# Autopilot System

**STÄHLE**

## SMC2000

**for computer controlled driving of motor cycles
on chassis dynamometers**



- **Human drive style speed control**

- **Different human drive styles selectable**

- **Extrem high repeatability**

- **Very fast and simple vehicle installation**

- **For 2- and 3- wheeler**

- **Supports hand shifter and foot shifter (left & right)**

- **Various system configurations and application packages available**

**STÄHLE**
**ROBOT SYSTEMS**

## Applications

- Emission correlation tests
- Climatic tests
- Research and development

- Emission certification
- Mileage accumulation
- Acoustic tests

- Exhaust emission tests
- Runninglosses tests
- Transmission tests

## Description

The MOTORCYCLE PILOT is an advanced computer controlled driving robot for test driving of motorcycles on single and dual chassis roll dynamometers. It can be installed on motorcycles within 10 minutes and be ready to perform tests which normally require a human driver. An extremely wide operating temperature range allows use in environments where human driving is impossible or difficult.

The computer controlled system offers a high degree of accuracy and repeatability for consistent test results. The specific drive cycle can be operator defined in the software or commanded from a remote host computer (via RS-232 or LAN interface). Special configuration parameters allow modifying the robot's driving style to match different types of human driving.

The SMC2000 system can be linked to exhaust emission analyzers, dynamometer control systems, and remote host computers. The system may be installed without a monitor or keyboard when controlled remotely via host computer and hand terminal. It can be configured to either initiate the driving cycle, or be activated by an external system.

## Operation

- Menu-driven operating software, WINDOWS GUI available

- Hand shifter, foot shifter (left & right), manual and automatic transmissions with max. 8 gears or 8 positions (P/R/N/D/4/3/2/1). Sequence is user definable

- Teach In operation for actuator strokes

- Fully automated learn cycle performs dynamic learning of all relevant control parameters

- Various closed loop control modes as VEHICLE SPEED, ENGINE RPM, THROTTLE, MAP(IMD), FORCE, EXTERNAL SIGNALS

- Integrated Watchdog

- Fail-safe actuator design: Emergency off results in non-energized state: All power disabled - Accelerator handle released - Brake pedal released - Clutch disengaged (handle pulled)

## Basic Specifications

Programmable Intelligent signal conditioning with auto scaling for vehicle speed and engine speed measurement

Analog I/O interface with potential buffer amplifiers

Digital I/O interface with relays and optical insulation, 24V technology

Controller: Intel Computer system, Signal module, power module as 19" rack mount components

Operating temperature: -40°C to +80°C

| **Accelerator** | **Hand** | | **Brake** | **Foot** | | **Clutch** | **Hand** |
|---|---|---|---|---|---|---|---|
| Turn angle | 130° max. | | Stroke | 100 mm max. | | Stroke | 120 mm max. |
| Torque | 2 Nm max. | | Force | 250 N max. | | Force | 150 N max. |
| Velocity | 60 °/s max. | | Velocity | 0.3 m/s max. | | Velocity | 0.35 m/s max. |
| **Shift** | **Foot** | | **Shift** | **Hand** | | | |
| Turn angle | +-20° max. | | Turn angle | 130° max. | | | |
| Torque | 10 Nm max | | Torque | 3 Nm max | | | |
| Velocity | 40 °/s max. | | Velocity | 0.6 m/s max. | | | |

## Options

- Brake fingers (left & right)

- Application specific configuration packages

- Shift force or clutch force measurement

- Host computer interfaces
  - Serial or TCP/IP: Extended AK protocol
  - Hybrid bit - parallel & analog interface

- Fieldbus Interfaces for vehicle OBD, chassis dyno LifeData, Data acquisition systems

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