary permits and make sure work is carried out in line with your safety routines.

The plan will be reviewed yearly, based on technical development, market, environmental and asset conditions together with you in a cable repair preparedness workshop.

Monitoring solutions

Monitoring a cable system is all about optimizing availability. You need to be able to optimize the load depending on changing conditions and, whenever possible, increase the usable capacity.

It must be possible to check the cable's health to enable effective maintenance strategies. Any risk of cable damage must be identified and, if possible, prevented so that you can reduce your insurance fees. NKT can help you with all this.

NKT uses leading continuous monitoring systems, including LIOS, together with complementary

measurement systems. We can therefore ensure the highest cable system availability, regardless of the specific customer conditions.

Measurement data is combined with a vessel-tracking system with configurable alarms for the cable route. This allows you to monitor marine traffic close to the cable and, in case of cable damage, playback the recorded traffic. Data is transmitted via a fiber-optic cable placed inside or bundled with the power cable.

NKT provides regular inspection of your spare part stock, report status, re-supply storage and replace parts if requested. Roles, responsibilities and procedures are defined in advance to take effective action if a cable fault should occur.



Guaranteed expert and equipment availability

Resources on call

The Resources on call service ensures that NKT experts are always available for you in case of a cable problem. At fixed daily rates, you are offered the peace of mind of knowing that there is no price negotiating necessary to add to the stress of downtime and loss of revenue strikes.

You are guaranteed telephone contact with one of our cable engineers within 30 minutes. Depending on the problem, initial fault analysis will be carried out after taking part of the customer's fault reporting over the phone. The fault report forms the basis of our evaluation of the problem and of the preparation work for fault detection on site.

The mobilization of a repair operation can begin immediately after the call, if needed. NKT's preparedness covers onsite support, fault location, emergency cut and seal as well as a jointing team with all its necessary repair equipment and tools.

Guaranteed response times for on-call, fault location, cut and seal, and repair ensures that the right resources are always available at the right time.

Marine resource plan

NKT provides marine operation contracts to reduce the time from outage to mobilizing repairs. These contracts, which are commercially prenegotiated, provide a basic description of the service scope, outlining a generic time schedule.

Without the security of a marine resource plan, vessel availability, market conditions or site elements at the actual repair site may jeopardize the opportunity to obtain e.g. the most suitable ship or other marine platform required for repair work.

As a leading cable installation provider, NKT keeps an extensive network of ship owners and brokers.

We can, on short notice, select the right vessel for a specific task. We then transfer the vessel to Rotterdam and mobilize in a total guaranteed time of appr. 10 days (read more on page 10-11).

We take full responsibility for the equipment on board, for measurements and for the acquisition of necessary safety permits for vessel, personnel and cable.

NKT will provide information from marine brokers to support and enhance the yearly preparedness planning updates. Marine surveys can be carried out to gather the information required to keep the preparedness plans and documentation updated.

Enjoy the peace of mind of knowing that NKT's cable experts will be available if a problem occurs. Thanks to marine resource planning, the right vessel with the right equipment including an ROV (remotely operated vehicle) will always be available for repair work at sea.



The NKT Victoria is NKT 's innovative and beachable vessel, designed specifically for cable installation and service. The vessel ensures efficient and precise offshore operation, while providing maximum safety for crew and cables.





Guaranteed mobilization time – Part of Marine resource plan

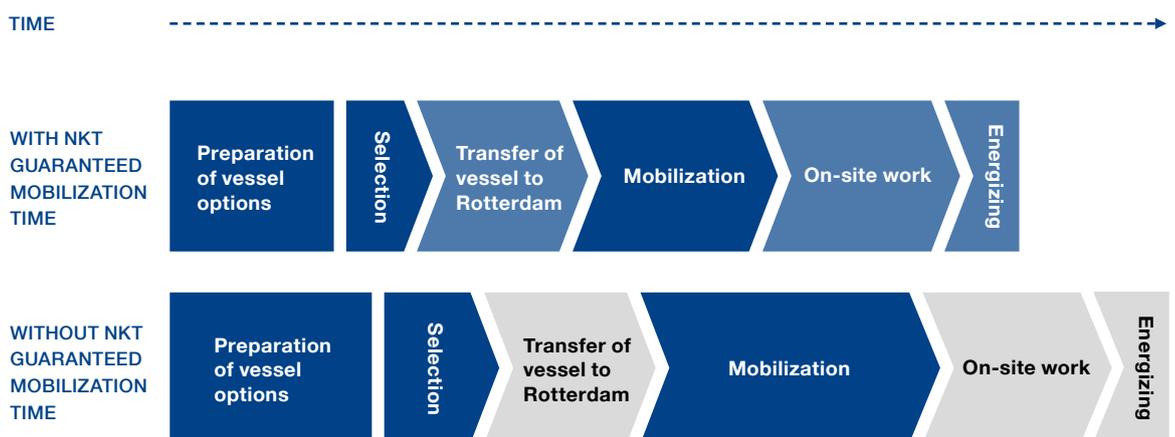
No more uncertainty

Guaranteed mobilization time is a new solution included in the Marine resource plan, which guarantees a maximum mobilization time of appr. 10 days.

Selecting the right vessel and staffing it with the right people and tools at the right time is a challenging task, and a common cause of delay in cable-repair projects.

NKT has partnership agreements with multiple vessel suppliers, which allows us to meet any customer needs or external conditions that may occur during repair work.

You can trust the cable-repair vessel is perfectly optimized and ready in 10 days – and that your cable system will be back in operation on schedule.



No more uncertainty. With the guaranteed mobilization time, the predictability and time to start the repair on site will be significantly improved.

Vessel mobilization – How it's done



1. Selecting the right vessel or barge

Together with our customer, we select the right vessel for each repair operation. Choosing the most suitable vessel for every step of the operation – e.g. fault location, de-burial, repair and cable laying/overboarding – maximizes cost effectiveness and operational efficiency. NKT has partnership agreements for multiple vessels of different sizes and capabilities. The portfolio also includes our own state-of-the-art, purpose-built cable-laying vessel NKT Victoria. It is the most environmentally friendly vessel of its kind in the market today, minimizing CO₂ emissions during repair operations.



2. Selecting the best mobilization site

NKT normally uses Rotterdam as its mobilization harbor. The port is ideal for fast mobilization due to short transit times. Rotterdam is located close to many export and interconnecting cables, providing ideal market proximity. Purpose-built cable-handling equipment is stored at quay side, staff is available all year round, and it is easy to store cables and spare parts.



3. Selecting the right personnel and resources

External mobilization personnel (e.g. welders) and all the equipment needed (e.g. ROV) is available for each repair operation. NKT has over 100 certified in-house installers, ready to go to site on short notice.



4. Selecting the critical cable-handling equipment

All the necessary cable-handling equipment is provided by NKT, including turntable and drive unit, loading tower, tensioner, winch, chutes, etc. The equipment is quickly and easily loaded onto the selected vessel at the mobilization site.

Skilled field experts, Ph.D. technology specialists and high-tech ROV equipment combine to make it possible to accurately pinpoint a cable fault. NKT's cable jointers are trained specialists who have all the certificates and licenses required to carry out cable jointing and termination works.



Efficient methods to locate and repair cable faults

Fault location

Cable downtime can be costly – in the form of loss of income, penalties and customer badwill. But spare cables are also expensive, limited resources. Therefore, accurate fault location is of crucial importance to ensure cost efficient repairing using a minimum length of spare cable.

Fault location is a complex undertaking, especially off shore. It requires well-timed logistics including timing of different phases of the operation and the availability of vessels.

NKT operates service vans that are fully equipped to make all the necessary field measurements. All components have been tested and calibrated to

work as a complete system, reducing error sources to an absolute minimum.

In addition to high-tech equipment, a successful fault location requires skilled and experienced specialists. Backed by its technical department, NKT's service engineers use and combine different methods to find and locate the section of a cable where a fault has occurred.

Depending on distance and signals, measurements from the cable ends will give a first indication what part of the cable the fault is located in. Then our ROV (Remotely Operated Vehicle) is sent out to identify the location of the fault with high accuracy.

Cable jointing and termination

Cable jointing is a craft that requires solid experience, whether it is about extruded or mass impregnated (MI) cables.

NKT's jointing personnel are sourced from our inhouse installation department, which means they spend all their time on jointing and termination work.

We deliver complete jointing solutions, which aside from the expertise of our personnel, also comprises all the equipment necessary for jointing.

The equipment includes, for example, jointing houses and our own-designed paper-lapping machine, which is used when jointing MI cables.

As a provider of complete solutions, NKT offers to assume total responsibility for the whole jointing and termination process.

Using pre-tested and sea-certified equipment only, NKT ensures that all equipment is fully functional when it is loaded on board your vessel – ensuring a time-efficient repair operation.

**Turnkey repair
– from initial fault
location to final
documentation**

NKT can offer you a turnkey repair operation, regardless of cable location or voltage levels.

NKT can provide you with a turnkey repair operation. We will handle all interfaces between owners of the different services, so in effect, you will have one point of contact at NKT.

Our turnkey service covers everything from initial fault location and project management for the repair work, to providing final documentation.

By selecting our turnkey repair operation, you are relieved of the risk and administration involved in managing several contracts. You are also guaranteed that there will be

seamlessness between the different technical systems used in each service.

NKT works according to the highest HSE requirements. Every operation begins by preparing a health, safety and environment (HSE) plan which must be approved, and followed, by the customer.

Repairs might be needed in many different environments, for example, repair work in a tunnel differs a lot from repair work in an offshore wind farm.

NKT has extensive experience from carrying out repair work at different types of location. We will successfully deliver your turnkey solution, whatever the cable location.

Service highlights:

- All NKT cable service included
- All cable locations and voltage levels covered
- Certified NKT service personnel only
- HSE plan ensures highest standards

Main benefits:

- Reduced time to repair
- Cost control
- One point of contact

**NKT Group GmbH /
NKT GmbH & Co. KG**
Düsseldorfer Strasse 400
51060 Cologne
Germany
T: +49 221 676 3100

NKT A/S
Vibeholms Allé 20
2605 Brøndby
Denmark
T: +45 434 820 00

NKT HV Cables AB
PO Box 546
SE-371 23 Karlskrona
Sweden
T: +46 455 556 00

cablesupport@nkt.com
nkt.com



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