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PERFECT SYSTEMS.

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# Theysohn® Extruder Control System Retrofit upgrade to TEC 4s

Be it that the extrusion line is operated with an outdated control or even conventionally without control system at all, High Tech Extrusion now offers a clear and state-of-the-art solution. The TEC 4s Control System which is installed in all new extruders from High Tech Extrusion is finally available as retrofit kit exclusively for all High Tech Extrusion – Theysohn extruders.

Following a check for compatibility of main drive and dosing unit, space requirement for the new control cabinet is assessed whereupon the existing control cabinet is replaced together with the installation of the 19" touch screen. The core unit of the Theysohn Extruder Control System is a powerful, fanless and therefore maintenance-free industrial-PC. The communication between the TEC 4s and all components of the extrusion line works through the worldwide most used bussystem – Profibus.

This solution provides an upgrade to a state-of-the-art management of the entire extrusion line with its existing components whilst the overall investment remains manageable in comparison with the acquisition of a new extruder.

## ADVANTAGE

### Reliability:

- Two independent operating systems (Windows XP Embedded, WinAC RTX)
- In case of emergency the main-motor can be started independently from the PLC.
- Operator panels extruder and downstream:
  - Particularly robust and compact.
  - Very high protection class IP65.
  - Surface of touch-screen made of special glass.
  - No mechanical parts.
- Dust-free control cabinet:
  - Closed air circulation.
  - Heat exchangers for cooling the control cabinet, instead of blowers.

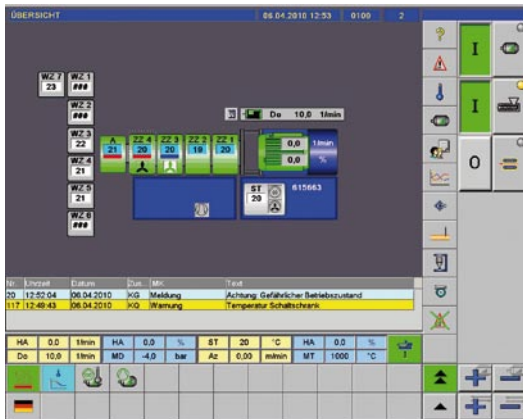
- Automatic self-tuning of temperatures: Self-tuning at any switch-on of heating. Helpful, when often changing toolings
- Heating current monitoring: Cyclical measuring of actual current by current transformers, hence quick detection of damaged heating zones
- Timer Heating: Heating-up of extruder without an operator on site therefore time saving

### Efficiency:

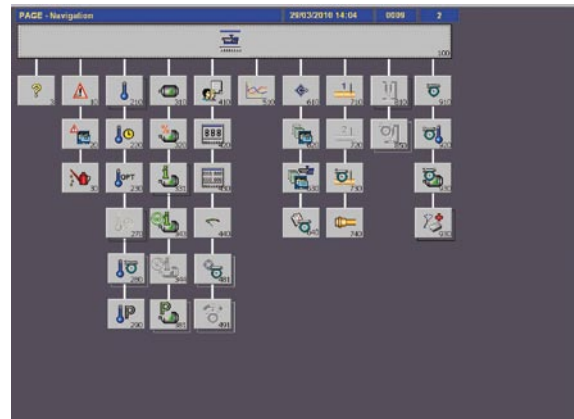
- Speed controlled vacuum- and water pumps: Pumps run only at speed which is required for production of the necessary vacuum.
- The extruder main motor is an energy saving motor
- Production data acquisition: Process-data are continuously monitored, stored and evaluated

### Productivity:

- Pre-Leading Quality Measurement: In-time visualization if actual values of resulting figures are not correct
- Access to remote maintenance via Internet and/or Intranet
- Quick connection system of tooling: One common socket for electrical-energy and for temperature sensors
- Diagnostics- and drives information: Easy diagnosis of the extrusion line
- Maintenance management: Recording of operating hours and display of an alarm when reaching the maintenance interval is reached



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## Visualizing system (IPC)

Processor	Core 2 Duo, 1,2 GHz, 800 MHz FSB
Operating system	Windows XP embedded
Memory	2 G Byte DDR3 1066 SDRAM
Hard Drives	1 x Compact Flash Card, 4 Gbyte min.
Interfaces	1 x Profibus Master 2 x Gigabit Ethernet 4 x USB 2.0 1 x RS232 1 x DVI/VGA
Display	19" TFT touch screen 1280x1024 pixel

## Additional features

- internal monitoring of operating voltage and temperatures
- backup of CMOS data
- telediagnosis and remote maintenance via LAN and/or Internet
- 2 MB battery backed SRAM for data storage
- electrically insulated power supply

## Peripheral devices (Standard equipment)

Inputs/Outputs	32 digital inputs 40 digital outputs 2 incremental counters 8 analog inputs, 12 Bit 8 analog outputs, 12 Bit 16 TC inputs 3-5 motor starters with diagnostic function 1-2 strain gauge amplifier module
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## Temperature controllers

The temperature controllers are made as software controllers. 64 controller zones can be driven.

- configureable as 2- or 3-step controller, as well as setting element
- PID control mode
- selftune
- automatical selftune with each heating process, thus guarantees best control results after change of tooling without any additional effort
- adaptation at the set point
- check of controller loop plausibility
- check of actual value plausibility
- automatic adjustment of controller outputs in case of sensor failure
- heating timer
- optional heating current control
- heating with solid state relays, fuse protection without lead fuse

## Standard

- a logical colour scheme and transparent screen information provide clear overview and easy handling
- general layout / user concept
- operating system: Windows XP embedded
- several main operating parameters can be freely selected to be displayed on all screen pages
- touch screen for easy operation and input of data
- on-line shifting between languages (up to 32 languages)
- saving and loading of formulas and process parameters
- alarm messages are shown as clear text in pop-up windows
- alarm history
- trend graphs register the relevant production parameters for periods of up to 4 weeks
- production protocols can be printed and stored on flash disk
- synchronization of up to 12 drives
- self-tuning temperature controllers
- timer for barrel and tooling heating zones
- powerful SoftPLC on high solid operating realtime system
- automatic adjustment of controller outputs in case of temperature sensor failure
- online help system
- automatic breaker
- maintenance management
- PROFIBUS guarantees quick and safe data transfer
- voltage loss protection of the control voltage by buffer battery at sudden voltage loss (up to 3 seconds)

## Options

- 6 up to 54 tooling zones
- production data acquisition
- co-extrusion control
- remote maintenance via LAN and/or Internet
- integration of gravimetric feeding unit
- integration of wall thickness measuring device and wall thickness control
- saw cut control including wall thickening program
- heat current control for barrel zones
- heat current control for tooling zones