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

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

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

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Emergency stop with optical signal after obstacle detected
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