



Case Study

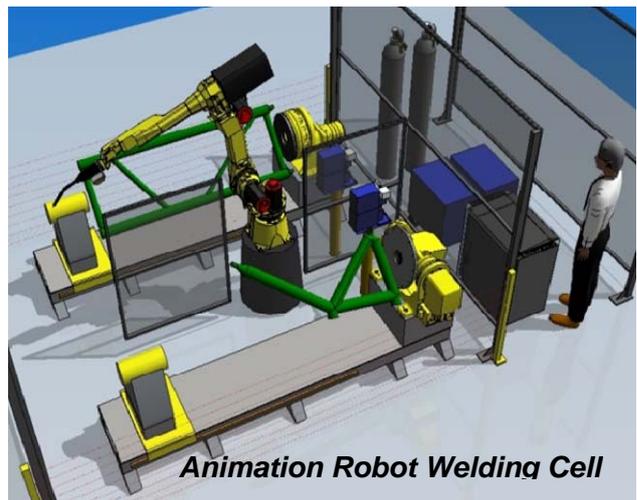
Process conversion to automated welding: Russian helicopter manufacturer benefits from excellent component accessibility and absolutely reliable wire feed

Which systems are in operation?

- DINSE MIG/MAG automatic power source DIX PI 500
- DINSE MIG/MAG Push-Push robotic torch DIX METZ 544
- ESS power source SquareArc 506C for automatic TIG welding
- DINSE MIG/MAG Push-Push wire feed MEP 200
- DINSE MIG/MAG special torch LKTZ
- DINSE Tool storage system WAS 100

Which welding tasks does the customer have to face?

In the factory there is a wide range of welding tasks. The MIG / MAG and TIG processes are used to join the different basic materials. The biggest challenge: different welding positions, hard-to-reach welding seams and welding with pre-heated material. In addition, each individual weld seam is subjected to a strict X-ray test. For this reason, absolutely excellent, faultless and accurate seams must be welded. In order to be able to weld different workpieces in different quantities during a shift, flexible robot installations are necessary. In close cooperation with DINSE ESS, the customer succeeded in coping with this complex task and achieving the required results.



What were the problems before choosing DINSE ESS systems? Why is manual welding changed into an automated solution?

With DINSE ESS products, the customer has successfully changed from manual to automated welding. The reasons for the switch to automation were complex.

- The previous MIG / MAG welding equipment could not meet the exact and very strict production requirements. The wire was not carried reliably enough.
- Instability of the welding results: The welding result was very much dependent on the individual qualification of the welder. There was no reliable consistency in the quality and texture of the welding seams.
- The welding process took too long, since each workpiece was prepared according to the requirements of each welder in order to achieve adequate welding results. The difficult component accessibility also prolonged the process.
- A high reject rate due to defect welding reduced productivity.

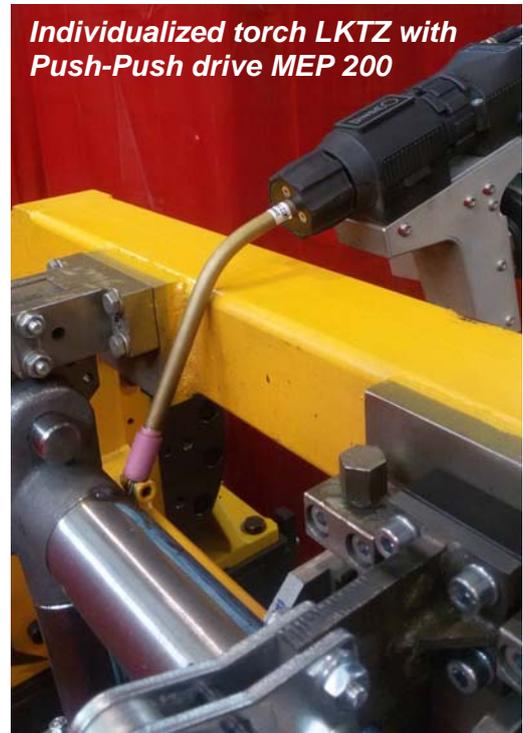
Which solutions could DINSE ESS systems offer for this problem?

MIG/MAG robotic welding with DINSE Push-Push Technology

In order to achieve excellent weld seams, the algorithm and the synchronization of the cold-wire system play an elementary role. In the DINSE Push-Push Technology, two completely uncoupled drive units ensure the most precise wire feeding possible, regardless of torsion, bending and the length of the torch set. The adjustable maximum torque of the rear motor prevents the wire in the torch set from buckling out. The front, speed controlled motor precisely adjusts the quantity of wire needed for the process.

The Push-Push technology ensures that the welding wire hits the weld at the right moment. In addition, the welding process becomes more flexible as there is the possibility of initially melting more welding wire to fill the weld pool. Afterwards, a wire speed can be set which is kept constant during the entire process independent of the robot movement and the resistance in the conduit hose. Finally, the end crater can be filled with a reduced welding power.

The wire always runs accurately and pulls out of the weld at exactly the right time. This perfect interaction of welding equipment and wire feed system enables to achieve results which in the past were not achievable for the customer in the required quality.



MIG/MAG robotic welding with particularly difficult accessibility

The torch DIX LKTZ especially designed according to exact specifications is currently the only solution for the customer to successfully weld certain workpieces with difficult and challenging accessibility. Absolute TCP reliability, a long operating time and an extremely slim design with a special length and individual bending angle were the requirements placed on the torch.

With the LKTZ, seams can be welded in an automated and absolutely reproducible manner, which in the past could only be realized manually by a highly qualified welder. "Now, instead, we have a stable robot technology, in which welding parameters can be controlled according to the requirements of the weld, e.g. width and height. The result is an absolutely reliable, high quality, which passes the strict X-ray examinations without problems", sums up the project manager for automation Ivanov Artem.

Conclusion

"The high quality of all DINSE components and the possibilities that result from the mature DINSE systems - especially in the case of particularly complex welding tasks - have convinced us. We are now much more flexible and can dare more complex welding tasks", says Artem.



Special torch LKTZ with Push-Push drive MEP 200: Thanks to its slim shape and the special bending angle, it allows optimum component accessibility

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