

CASE STUDY

REO stabilizes power quality for reliable welding robots in 24/7 pipe construction



How a REOWAVE harmonic filter reduces power disturbances and enables uninterrupted operation of an automated welding robot



Initial Situation / Challenge

Modern manufacturing facilities in the metalworking and pipe construction industries are increasingly automated and operate around the clock. Welding robots handle precise, repeatable processes and ensure consistent high product quality. A pipe construction manufacturer used an automated welding robot designed for 24-hour operation. The system ensures high welding precision and efficient series production of pipe components. However, frequent disturbances in the power supply occurred in practice. Mains fluctuations and electrical harmonics caused the welding robot to react sensitively, shutting down for safety reasons or switching to error mode. As the system is partially unattended and does not have permanent operating personnel, these faults had a significant impact on production.

Typical problems included:

- Unplanned system shutdowns
- Production interruptions during the welding process
- Time loss due to manual restarts
- Additional organizational effort



Objective

Provide a solution that:

- Improves grid quality sustainably
- Reduces electrical harmonics
- Protects sensitive industrial equipment
- Enables stable and automated 24/7 operation
- Prevents unplanned production interruptions

Summary

Application: Automated welding systems / Pipe construction industry

Country: Switzerland

Product: REOWAVE Passive harmonic filter

Objective: Improve grid and voltage quality to ensure stable 24/7 operation of a welding robot

Result: Significantly reduced harmonics, stable power supply, and uninterrupted production processes



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Solution

REOWAVE Passive Harmonic Filter

To stabilize the power supply, a REOWAVE Passive Harmonic Filter by REO was integrated into the electrical supply system of the welding plant.

The system reduces grid-related harmonics directly at the source and sustainably improves voltage quality.

The REOWAVE filter was specifically designed to target the harmonics occurring in the production network, stabilize the power supply to the welding system and thus ensure stable operation of the sensitive electronic equipment.

Why choose a REOWAVE Harmonic Filter?

The REOWAVE filter offers key benefits for industrial applications:

- Effective reduction of harmonics in the power grid
- Improved voltage and current quality
- Protection of sensitive power electronics
- Increased system availability
- Robust design for industrial environments



Results

After installation of the REOWAVE harmonic filter, there was a marked improvement in grid quality and system availability was significantly increased. Production processes can now be planned more effectively, and downtime costs have been significantly reduced.

In summary, the following results were achieved:

- No unplanned shutdowns of the welding robot
- No switching to error mode due to grid disturbances
- Significantly improved power quality
- Stable and uninterrupted 24/7 operation
- Substantially higher system availability



Conclusion

Harmonic Filters as the key to stable industrial processes:

A stable power supply is a fundamental requirement for efficient automated manufacturing processes. Grid disturbances and harmonics can affect sensitive machinery and lead to production downtime.

By using a REOWAVE Passive harmonic filter, power quality was sustainably improved and reliable operation of the welding system was ensured.

REOWAVE filter solutions by REO are used worldwide in numerous industrial applications – wherever grid quality, process stability and system availability are crucial.

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FAQ's

Why are harmonic filters important in industrial power grids?

Harmonics are generated by "non-linear loads," such as the use of components like thyristor controllers or inverters. These harmonics can degrade grid quality, cause system malfunctions, reduce component lifespan and lead to unnecessary energy consumption. Harmonic filters reduce these distortions and stabilize the power grid.

What is a REOWAVE Harmonic Filter?

REOWAVE is a filter solution by REO designed to reduce harmonics in industrial power systems. The device is installed directly at the source of the issues – i.e. where the greatest effect can be achieved. By being installed between the grid and the load, it removes harmonics at the source, preventing them from spreading through the grid and damaging other electrical equipment.

Where are REOWAVE Harmonic Filters used?

REOWAVE filter solutions are used worldwide in drive technology for motor drives, e.g.:

- Mechanical engineering
- Conveyor technology
- Ventilation and air conditioning systems
- Robotics
- Elevators and escalators
- Refineries and pumps

Can harmonic filters extend the lifespan of electrical equipment?

Yes, by reducing grid distortions and harmonics, sensitive electronic components are protected. This reduces overheating, wear and unplanned downtime, which significantly increases the operational life and reliability of industrial machinery.

What role does the harmonic filter play in energy efficiency?

The REOWAVE reduces harmonics, thereby decreasing the reactive currents caused by harmonics. This reduces the proportion of reactive power, lowers energy consumption and consequently reduces operating costs.



Contact & Information



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