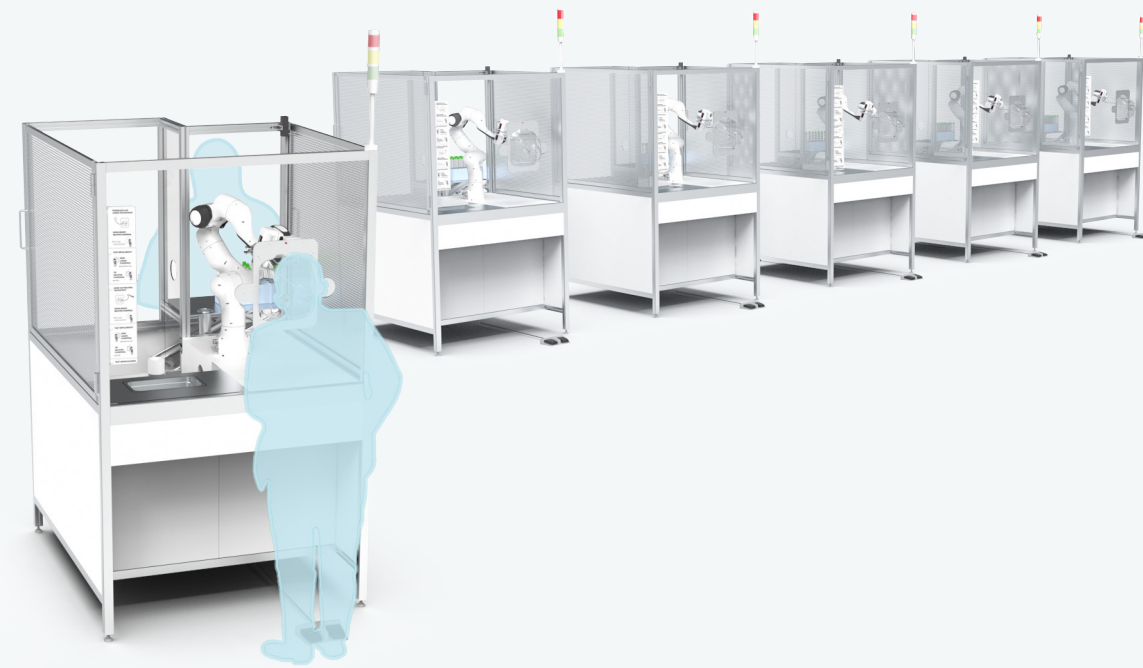


THE PROCEDURE

Safe, continuous, scalable

One or multiple SR-NOCS stations are operated by one operator. Under regular operation SR-NOCS continuously repeats the execution of the test routine, whereby the operator prepares the station and the patient is guided through a semi-autonomous swab procedure, under the supervision of the operator. This routine is repeated for every swab. The force-sensitive robot performs each test with accuracy, thus ensuring safe interaction with the patient.



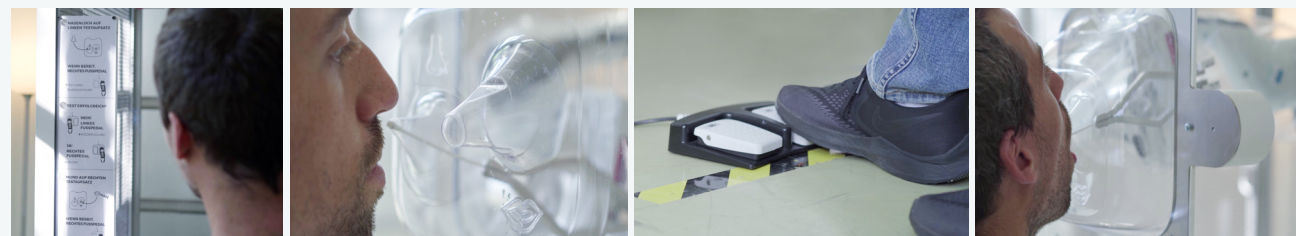
Operator

The operator supervises the station(s) and performs the necessary support actions, such as handling new material and sorting out tests for their analysis at the lab. The operator also supervises and assists the patient with any questions they might have.



Patient

The patient is in control of the test progress by means of a foot pedal and has the possibility to repeat each procedure. An instruction panel guides the patient through the required steps and actions.



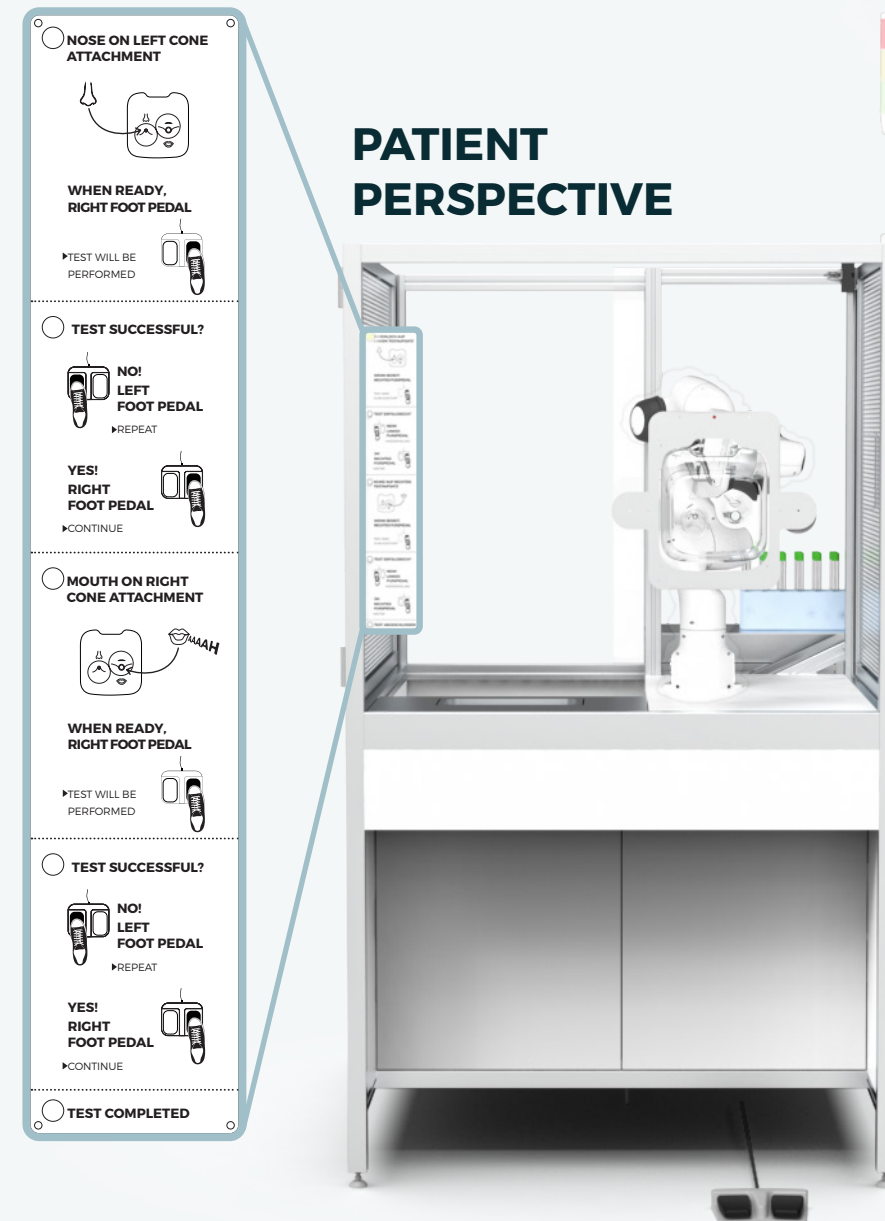
OPERATOR PERSPECTIVE



SIDE VIEW



PATIENT PERSPECTIVE



NOSE ON LEFT CONE ATTACHMENT

WHEN READY, RIGHT FOOT PEDAL

TEST WILL BE PERFORMED

TEST SUCCESSFUL?

NO! LEFT FOOT PEDAL REPEAT

YES! RIGHT FOOT PEDAL CONTINUE

MOUTH ON RIGHT CONE ATTACHMENT

WHEN READY, RIGHT FOOT PEDAL

TEST WILL BE PERFORMED

TEST SUCCESSFUL?

NO! LEFT FOOT PEDAL REPEAT

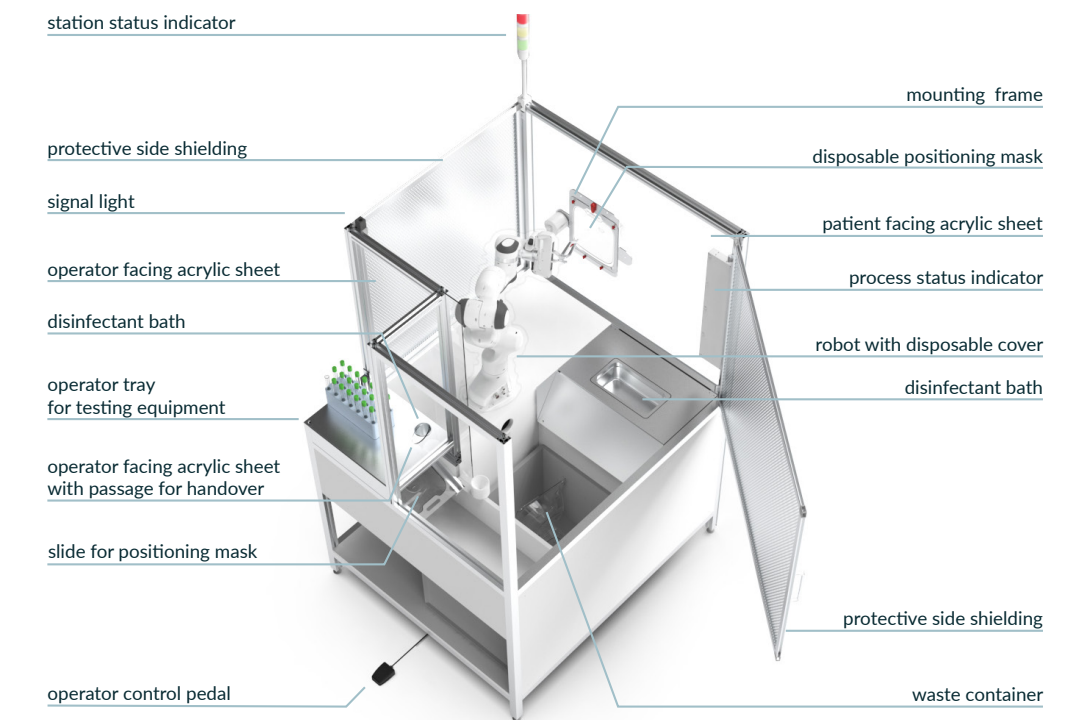
YES! RIGHT FOOT PEDAL CONTINUE

TEST COMPLETED

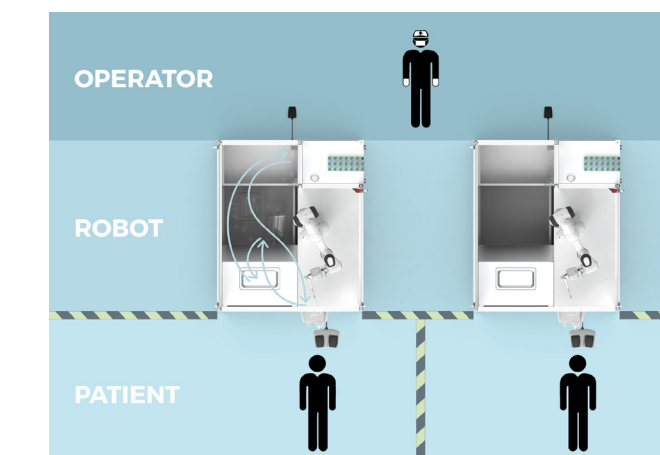
THE STATION

Our robotics know-how at the service of public health

At Franka Emika, we redefined robotics with the world's most advanced robotic system Panda Powertool, the fastest selling industry-suited robotic system. While our customers from SMBs and global enterprises profit from such novel easy-to-use, flexible, cost-efficient and scalable solution - in the wake of the COVID-19 crisis - we decided to focus our resources and technology to provide support in the global effort against the pandemic. In record time, we developed the first autonomous swab robot while complying with all applicable regulations for medical devices, with the aim of increasing testing capacities.



To limit direct interaction between patient and operator, the layout of a SR-NOCS system consists of three clearly-defined areas. Operator and patients never access the same area and are shielded from the robot workspace by a physical barrier.



Operator area: Here, the operator can move freely and interact with the system.

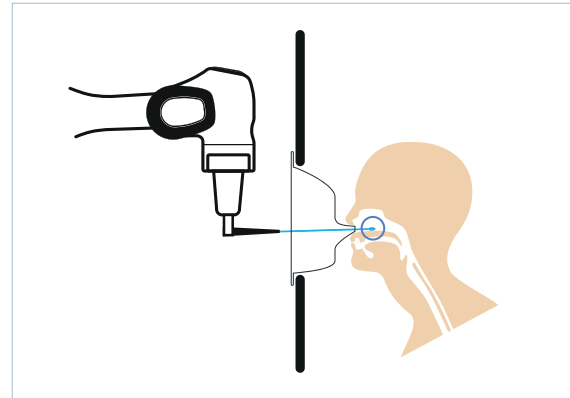
Robot area: Robot arm workspace. Access is restricted and for setup purposes only. Free circulation of air helps further reducing the risk of infection.

Patient area: The area where the swab is performed. To accommodate persons from a diverse tallness range and ensure good ergonomics, several variants of the cell with different heights are offered.

SR-NOCS BY FRANKA EMIKA

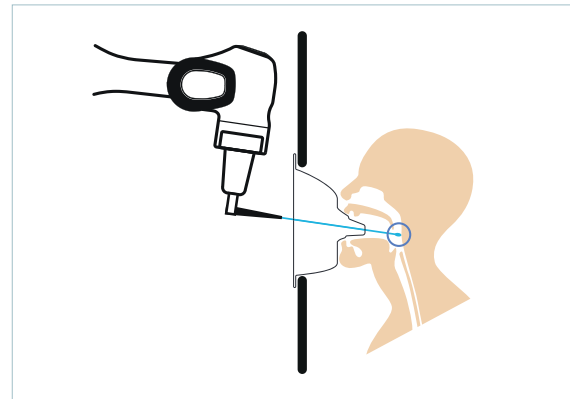
Swab robot for naso- and oropharyngeal Covid-19 screening

COVID-19 smear testing involves introduction of a cotton swab in the naso- and oropharyngeal area. While the standard procedure poses risks for both patients and medical personnel, as the risk of transmission and infection is high, such danger can be avoided with SR-NOCS. By employing SR-NOCS the smear is performed by a robot. This eliminates direct interaction between patients and medical staff – thereby remarkably reducing the infection risk.



Nose Swab

After obtaining the smear stick from the operator, the robot moves to the initial swab position. The patient places each nostril in the corresponding opening, and initiates the swabbing procedure by pressing a pedal. The force-sensitive robot performs a gentle swab without hurting the patient. Note that the patient is free to withdraw (therefore interrupting the procedure) at any time.



Throat Swab

Following the Nose Swab, the patient places the mouth against the corresponding opening, says "AH" to expose the oropharynx and confirms the start of the swab procedure via the pedal. The force-sensitive robot slowly approaches until contact with the back of the throat (thus ensuring a safe and effective test), before performing the swab motion. Also in this case, the patient is free to move away (therefore interrupting the procedure) at any time.

KEY ASPECTS

SR-NOCS by Franka Emika

SR-NOCS is a device for automatic naso- and oropharyngeal swabs as performed for diagnosis of highly infectious diseases like COVID-19. The goal is to minimize the infection risk between healthcare workers and patients, plus providing higher consistency of test execution and hygienic measures, as well as to increase testing capacities.

Autonomous

SR-NOCS is able to autonomously perform (with confirmation from the patient) the complete naso- and oropharyngeal swab, including switching the disposable covers and disinfecting its gripper fingers. It can effectively increase testing capacities by allowing parallel operation.

Contactless

SR-NOCS does not require any contact between patient and operator. Additionally, the patient has direct contact exclusively with one-way items and interacts with the station through a foot pedal.

Safe

By reducing contact between patient and operator and ensuring one-way items for the testing of patient, SR-NOCS effectively reduces the risk of infection to a minimum, thus keeping both the medical personnel and population safe.

Qualified as Class I medical device

SR-NOCS will be commercialized as a Class I medical device across all Europe.

Clinically tested

SR-NOCS was tested in a clinical study in cooperation with the Technical University of Munich and the Klinikum Rechts der Isar. Results indicate the same level of efficiency as manual sampling, as well as high positive subject acceptance.

Consistent quality of results

SR-NOCS consistently performs the swab test with robotic precision each time, ensuring homogeneous results.

Easy operation by medical personnel

Medical personnel can operate SR-NOCS after a 1-2 day training session. Interaction with SR-NOCS is simple and intuitive, reducing personnel stress and the risks associated to it.

Setup in less than 3 hours

SR-NOCS can be set up in any new location in less than 3 hours, thus enabling quick transport and relocation. In its daily use, short start-up and shut-down routines allow efficient testing capacity.

Ready for use 24/7

SR-NOCS can be used continuously and one operator can supervise several stations in parallel, effectively increasing testing capacities.



WHY SR-NOCS

- MINIMIZATION OF INFECTION RISK BETWEEN WORKERS AND PATIENTS
- HIGHER CONSISTENCY OF TEST EXECUTION
- MAXIMUM HYGIENIC STANDARDS
- INCREASE OF TESTING CAPACITIES

SR-NOCS

autonomous | contactless | safe