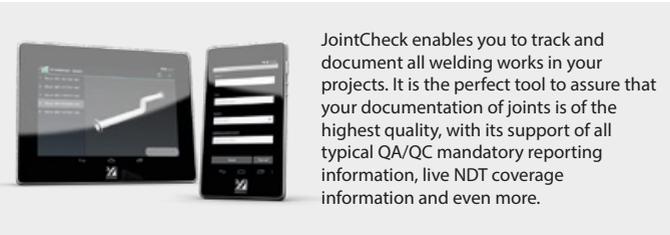


- ▶ Turnkey Automated Pipe-Shops
- ▶ Integration of Engineering and Fabrication
- ▶ Customized Software Solutions
- ▶ Streamlined Production Planning
- ▶ Fabrication Monitoring
- ▶ Optimized Flow of Material

## JOINT CHECK



JointCheck enables you to track and document all welding works in your projects. It is the perfect tool to assure that your documentation of joints is of the highest quality, with its support of all typical QA/QC mandatory reporting information, live NDT coverage information and even more.

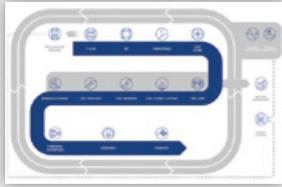
JointCheck acts as an extension to RAMP and covers all steps of QA/QC documentation from fitup to NDE. It runs on PCs, tablets and even smartphones, enabling you to comfortably use it at practically any location. This means that you are not only able to track and document all welds that are done within the pipe-shop, but also all field welds directly on site.

One key strength of JointCheck is the large amount of different documentation it can generate

automatically. From fit-up reports to welding reports, as well as joint history reports and NDT requests, it has everything covered.

In addition it is also possible to obtain automatically generated performance reports, such as welder performance or performance per station, as well as daily progress reports. Live data is also sent constantly to RAMP. This way you can easily and quickly monitor if everything is going as well as it should.

RAMP is the 3R software framework's core application package for pipe-shop automation. It is composed of a main module and machine- / process-specific client modules. Its primary goal is to balance the flow of material and the utilization of the various processing machines and stations, in order to control the fabrication cycle.



Each installation of RAMP is customized to cater for our customers' individual requirements, as every workshop holds different storage options, machines and transport systems. Furthermore every fabrication process needs to address different key aspects.

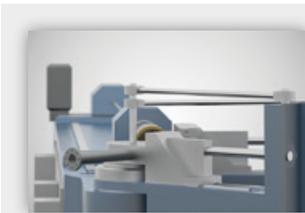
The entire work preparation process is facilitated by RAMP. By using various filter and sorting criteria the user can create optimized packages for fabrication in the pipe-shop. These packages always consider the maximum capacity of each individual

machine, as well as currently available material, for optimal utilization.

RAMP clients can be implemented at all processing stations / machines. CNC data can be transferred directly to many machines. After the respective fabrication process has been executed, the current status is updated.

By connecting the various work stations to a centralized fabrication database, the current progress of fabrication can be checked at any time.

## KOLLI7



Kolli7 is an automated feasibility analysis for pipes and profiles that are processed on CNC bending machines. It simulates the bending process on rotary-draw or push bending machines, as well as roller and induction bending machines. Both simple three-axis benders and modern left/right benders with multiple heads and levels are supported.

With the Kolli7 software framework 3R offers not only a computerized feasibility analysis with generation of CNC data, but also a construction platform for pipe geometries, for processing on modern pipe bending machines. For precise monitoring and support of the fabrication process the entire bending operation is simulated and tested for collisions.

Kolli7 simulates the bending process of a pipe geometry on one or more virtual bending machines. In case of interference or collision during the bending sequence the software

independently searches for solutions. In addition the user can intervene manually at any time and adjust the bending process. The search for a suitable bending sequence is dependent on the machine type.

Kolli7 considers all relevant machine-, tool-, and material-specific parameters when generating CNC data. It calculates the precise cutting length, considering the pipe's springback, the reduction in traction lengths caused by overbending and the bend's radius increase, as well as the material stretching inside the bend.

## REFERENCES





## What makes 3R solutions special?

- ▶ 3R solutions is unique in that we are both a developer of customized software, which bridges the gap between engineering and fabrication, as well as a designer of automated pipe-shop solutions. Unlike a traditional machine manufacturer or distributor we are independent, so we are not restricted to a single brand or catalogue, but can select the most suitable machine for each specific task or project.
- ▶ We have more than 40 years of experience in pipe-shop planning and software development.
- ▶ Rather than offer standardized "off-the-rack" software or systems, we create customized solutions for your specific requirements. Your feedback and suggestions are important to us.
- ▶ We have good relationships with leading machine manufacturers, allowing us to transfer data to many types of machines, as well as discuss adjustments to their machines to integrate them smoothly into automated fabrication processes.
- ▶ All of our developers and representatives have a solid understanding of pipe prefabrication processes, so we can discuss your requirements and expectations with you with a deeper background knowledge than a generalist software developer who works on a per-project basis.

## What can 3R solutions offer you?

- ▶ Customized software solutions that take your specific requirements and processes into consideration
- ▶ Integration of engineering and fabrication processes
- ▶ Streamlined production planning and fabrication monitoring
- ▶ In-depth analysis of your pipe-shop requirements
- ▶ Pipe-shop layouts for optimized flow of material and process coordination
- ▶ Coordination and implementation of pipe-shop automation projects
- ▶ Personal support – you will generally have one or two contact persons assigned to your project, rather than being routed to the next available support person in some call-center
- ▶ Customized after-sales service plans – you decide what type of service you would like after warranty, and we create the appropriate plan.

## Contact us

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## CONSULTING / PLANNING



As part of our consulting services we perform an in-depth analysis of your requirements, taking your current processes and machine park into consideration. We look at the flow of material and the flow of data and information, so we can reduce the actual fabrication time and also streamline your preparation process.

A modern pipe-shop is more than a collection of machines. It is an intricate combination of multiple processing steps, all of which have to be considered to improve efficiency. Any intervention at one point will have significant effects on other parts of the process.

In order to help you avoid any of the many mistakes that can be made when planning a tube shop, we offer customized consulting services. These can help you build a workshop that will meet your fabrication goals while increasing your efficiency ratings.

We can not only provide all fabrication relevant CNC-data, but also much of the information and documentation required for tracking and monitoring your fabrication.

So rather than offering you simply a collection of machines to put into your workshop, we offer you an integrated concept, combining software, machines and transport systems. Every component is carefully selected to work seamlessly with the others and to make optimal use of each component's full capacity.

## ISO BUILDER



IsoBuilder is an intelligent solution for the import and editing of isometries, which extracts all fabrication relevant data from the drawing. Among many other features, it boasts numerous interfaces to common 3rd party systems, automatic spool splitting, automatic generation of Dia Inch and other reports, and a lot more.

Due to an integrative database all fabrication relevant information regarding the pipeline elements are known. This way the system can use the drawing to automatically generate all required information and lists, which are required for purchasing and the fabrication of the order.

IsoBuilder splits a drawing into its spools based on a set of rules defined by the customer. For each isometry all data required for fabrication is then generated and stored in the database. By combining IsoBuilder with 3R's RAMP software it is possible to utilize

this information to generate CNC-data for all stations of the manufacturing process.

IsoBuilder can generate worksheets, part lists, welding documentation, bending / cutting lists and many other forms of documentation for each individual spool, including all data required to fabricate the spool at the various processing stations.

A variety of Dia Inch reports provides a detailed overview of the fabrication expenditure for each drawing.

## TURNKEY PIPE-SHOPS



3R solutions offers project planning and implementation for automated pipe-shop turnkey projects. With more than 40 years of experience and references around the world, 3R is a reliable and qualified partner for your pipe-shop improvement needs, regardless of whether your projects are ships, offshore rigs or industrial plants.

3R solutions will coordinate the purchase, transport and commissioning of all transport systems and machines. Rather than having many different points of contacts, the customer only has to deal with one person from 3R, who will resolve all issues and challenges on site.

During the project the customer is fully involved and their input and ideas are always considered. In case a customer's idea can be implemented without disrupting other processes, 3R will be happy to do so. If a suggestion or request turns out not to be feasible, 3R

will discuss this with the customer in order to find a solution that can be implemented and bring the desired results.

Every machine in the pipe shop is connected to the centralized database. The 3R software provides all required fabrication data in a format that the machine can process. After the spool has been processed at one machine, it is automatically transported to the next station in the process chain, while the status in the database is immediately updated.

## SPOOL EDITOR



SpoolEditor is a user-friendly alternative for generating fabrication data. Existing worksheets and spool information can be applied easily through import interfaces. All cutting lengths, CNC bending and flame cutting data, welding information and bills of material are created automatically and stored in the fabrication database.

SpoolEditor expands the framework by a solution for connecting external construction systems and RAMP. Almost all construction systems are able to provide a worksheet (PDF) and ideally a drawing (PCF/IDF) for every spool. SpoolEditor is utilized to check the worksheet and the imported data for integrity and to complete any missing information before sending the spool to fabrication.

SpoolEditor has very slim and convenient material management. The entire material can be maintained

within one Excel table, which can be imported into the system. All materials are stored in the RAMP database, making it unnecessary to administrate a second database.

Unlike IsoBuilder, SpoolEditor is not a construction system. The core functionality is to supply the RAMP database with spool fabrication data. SpoolEditor is the perfect choice for all customers who have already completed the spool design and want to transmit the design to their pipe-shop as easily as possible.