

Services for productive machine networks



Services for networks & for every maintenance and management strategy on the shop floor level



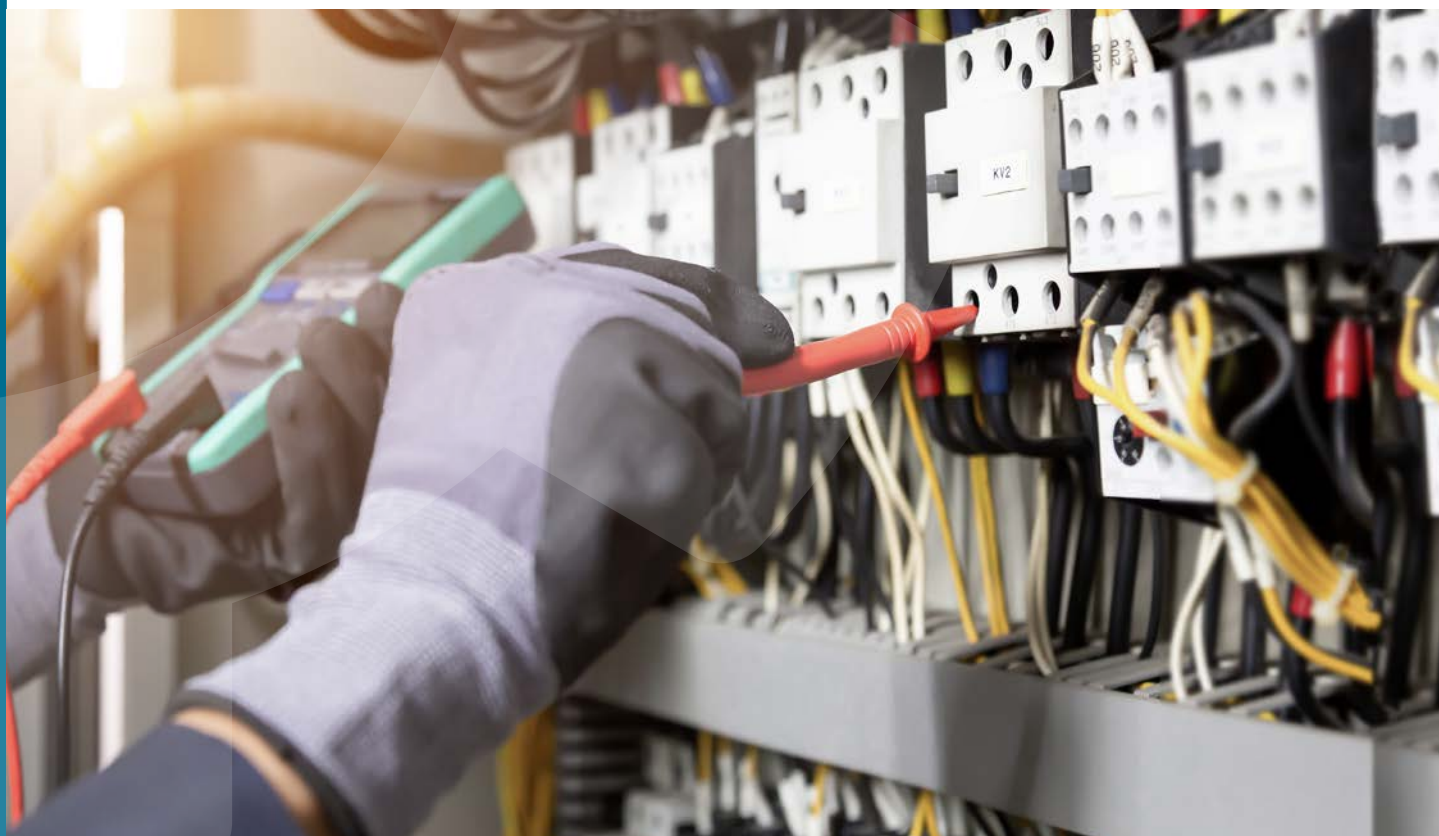
Our team of **40 network specialists** offers industrial companies throughout Europe the daily support needed to appropriately and purposefully meet every type of challenge that can arise from the operation of machine networks.

No matter which maintenance strategy you pursue in your company:

We **advise, plan, prepare projects** and **manage** for you the decisive measures that

increase overall system effectiveness significantly, stabilise production processes and open up access to previously unattainable potential savings.

In future, the digitalisation know-how in our condition monitoring systems will not only extend to the network itself, but also to the system and its environment.





Condition Monitoring Systems

automate the maintenance activities

We extend the CMMS* to include multi-sensors (SIEDS*) and an OT security device (D*bridge) and create the basis so that installers and operators receive equal access to the data streams below the PLC.

The result will be that in future, many routine tasks (such as inspections and similar) can be automated and worked through in a structured way. A valuable contribution with which we will help industry to **deal with the shortage of skilled maintenance workers**

Make your maintenance strategy more successful and make your machine networks real value drivers in the company, which will pay directly into the operating result.



Planning productive OT networks

Network planning is one of the unique competencies of Indu-Sol, which enable customers to increase strategic network improvements at any time and achieve significant improvements when it comes to availability and performance.

We consider the whole network and generally achieve the required goal with **up to 40% lower production costs**.



Training offers for all aspects of industrial networks

As a long-standing specialist for industrial networks and an official PI training centre, we are extremely familiar with the optimisation of automation networks.

Based on our experiences and extensive expertise, we offer you **practice oriented further training courses for PROFINET, PROFIBUS & Co.**

Benefit from our know-how and become an expert!



Consulting for OT and IIT networks and integrations

Our experts are already undertaking the field level network management for several of our most renowned customers. Working closely with the maintenance on site – via remote – together we are already developing the forward-looking network management of tomorrow today.

Installers and operators benefit equally from our advisory expertise, which we contribute during the strategy and planning phase.



Our planning expertise sets itself apart through:

- » clear structures in the network without weak points and unnecessary redundancies
- » optimisation of the maximum network load, the overall performance and making sure that the hardest real-time requirements are met
- » security and continuity through segmentation
- » We plan greenfield and brownfield projects to be **<|digital ready|>** so that the OT can deliver the data for optimising the production processes in the IT.
- » independent device selection

**CMMS = Condition Monitoring Management Systems*

**SIEDS = smart industrial environment digitalization sensor*

The benefits for your business

In order for these comprehensive and integrative processes and services to succeed, advice and network planning that bring together the interests of the installers involved as well as those of the operator are needed in the strategy phase. The result is **more benefits, availability and performance for significantly lower costs** (generally approx. 40%), with a clearly defined network for the installation phase.

This saves valuable time and costs for the commissioning of the system. We offer this integrative advisory and planning service for all brownfield and greenfield projects.



More than 1,750 deployments of our service technicians at a total breakdown on the operator side.



SOS Network Service – always there when it's really urgent

In **2022**, our network experts were called out to approx. **150 SOS deployments** on site (in industry).

The reasons for these are generally massive faults in the production process or total breakdowns, which are caused by a reactive maintenance strategy, which exceed the client's resources and know-how.

We have used the events of recent years as an opportunity – to review how the quality of machine networks and the opportunities for operating proactive condition monitoring have developed.

» **2.3 billion of lost profits due to reactive maintenance. 90% could have been avoided.**

Five numbers really surprised us:

1. More than **1,750 deployments** of our technicians at a total breakdown on the operator side.
2. **2.3 working days** average until stable running of the plant/system is restored.
3. Indirect maintenance costs of **Ø 30,000/hour**, due to (material loss, lost profits, cleaning and disposal costs, etc.)
4. The industrial customers who called out our technicians to SOS deployments during this period incurred more than **2.9 billion** in lost profits due to total breakdowns.
5. Many companies use these severe experiences as an opportunity and set up a forward-looking maintenance regime. But what is truly astonishing is that approx. **62%** of the companies continue to opt for reactive maintenance and call us out to SOS deployments again.

And another surprising number:

The reasons for more than **90%** of these downtime costs could have been identified in good time and prevented with proactive **condition monitoring** and **predictive maintenance**.



PowerUp Service – we determine how the network in your plant is doing

Our service technicians carry out extensive examinations of the plant condition on the network level, record the plant condition as part of an inspection and assess the network quality.

You then decide what happens next. We are there at your side whenever it's necessary.



Network CareUp Service – we support you with your network management when support is necessary

This service is a supplementary configuration stage to the PowerUp service. Then, based on the analysis of the results, our network experts work with

the client to develop an offer with supporting maintenance offers, e.g. in the form of regular updates, etc.



Our service levels for condition monitoring management systems with maintenance offer a massive economic contribution.



Digitalisation and OT/IT integration are changing everything

Due to the increasing digitalisation of the field level, sweeping changes result within the classic job descriptions. New task profiles result.

Apart from production planning and control, this also severely affects maintenance. Due to the integration of OT and IT in particular, new specialists are sought who know their way around the needs of both spheres. Nevertheless, the classic maintenance must continue to ensure the availability of the plants and systems in a structured way and with maximum security.

The classic OT organisation not only meets its limits with regard to content but above all in terms of personnel. The new objective is to automate the core process and constantly recurring maintenance tasks economically and efficiently.

The three network services described in the following, in combination with our system know-how at the system condition monitoring management level and forward-looking maintenance offer a massive economic contribution. And do so depending on the integration depth in the customer's processes.



Network SmartUp Service – provision of network monitoring of the defined plants/systems

- » We develop the optimisation measures and draw up the timetables for the implementation.
On request, we provide advice and support for the measures through to the final implementation.
- » Creation of a catalogue of measures for the defined networks in the event of technical problems
- » Testing & adjustment of the threshold values for the alarm management for Indu-Sol hardware and software of the defined networks
- » Database maintenance by Indu-Sol
- » Software of the defined networks



Network EmpowerUp Service – Provision of network monitoring + protection measures for network-related plants

- » *The content of all services is based on the Smart-Up service*
- + Database maintenance by Indu-Sol software of the defined networks
- + Implementation of the planned measures to secure plant availability



Network ManageUp Service – Provision of network support + network management of network-related plants

- » *The content of all services is based on the Smart-Up service*
- + Implementation of the planned measures to secure plant availability
- + Spare parts stocking
- + 24/7 availability and on-call

Which maintenance strategy is pursued in the company?

Along the way to efficient and likewise productive maintenance – in the sense of Industry 4.0, operators of machines and plants are faced by diverse challenges: High direct and indirect maintenance costs, which can often account for more than 40% of the ongoing operating costs, poor documentation, insufficient access to relevant data from the machine network, reactive procedures and time problems are in their way.

A suitable condition monitoring management system can make a proactive contribution to the correction of these problems to make your production more efficient, reduce costs and automate many recurring maintenance tasks.

1



Breakdown maintenance

Maintenance measures are not carried out until damage has already occurred to the maintenance object or the object has completely broken down or failed.

In this strategy, failure of the maintenance object is knowingly accepted. No preventive maintenance measures take place – the primary focus is on repairing the damage.

2



Time-based maintenance

Describes the servicing of equipment on the basis of a calendar schedule. In this maintenance strategy, time is the trigger for the servicing.

TBM is therefore also called scheduled servicing as it has to be planned in advance.



3



Condition-based maintenance

In this maintenance strategy the component or tool is not changed until the highest degree of wear has been reached.

To this end, the actual condition of a plant is monitored continuously to determine which maintenance measures are required.

4



Predictive maintenance

Pursues a forward-looking approach and services machines and plants proactively. In this maintenance strategy, the suitable time and measures required for changing the component or tool is determined on the basis of the current and historical data.



Investment comparison

Costs vs. benefits

The condition monitoring “earnings”

The example described below involves a medium-sized production plant, with 6 programmable logic controls in the food industry.

If you are interested in finding out what specific

potential savings can be achieved in your field level, then simply contact us. We will be pleased to assist you.

Implementation without monitoring

Investment in reactive maintenance:

- » 170.000 € downtime costs / day (7083/ h)

X

Disadvantages:

- » Troubleshooting stress
- » IH personnel costs
- » Reduced plant availability and therefore pressure from line managers
- » Costs incurred in the event of a major failure

Bet that it doesn't happen like that!

Implementation with monitoring ✓

Invest in proactive maintenance:

- » 28.600 € one-time investment

Network SmartUp Service ✓

Costs:

16.000 /year ✓

Advantages:

- » Troubleshooting stress
- » IH personnel costs
- » Identify 90 % of the failures proactively and work through them in a structured way



The experts determine how the network is doing

- » Operate the network
- » Record/evaluate NW data
- » Remove problems/faults
- » Servicing/maintenance



We listen to the experts and accept support

- » Record/evaluate NW data
- » Remove problems/faults
- » Servicing/maintenance
- » Recommended actions

Insourcing

Costs:

- » 38.850 € per year*

Disadvantages:

- » Personnel recruiting
- » Training and coaching
- » Create redundancies
- » Costs for personnel management

* Insourcing costs, for approx. 1.5 FTE, approx. 30%, of which spent on condition monitoring deployments

Outsourcing

Costs:

- » 16.000 € per year

Advantages:

- » Scalable costs
- » The experts at your side
- » Ability to respond fast
- » Cost-effective from year 1



We involve the experts in the workflow

- » Operate the network
- » Remove problems/faults
- » Servicing/maintenance
- » Record/evaluate NW data
- » Recommended actions



We integrate the experts into the network management

- » Operate the network
- » Remove problems/faults
- » Servicing/maintenance
- » Record/evaluate NW data



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