

KUKA

KR C4 Training courses

- Overview of training courses
- KUKA Automatisering + Robots N.V.
- 2020-12-11 (replace 2019-12-10, 2018-07-08, 2016-10-02)
- Valid for 2021



College

To ensure that the skills of the workforce keep pace with technical developments, training is necessary.

That is why KUKA Automatisering + Robots sees product training as a part of the robot system and offers everyone who works with robots - from system operators to programmers, and from maintenance personnel to designers of robotic cells - expertise "ex works".

The training courses are organized in a fully equipped training center.

Experienced trainers, modern methods with 50 % practical work and detailed documents make the KUKA trainings efficient.



The seminars are divided into basic, advanced and application courses to meet the needs and requirements of the students. An overview of the seminars can be found in this brochure.

Road map ... see www.kuka.be

Hotels see www.kuka.be

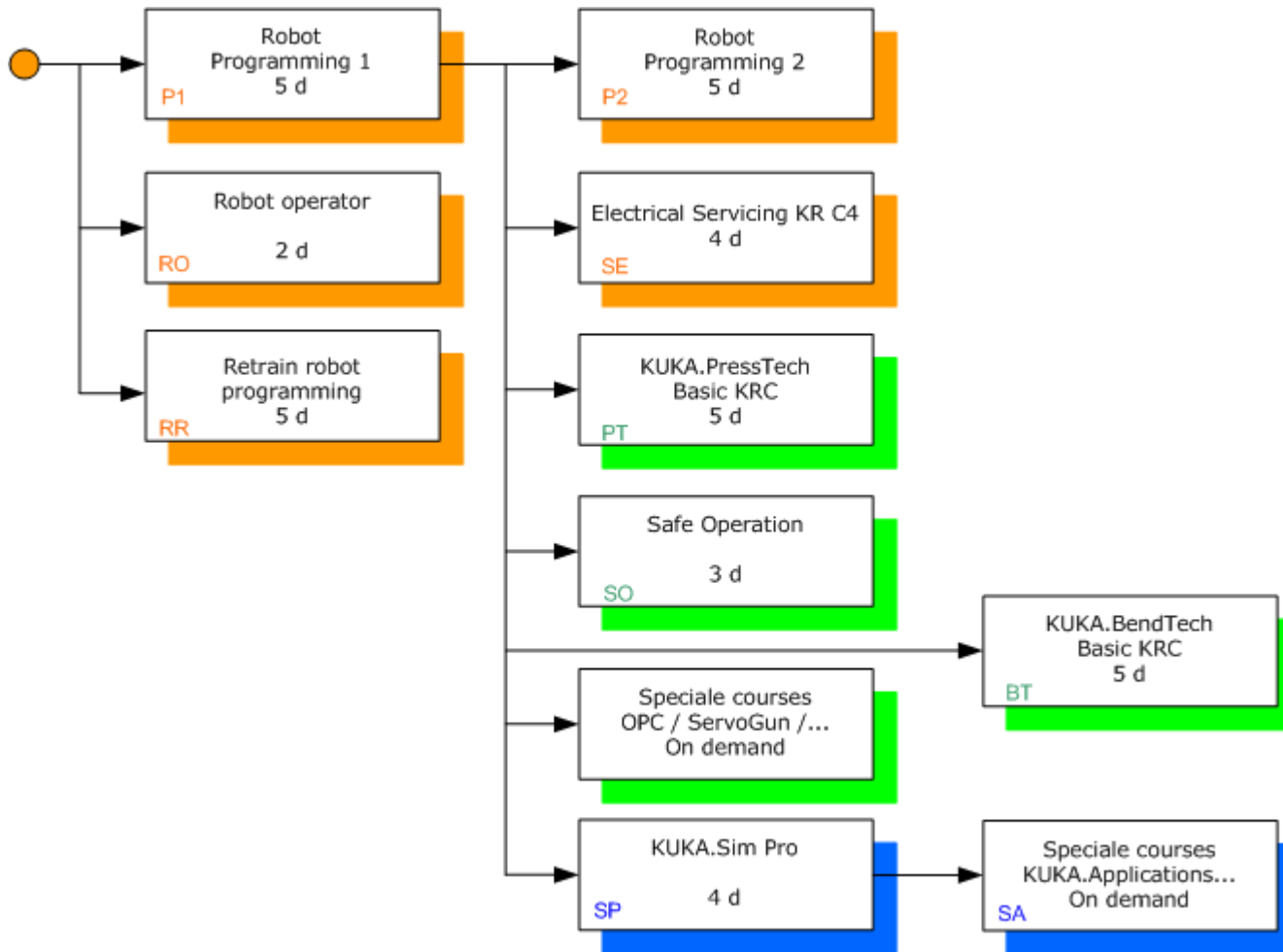
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Overview training courses KR C4



KUKA Automatisering + Robots N.V. offers a large numbers of training courses. The available trainings courses are listed in the figure on the left. The figure also gives an indication of the training course duration. For several training courses a basic level is required. For example: for the training course “Robot programming 2”, it is required to have knowledge of the training course “Robot Programming 1”.

Contact

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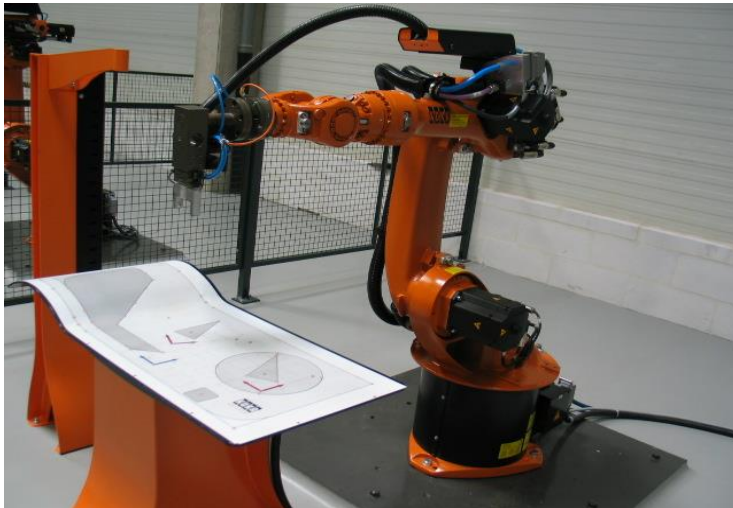


Training cells



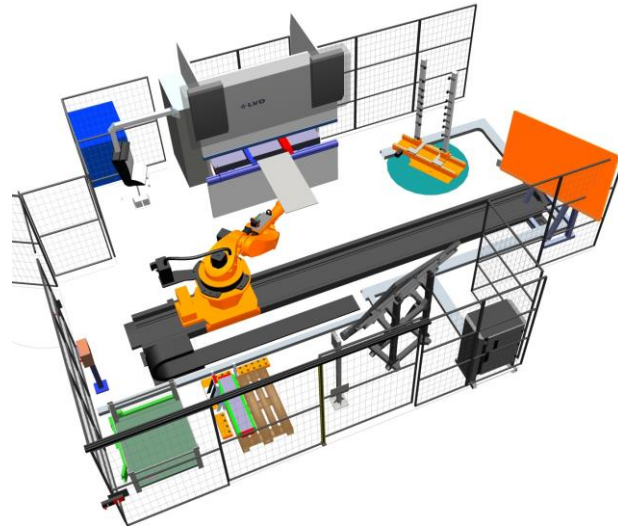
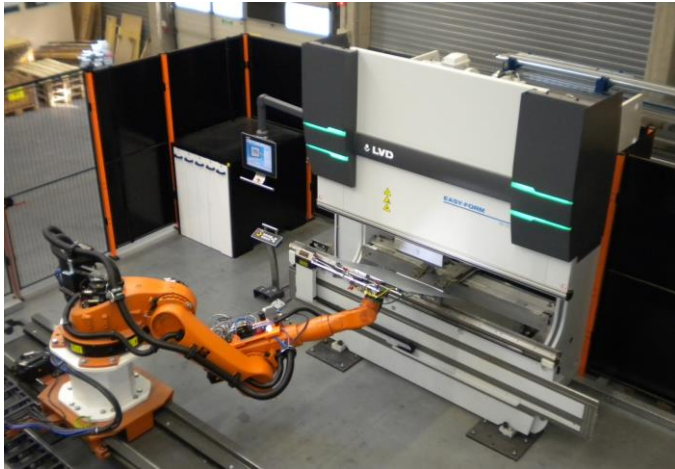
Components

- Robot KR16
- Robot CyberTech KR16
- Table with contour
- Schunk gripper
- Anti collision device
- External tool
- Buffer station
- Operator panel
- Fence



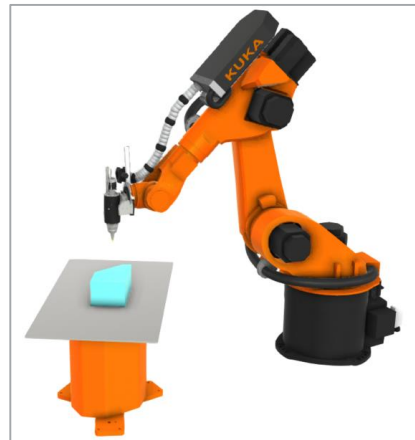


Training cells



Components

- KR 60L45K + KL1000
- KUKA KR C4
- LVD PPEB-EFL
- 80/25Gripper
- Thickness measurement
- Input stations
- Output stations
- Regrip station
- Angle meas. system



Components

- Quantec Robot KR150 R2700 Extra
- IBAG Milling tool 40.000 rpm (1.5Nm, 6kW at 40.000 rpm)
- Tool diameters up to 12mm
- Tool length up to 100mm
- KR C4



Robot Operator

Seminar Goal

The "Robot operator" seminar is made for the service personnel of KUKA industrial robots.

This seminar provides training with regard to the proper and safety-conscious operation of a robot in a production environment, the modification and maintenance of robot application programs, selection and execution of robot programs.

Topics covered

- Safety when working with KUKA robots
- Basic knowledge of the structure of a robot system
- Moving the robot manually
- Starting and executing robot programs manually and in automatic mode
- Reading and interpreting robot controller messages
- Displaying the current robot position
- Principle of mastering and checking the mastering
- Gripper operation (KUKA.GripperTech)

Preconditions

Basic technical training.

Computer knowledge and knowledge on MS Windows is helpful.

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

2 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 4 participants
Max. 10 participants

Date

On request

Language

English

Location

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Robot Programming 1

Seminar goal

The seminar "Robot Programming 1" is made for the programming personnel of KUKA industrial robots.

This seminar provides training with regard to

- the proper and safety-conscious operation of a robot in a production environment,
- the modification and maintenance of robot application programs,
- the creation of linear application programs (without branching and hierarchical structures).

Topics covered

- Structure and function of a KUKA robot system
- Moving the robot
- Starting up steps at the robot
- Executing robot programs
- Working with program files
- Creating and modifying programmed motions
- Programming spline motions
- Using logic functions in the robot program
- Using technology packages
- Programming with external tools
- Introduction to Expert level
- Variables and declarations
- Using program execution control functions
- Working with a higher-level controller

Preconditions

Technical training.

Computer knowledge and knowledge of MS Windows is helpful.

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

5 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 4 participants
Max. 10 participants

Date

On request

Language

English

Location

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Robot Programming 2

Seminar goal

The aim of the seminar is to build on the basic skills taught previously and to learn the basics of the KUKA high-level programming language KRL and apply it in structured robot programs.

Topics covered

- Programming with WorkVisual
- Structured programming
- Introduction to Expert level
- Variables and declarations
- Subprograms and functions
- Customized messages programming with KRL
- Motion programming with KRL
- Working with system variables
- Interrupt programming
- Switching functions with KRL
- Using the submit interpreter
- Working with analogue signals

Preconditions

Seminar: Robot Programming 1

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

5 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 4 participants
Max. 10 participants

Date

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Re-train Robot Programming

Seminar goal

After this seminar experienced robot programmers are able to visit other seminars of the KUKA college. This means all programming seminars, all service seminars (electric & mechanic) and also the entrance in the Certified Robot Professional is possible.

Topics covered

- Safety when working with KUKA robots
- Advanced knowledge of the structure of a robot system
- Executing robot programs manually, in automatic mode and via an external controller
- Human-machine communication
- Using technology packages (KUKA.GripperTech)
- Working with program files
- Displaying and adapting saved values (variables)
- Modifying existing or creating new programmed motions with macros
- Programming and applying logical functions in motion programs
- Performing commissioning tasks on the robot
- Successful programming with KRL (KUKA Robot Language) and WorkVisual
- Working with variables
- Creating and modifying programmed motions in KRL
- Programming logical functions in KRL
- Linking robot programs
- Programming project: cycle time optimization using the example of a palletizing application

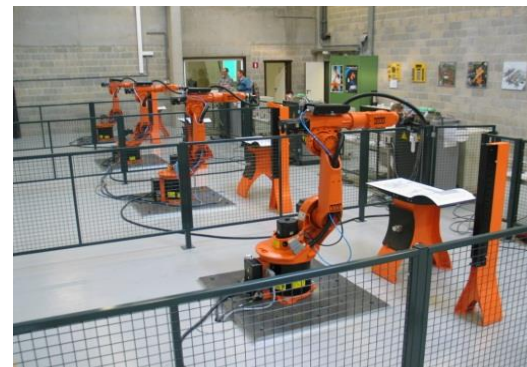
Preconditions

Expert knowledge in programming of industrial robot systems
 General knowledge industrial robots
 Start-up knowledge (mastering, tool and base creation)
 Knowledge about coordinate systems
 Knowledge about robot motions (point to point, linear, circular)
 General knowledge in programming
 Knowledge about cell concepts

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

5 days (8:30 until 16:30)
 (Lunches included)

Limitation

Min. 4 participants
 Max. 10 participants

Date

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Electrical Servicing KR C4

Seminar goal

The participants in this seminar are trained in the fundamentals of proper fault diagnosis and troubleshooting for the electrical equipment of the robot system KR C4 including the necessary network basics for recommissioning a KR C4 system after repair work.

Topics covered

- Safety when working with KUKA training robots
- Basic knowledge of the structure of a KR C4 controller
- Basic knowledge of the structure of a KR C4 control computer
- Overview of the bus systems of the KR C4 controller
- Basic knowledge of networks
- Basic principles of Ethernet-based field buses of the KR C4
- Familiarization with passive components of the KR C4
- Safety concept of the KR C4
- Software concept and data handling
- Diagnostic options and troubleshooting directly at the controller
- Trace function for troubleshooting
- Maintenance table and maintenance intervals
- Overview of WorkVisual and its potential use for diagnosis

Preconditions

Basic electro-technical training.
Seminar: "Robot Programming 1".
Computer knowledge and MS Windows knowledge is helpful.

Final assessment

The course ends with an achievement test.
A certificate is issued on successful completion of the course.



Length of seminar

4 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 4 participants
Max. 10 participants

Date

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English

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SafeOperation V3.x

Seminar goal

The participants in this seminar are trained in the fundamentals of proper commissioning, fault diagnosis and troubleshooting for the option SafeOperation.

Topics covered

- SafeOperation safety
- SafeOperation 3.x overview
- Activating SafeOperation functionality
- Programming the mastering test
- Programming the brake test
- Configuring and testing all safety parameters in practice
- Creating a safety configuration with WorkVisual
- Defining the interface to a safety-PLC
- Defining system variables for SafeOperation
- SafeOperation Diagnosis overview

Preconditions

Seminar: Robot Programming 1

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.

Length of seminar

3 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 4 participants
Max. 10 participants

Date

On request

Language

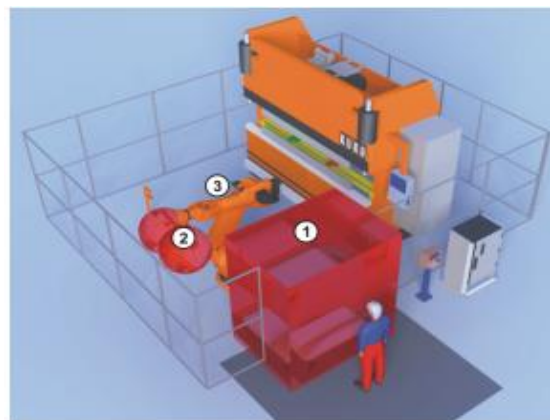
English

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KUKA.BendTech Basic KRC

Seminar goal

The seminar "BendTech Basic KRC" is made for programmers and maintenance personal of robots at bending presses. The participant in the seminar will acquire a thorough knowledge of the bend-technology. The robot system is set up for communication with the bending press. Robot programs are made and optimized.

In addition, participants carry out diagnosis and troubleshooting exercises for this application.

Topics covered

- Basis principles of robots at bending presses
- Technical requirements and factors
- Installation of the BendTech software
- Use of the BendTech software
- Configuration of grippers and vacuum channels
- Communication between robot and bending press
- Synchronization of robot and bending press
- Measurement of press, center table and pallets
- Program creation on the robot controller
- Optimizing the robot programs
- Alarms, error handling and fault diagnosis

Prerequisites

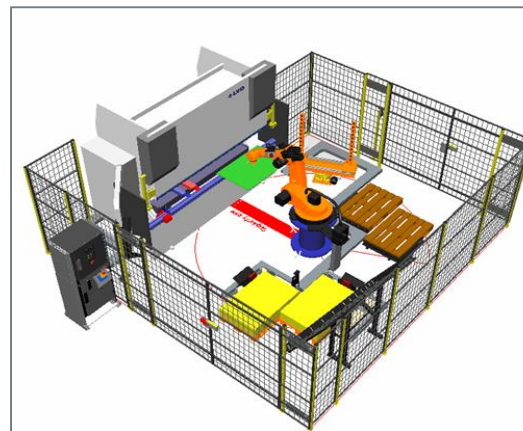
Basic technical knowledge

Seminar: "Basic Robot Programming".

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

5 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 3 participants
Max. 6 participants

Date

On request

Language

English

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KUKA.PressTech Basic KRC

Seminar goal

The seminar "PressTech" is made for programmers and maintenance personal of robots at press linking installations. The participant in the seminar will acquire a thorough knowledge of the PressTech-technology. Robot programs are made and optimized.

In addition, participants carry out diagnosis and troubleshooting exercises for this application.

Topics covered

- Basic principles of robots at press linking installations
- Technical requirements and factors
- Installation of the PressTech Software
- Use of the PressTech software
- Program instructions / Inline forms
- Teaching of robot positions in the press
- Optimizing the robot programs with respect to cycle time
- Alarms, error handling and fault diagnosis

Prerequisites

Basic technical knowledge

Seminar: "Basic Robot Programming".

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.

Length of seminar

5 days (8:30 until 16:30)
(Lunches included)

Limitation

Min. 3 participants
Max. 6 participants

Date

On request

Language

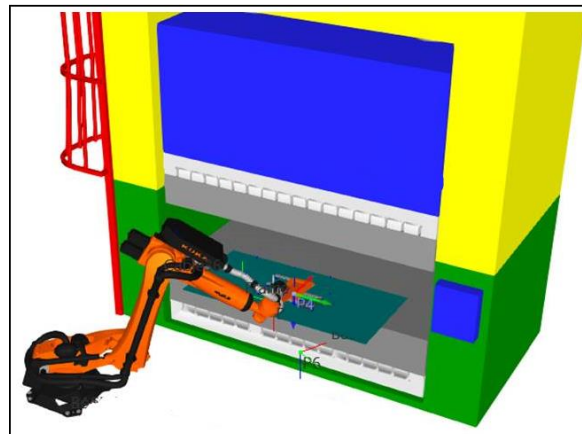
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KUKA.Sim

Seminar goal

The "KUKA Sim" seminar is made for the personnel which is planning robot cells.

Topics covered

Following topics are covered

- Installation of software
- Licensing
- The component library
- Selection of robots
- Building layouts with standard components
- Importing STEP files
- Simple robot motions
- Grasping of parts
- Defining signals and interfaces
- Importing and exporting robot programs
- Investigate the reachability of points
- Generate 3D PDF files
- Generate 2D Drawings
- Load data verification using KUKA.Load

Note

The trainee is asked to bring along a notebook computer on which KUKA Sim can be installed. See the website of KUKA Sim for the system requirements.

Preconditions

Basic knowledge of CAD programming systems is helpful.

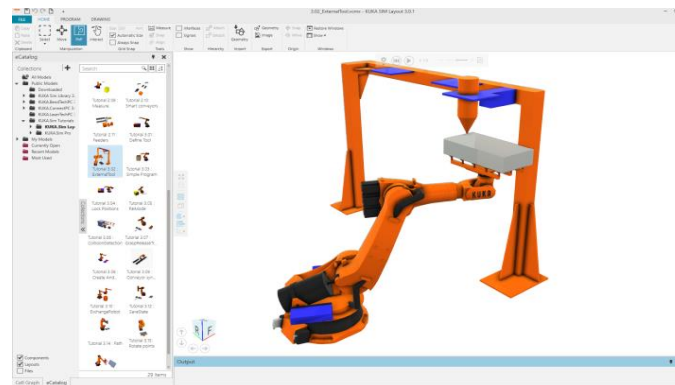
Computer knowledge and Windows knowledge is helpful.

Seminar: "Basic Robot Programming".

Final assessment

The course ends with an achievement test.

A certificate is issued on successful completion of the course.



Length of seminar

4 day (8:30 until 16:30)
(Lunches included)

Limitation

Min. 2 participants
Max. 8 participants

Date

On request

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English

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College conditions

Confirmation

Trainees are asked to report themselves in written form at least two weeks in advance to the training course. A legal agreement arises from the moment KUKA confirms the training course in a written form.

Training courses on site

Training sessions which are organized at customer site are prone to additional conditions and tariffs. Contact KUKA for the conditions.

Course times

The training courses start at 8:30 and end at 16:30. During the training on site, the travel time is a decisive factor in the start and end times of the training course.

Inclusive for trainings organized in Houthalen

Manuals and documentation
The usage of the training cells
Coffee and soft drinks during the break times
Lunch

Inclusive for trainings on site

Manuals and documentation

Liability

KUKA is not responsible for any damages during the training courses, except for those resulting from the correct observation of the training instructions.

Copyrights

The documentation which is provided to the trainee is protected by international copyrights. These shall not be reproduced or transmitted, in any form or by any means, and or used for training sessions without prior written permission of KUKA.

Length of seminars

From 1 to 5 days

Language

English

Location

KUKA Automatisering +
Robots N.V.

Dates

On request

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