

## Aids to meeting Nadcap audited regulations for Heat Treatment

Specnow has developed a range of products and services to help heat treaters meet their internal and external audit requirements, including “nadcap” standard.

The acronym nadcap refers to the “National Aerospace and Defense Contractors Accreditation Program”. Nadcap is a prescriptive quality system applied increasingly in the Aerospace Industry. For Heat Treatment, the audit specification is covered in AS7102, and the audit criteria in AC7102. Specnow provides customised solutions to achieve both the nadcap specification and the associated thermal processing specification AMS2750D.

Using a combination of off-the-shelf plcs, PCs and proprietary software, Specnow engineered an advanced furnace control system – **Microlink**. The unit has been running on many installations since introduction in 1998. With a high visibility HMI, the system is particularly suited to vacuum furnace applications that call for complex, high accuracy process cycles with nadcap discipline. The control and display software is written with DataManager, a low cost SCADA type package.



*Microlink controller on vacuum furnace*

*Easy TUS, portable nadcap survey box*



To complement **Microlink**, Specnow has designed an independent nadcap survey box - **Easy TUS**. This portable unit provides the separate instrumentation and recording facilities required for temperature uniformity survey (TUS). Screens also provide feedback on the status of thermocouples and ensure compliance with all of the standard's system accuracy tests (SAT). All data is recordable and can be exported as csv files.

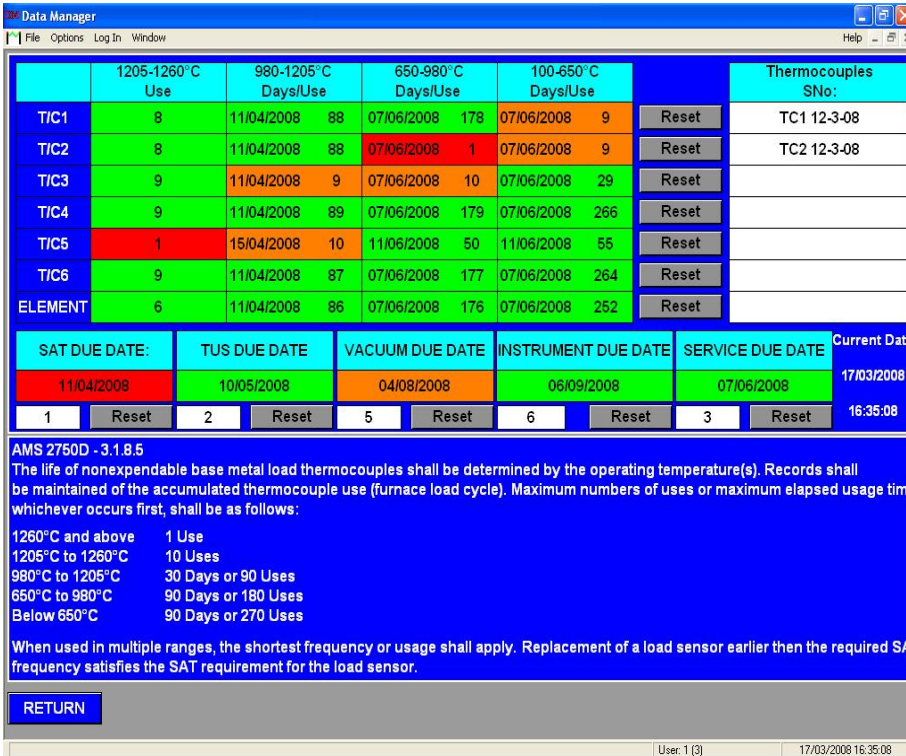
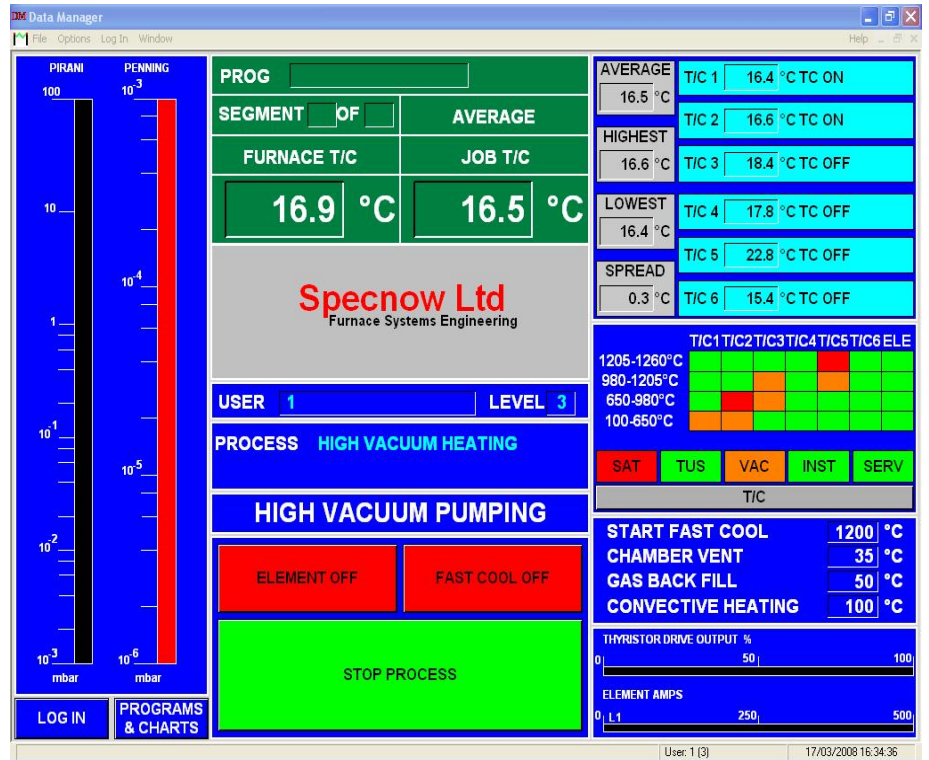
For vacuum furnaces, vacuum calibration access and a nadcap vacuum leak-up test and display are included.

Both **Microlink** and **Easy TUS** are available from Specnow; the company also offers calibration services and supply of sensors and instruments.

# Microlink furnace control and data management screens

## Operator's main screen

Here the Microlink control system is configured for use with high vacuum furnaces. The operator's main screen shows the furnace and process status. The display includes a compliance alert field, which is used to signal impending nadcap requirements and indicate thermocouple ageing. The alerts are shown in more detail in the nadcap control screen below.



## Nadcap control screen.

A second password protected screen shows the service status of thermocouples. Colour coding and data alert the user to nadcap replacement requirements.

Also displayed are the schedules for individual nadcap compliance routines (TUS, SAT etc) carried out with **Easy TUS**. The nadcap activity is managed and archived via the screen to record compliance.

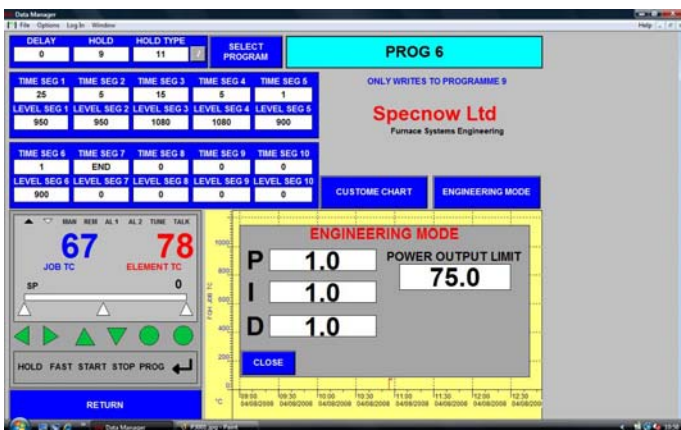
## Summary of capabilities and benefits

- Incorporation of Nadcap requirements into Microlink product design (Control Instrumentation and Data Management) to aid compliance
- Readily updateable software solution to accommodate revisions to nadcap
- Incorporation of user routines to aid systems accuracy test (SAT) compliance
- Intelligent management of all types/mixes of thermocouple, vacuum and gases
- Control algorithms to aid accurate performance against defined thermal profiles
- Special routines to eliminate thermal overshoot and achieve guaranteed thermal soak time
- Soft-wired control solutions to accommodate workload thermocouples monitoring
- The provision of equipment and services to aid temperature uniformity surveys (TUS) to nationally accredited standards
- Secure local and remote data recording at every level, local and plant-wide
- Routines for recipe revision control and recording of selected recipe profile against actual furnace performance

### Electronic archiving:

- Secure process values and setpoints (including events log for alarms, operator actions, recorded logins, operator notes)
- Protection of data through binary compressed and check summed records
- Batch entry details embedded in process data records
- Accurate time stamps against automatic Time Synchronized clock source
- Secure data archiving with automatic file backup and transfer to aid long term data archiving routines
- Provision for electronically copying data for archive
- Export facility allowing viewing of secure records in human readable format
- Remote channel access to record loaded recipe, setpoint profiles, and furnace atmospheres including vacuum

**Microlink** and **Easy TUS** can be used together or independently at an individual furnace installation. **Microlink** can also act as a hub to view and address associated furnace plant.



*The Microlink controller can act as a hub to monitor other plant in the local area. The status of Eurotherm, West, FGH and similar instruments can be mimicked, calibrations carried out, and data archived for nadcap requirements.*

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