Witte SCOOTER 1000

Self-propelled transport and loading system for optical measuring cells and coordinate measuring machines

Closing the gap in automation

Autonomous shuttle service between setup and measuring surface

Modular design:

- Working surface
  (here an example with grid plate)

- Working unit
  (Here a feeder unit with
  conveyor belts)

- Drive unit – payload 500 or 1000kg,
  autonomous navigator, with energy tank also
  for supply to working units

■ set up, feed and position with one system
■ autonomously mobile
■ autonomously powered
■ independent of measuring system
■ integrated navigation software
■ control / programming via standard PC and tablets
■ fast definition of driving, transport and loading tasks
■ capable of dialog with external systems
  such as hall gates, light barriers etc.
■ uncomplicated integration into existing IT infrastructures
■ problem-free integration into ERP systems etc.
■ easy handling
■ high operator safety
■ up to 100 scooters configurable in network fleet

In automated processes, the loading and positioning of workpieces on portal measuring machines or rotary tables of optical measuring cells often proves to be a bottleneck.
The effort for logistics and alignment extends cycle times and slows down process effectiveness.
The new Witte Scooter 1000 closes this automation gap between setup and measuring surface. Navigating autonomously, unerringly, tirelessly effective.

The system:
self-sufficient and coordinated

The Scooter 1000 is a mobile, autonomous feeder system for measuring devices with raised level access to the measuring volume. It is able to coordinate the transport of devices between set-up station and measuring unit completely independently.
The system consists of an autonomously navigating drive unit and a working unit for taking over and transferring a functional surface - for example a grid base plate or pallet with a mounted workpiece. As an unmanned, self-controlled shuttle system, the Scooter 1000 commutes between one or more set-up stations and measuring units. Done with millimeter precision when transferring and positioning.

The controls:
intuitive and logical

As a production-related system, the Scooter 1000 is designed in all respects for uncomplicated and user-friendly handling. Operation is either via an external drive computer (PC or tablet) or via the on-board intuitive touchscreen of the drive unit. An optional radio remote control is available as a backup solution in the event of a network failure.

The basic version of the control and drive software already covers the majority of industrial operating requirements that are common today. The Scooter 1000 is barrier-free compatible with the world of measuring machines.

Complete from the start:
# the basic scooter configuration

The basic configuration, of the Scooter 1000 comes with all the elements required to close the gap in automation. The scope of delivery for performance in series:

■ drive unit including control and function software, WLAN connection
■ working unit Scooter Move on the drive unit
■ working unit Scooter Turn for rotary table use
■ two loading stations, each with a Scooter Load function unit
■ two base plates for mounting fixtures or components

optional:
■ automatically accessible 24-volt charger station for on-road operation
■ handheld tablet for control / software operation in WLAN mode
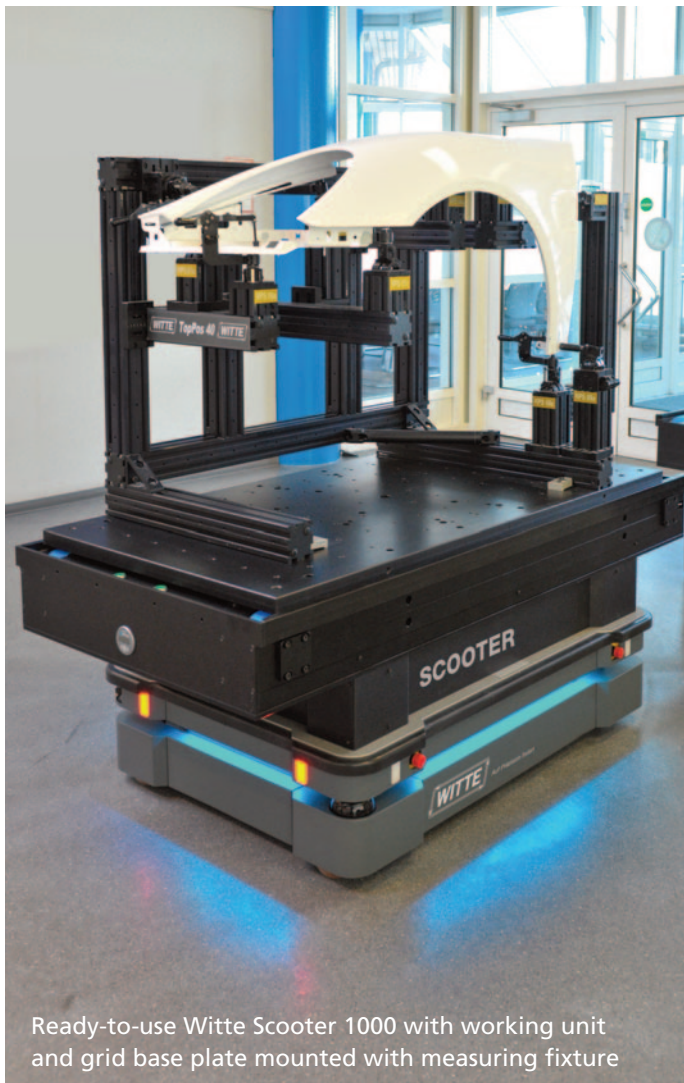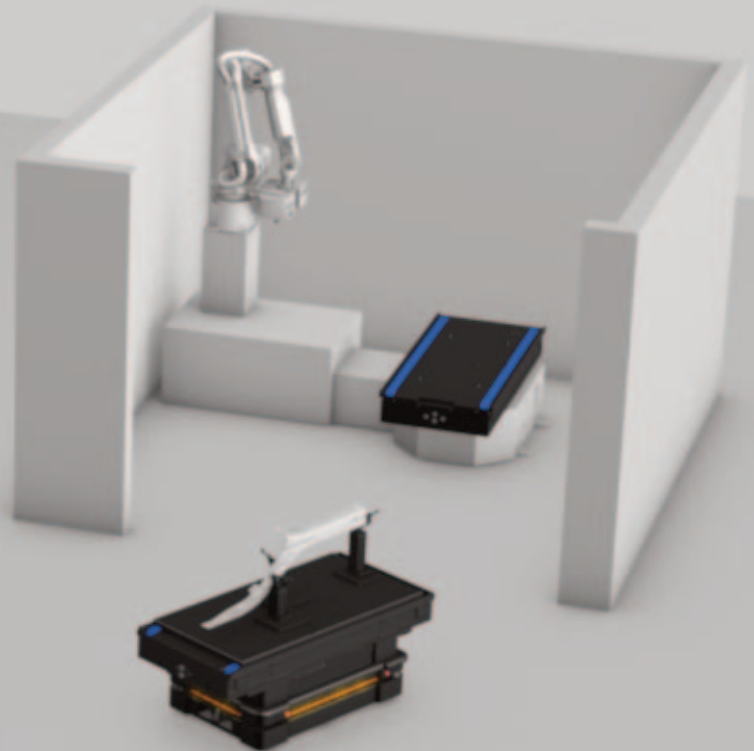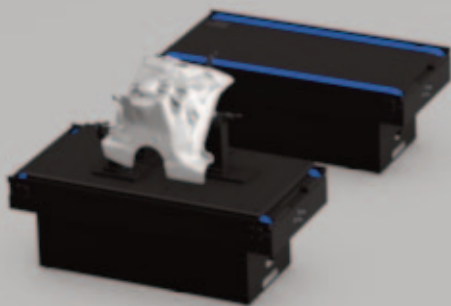
Ready-to-use Witte Scooter 1000 with working unit and grid base plate mounted with measuring fixture

Navigation:
accurate and intelligent

Not tied to rail systems or induction loops, but assigned with freely programmable routes, the Scooter 1000 adapts quickly and flexibly to any room geometry.

A laser-based 360-degree orientation and safety system forces a stop when confronted with sudden obstacles. And it even uses pre-saved alternative routes if the obstacle remains.

When it is started up for the first time, the Scooter 1000 scans the surroundings and independently creates a profile of usable area. The guideway generator determines the optimal pathways. Regardless of this, the user can redefine preferred travel areas, define taboo spaces and determine further parameters at any time.

Witte Scooter: Technical Data

DIMENSIONS

Length	1350 mm
Width	920 mm
Height	320 mm
Clearance from ground	30 mm
Weight (without load)	230 kg
Load surface	1300 x 900 mm

Payload

Drive unit Scooter 1000	1000 kg
Drive unit Scooter 500	500 kg

Drive and navigation

maximum speed:

Scooter 1000	1,2 m/s (4,3 km/h)
Scooter 500	2,0 m/s (7,2 km/h)
Turning diameter	2000 mm
Position (center of scooter):	±5 mm (0,2 in); angle: ±1°
Surmountable gaps + steps:	20 mm (0,8 in)

Battery Charging

Battery	Li-NMC, 48 V, 40 Ah
Battery running time	8 h
Full charging cycles	min. 700
charging time	
docking charge	1 h (10 % to 90 %)
cable charger	2 h (10 % to 90 %)
Mobile battery charger	
Input:	100–230 V AC, 50–60 Hz
Output:	48 V, max. 40 A

Environment

Ambient temperature, operation: +5 °C to 40 °C
(Humidity: 10–95 % non condensing)
Protection class: IP21

Safety conformity

5 safety functions according to ISO 13849-1
Standards: ISO/CD 3691-4, EN 1525, ANSI B56.5 EMV: EN 12895, EN 61000-6-2, EN 61000-6-4.

Connectivity, I/O

WIFI: Dual band, wireless, AC/G/N/B
I/O connections: 4 digital inputs, 4 digital outputs, 1 Ethernet port

Sensors and cameras

2 pcs.: SICK microScan 3.
FoV: 360° up to 30 m in a plane at 200 mm height.
2 pcs.: Intel RealSense D435.
FoV: Detects objects 1700 mm high at a distance of 950 mm in front of the scooter. 114° total horizontal view. Ground view, minimum distance from scooter: 250 mm.
8 pcs. proximity sensors
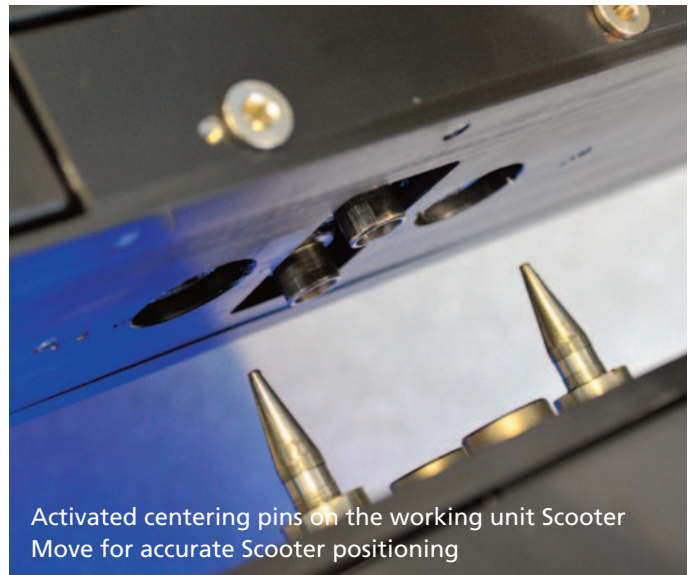
Activated centering pins on the working unit Scooter Move for accurate Scooter positioning
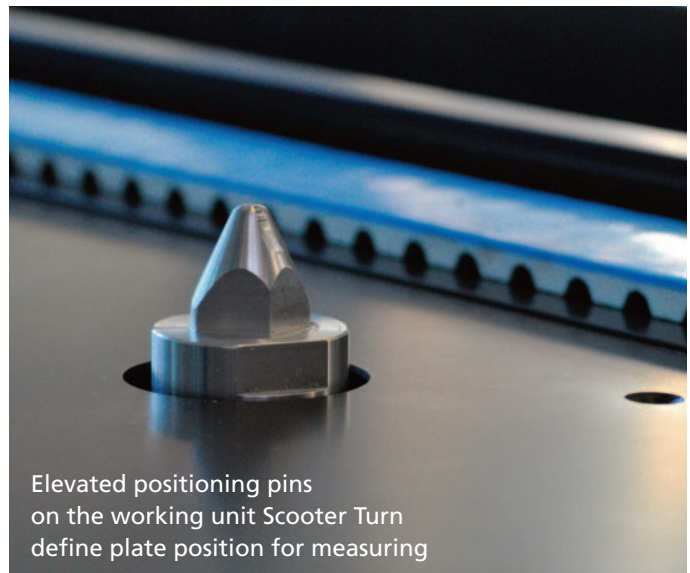
Elevated positioning pins on the working unit Scooter Turn define plate position for measuring
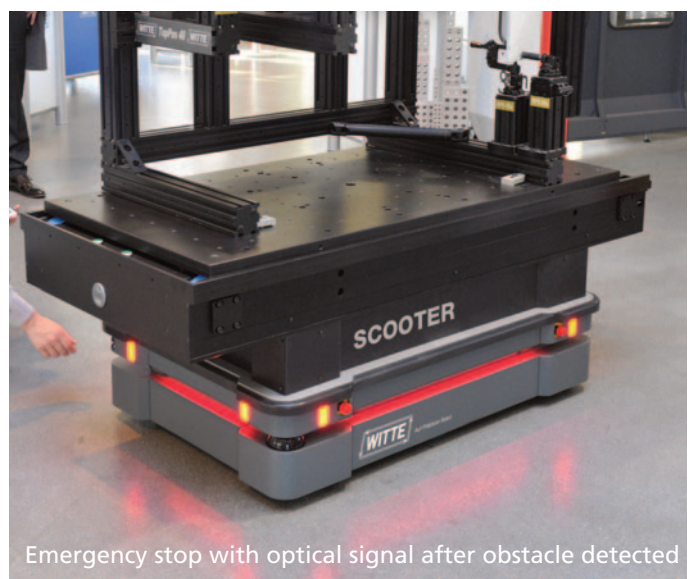
Emergency stop with optical signal after obstacle detected