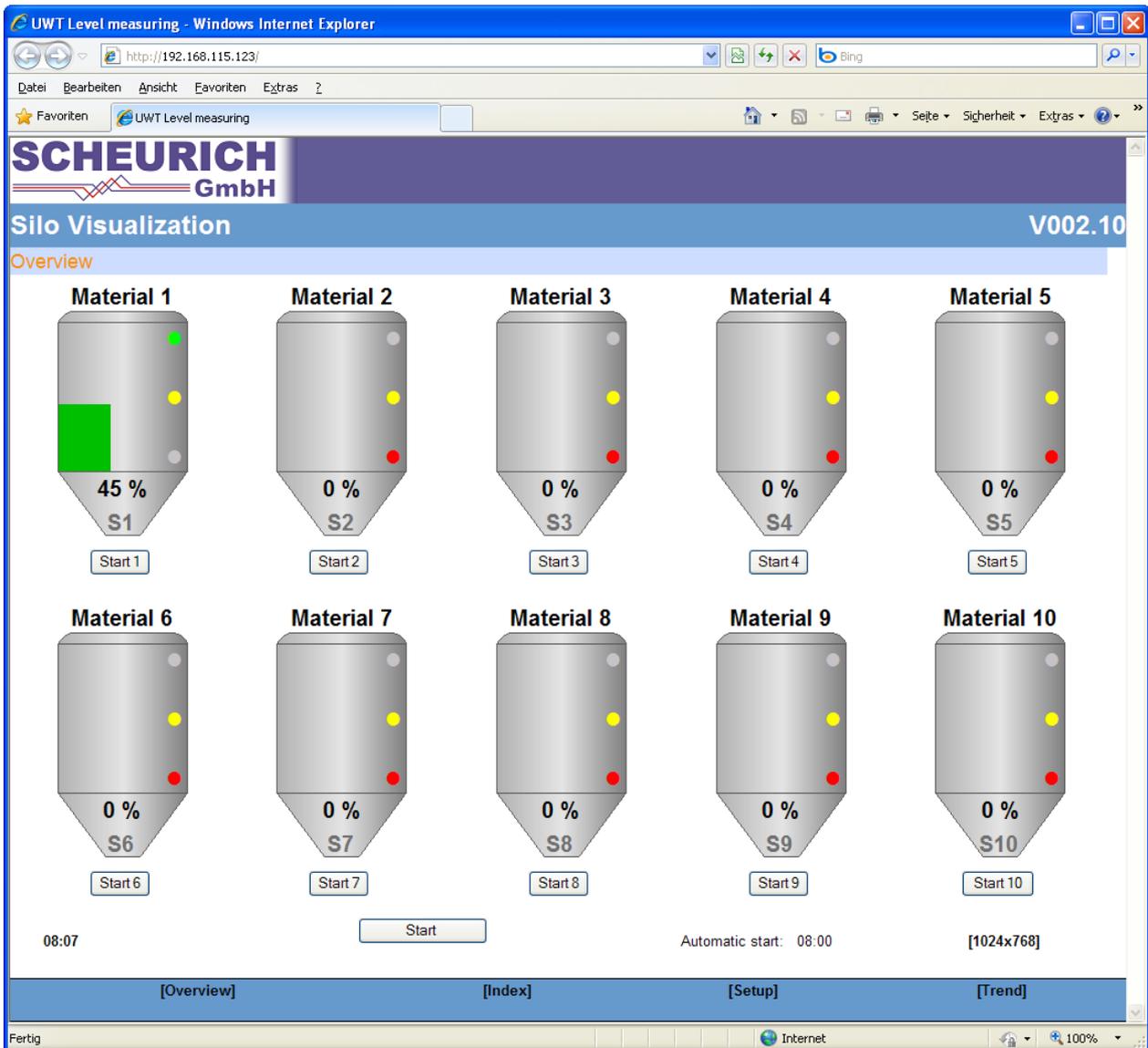# ICS22 – Silo Visualization

Short presentation of the benefits, the silo visualization offers.

The **Silo Visualization System ICS22** is used to show multiple silo fill levels via internet browser at the same time. It consists of a modular web server with add-on cards for analogue inputs (4 ... 20mA), digital inputs / outputs, strain gauge measurement and modbus interface (RS485 module). Optionally a modbus driver for Nivowave / Nivobob can be integrated to measure the fill level of contents of a silo by sound waves or sensor weights.

For each silo you can select between analogue or digital data acquisition. Also for each silo hardware sensors for minimum, demand and maximum levels can be connected. Alternatively, the alarm levels can be set by software.

The operation of the **ICS22 - Silo Visualization** is done via the integrated web interface using an internet browser. So you don't need special software - license for the visualization. Your PC only needs access to the IP address range of your network.

The individual pages can be protected by a password assignment.

Using an additional modem, the same functionality can be implemented for remote read over the public telephone network.

The websites are as follows:
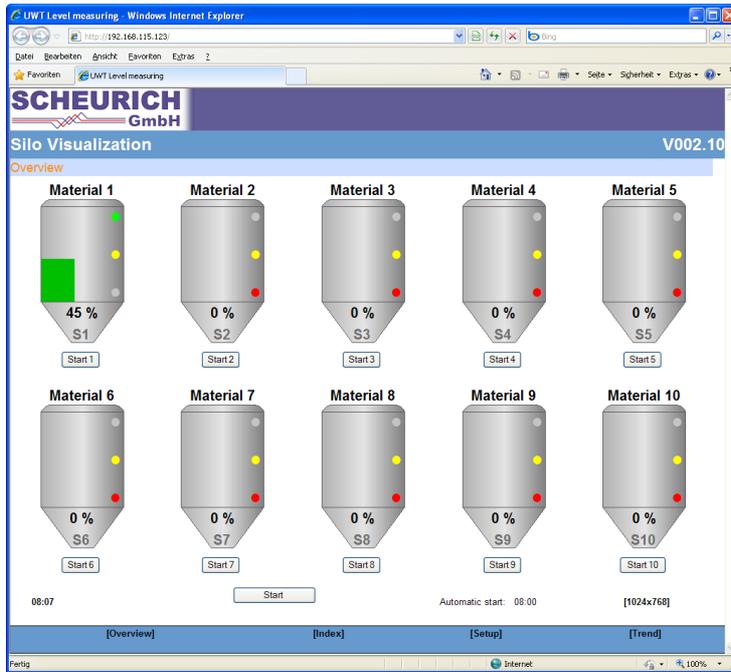
The page **Overview** provides a graphical overview of the silos with following information:

- Indication of fill levels (in %, t, kg, m^3, or m), bar chart
- State of low-level, demand-level and high-level sensors
- Content (Material)
- Silo identifier
- Current time
- Next time for automatic start

The page **Index** provides a summary table showing the current fill levels (in %, t, m^3 and m) and status information such as limits exceeded or falling below of low-level, demand-level and high-level sensors.

| Status	Meaning
MIN	Falling below the low-level sensors.
DEMAND	Falling below the demand-level sensors.
OK	Limit exceeded the demand-level sensors.
MAX	Limit exceeded the high-level sensors.

The page **Settings** contains a table with following options for the silos:

- Material
- Low Level
- Demand Level
- High Level
- Display
- Sensor Setting
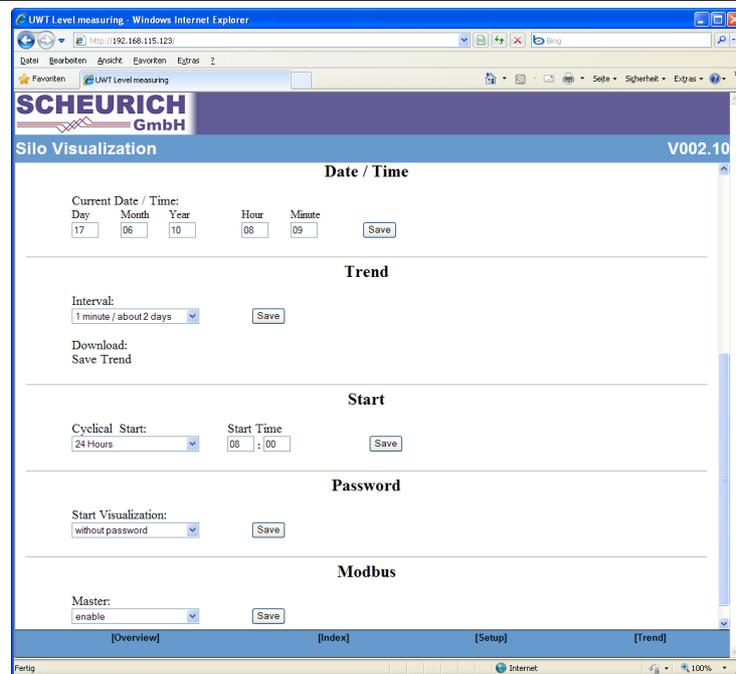
In addition, the page **Settings** provides following adjustments:

- Date / Time
- Trend (optional)
- Start (optional)
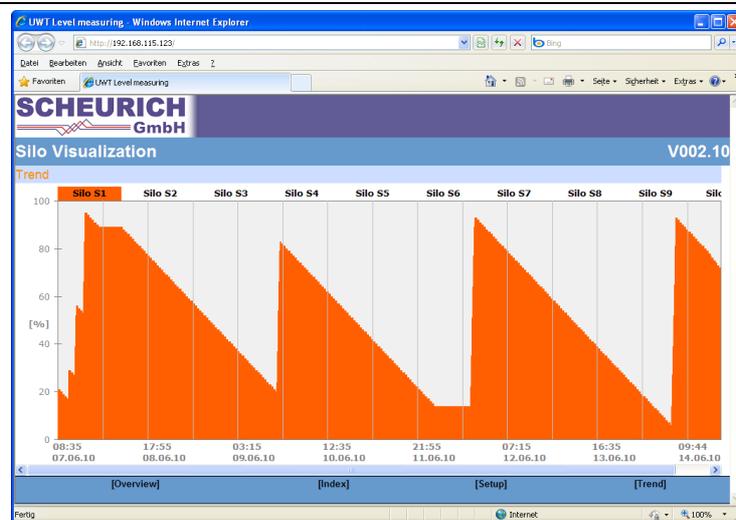- Password
- Modbus (optional)
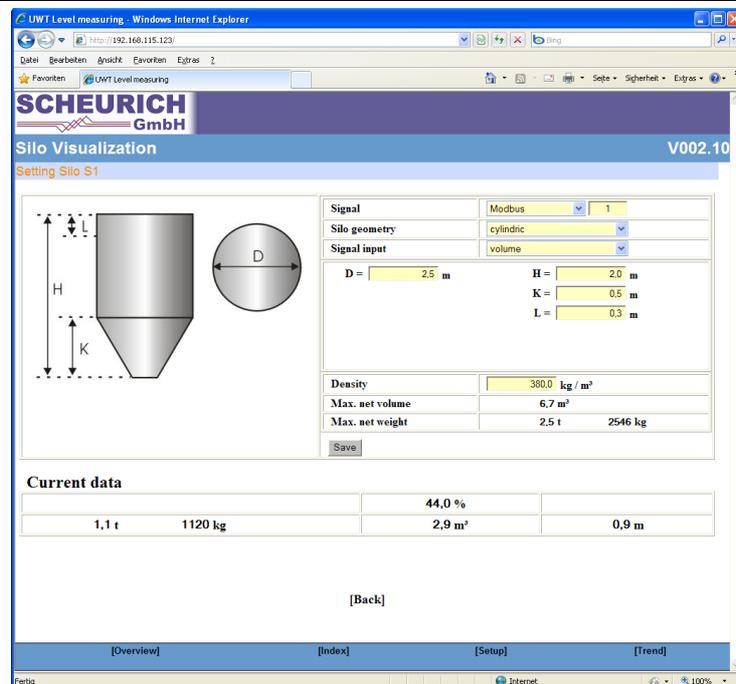
In the upper part of the page **Sensor Setting** the data acquisition and the silo geometry can be set.

- Signal
- Silo geometry
- Signal input
- Density
- Max. net volume
- Max. net weight

For checking the actual values, they will be calculated and displayed:

- Input signal
- Fill level in %
- Weight
- Current volume
- Current fill level

The page **Trend** is the graphical representation of the percentage fill level of a silo over a timeline. The values are fail-safe stored in the flash memory of the **ICS22**.

In page **Settings** you can display / change the interval for collecting the silo fill levels for graphic trend from 1 minute up to 1 hour.

Also on this page a link is available to store the trend data.

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Errors and technical
changes reserved

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