EMCS Portable Dryer Software Revisions

GSI AIRSTREAM SOFTWARE -- VERSION 3.09 RELEASE NOTES   Release Date: Sept 19, 2001
    Stephen Logue / Grain Systems, Inc.
==
- Increased speed of watchdog serial connection from 9600 baud to 19200 baud.
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GSI AIRSTREAM SOFTWARE -- VERSION 3.08E RELEASE NOTES   Release Date: July 17, 2000
==
- INTERNATIONAL VERSION ONLY   This version of 3.08 reports metric tonnes/hour instead of bushels/hour and total metric tonnes instead of total bushels (Export software).
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GSI AIRSTREAM SOFTWARE -- VERSION 3.08.00 RELEASE NOTES   Release Date: Jan 10, 2000
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- Made all mercoids active. On a single fan unit mercoid number 2 and mercoid number 3 will have to be jumped to J5-8. On a two fan unit mercoid number 3 will have to be jumped to J5-8. On any thing above a two fan the mercoids are active as needed; if you have a four fan there are four mercoids.
        The mercoid pins are:

mercoid #1	j4-20	mercoid #4	j4-16
mercoid #2	j4-18	mercoid #5	j2-19
mercoid #3	j4-03	mercoid #6	j2-20

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GSI AIRSTREAM SOFTWARE -- VERSION 3.07.00 RELEASE NOTES   Release Date: December 22, 1999
==
- Made dryer default to US instead of CANADIAN on power up.
==
GSI AIRSTREAM SOFTWARE -- VERSION 3.06.00 RELEASE NOTES   Release Date: July 99
==
- Put a selection screen to select the dryer for canadian   operation which will make the mercoids active.

| mercoid #1 | j4-20 | mercoid #2 | j4-18 | mercoid #3 | j4-03 | mercoid #4 | j4-16 |

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GSI AIRSTREAM SOFTWARE -- VERSION 3.05.00 RELEASE NOTES   Release Date: October 27, 1997
==
- Changing programming so that if novram is initialized END FILL AUGER is always selected.
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GSI AIRSTREAM SOFTWARE -- VERSION 3.04.00 RELEASE NOTES   Release Date: 08/28/97
==
- Changed software so a two fan dryer reports a right fixed grain hi-limit in place of a lower adjustable hi-limit, and a left fixed grain hi-limit is reported in place of a lower fixed hi-limit. **THIS WILL INCORRECTLY IDENTIFY AN ADJUSTABLE HI-LIMIT AS FIXED IN OLDER DRYERS**
==
GSI AIRSTREAM SOFTWARE -- VERSION 3.03.00 RELEASE NOTES   Release Date: 07/01/96
==
- When novram is reset then dryer starts on end fill.
- changed programming to help in wiring of the batch/cont switch. **Don't put old programming in a new dryer, because the dryer will not run in batch mode!**
==
GSI AIRSTREAM SOFTWARE -- VERSION 3.02.00 RELEASE NOTES   Release Date: 06/02/96
    PRESENTLY FOR NEW WATCHDOG USE ONLY!!!
==
- Added the new watchdog software. This program will only operate with the 1996 version of watchdog.
- Added software so that the watchdog can shut the dryer down remotely.
- Added the AUTOCALLER function which calls the customer's pager if the dryer were to shutdown. The pager must be a NOKIA. You program the number in by holding in on modify when the dryer is first powered up, following the normal message editor. Then select ON on that same screen. The time intervals that the dryer will call are programmed in with the green aux 1 button.
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GSI AIRSTREAM SOFTWARE -- VERSION 3.01.00C RELEASE NOTES   Release Date:
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- Added the mercoid safeties, for Canada, to version 301. ONLY SENT TO CANADA Future version 3.05? will jump in setup screen.
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GSI AIRSTREAM SOFTWARE -- VERSION 3.01.00 RELEASE NOTES   Release Date: 06/29/95
==
- Stopped the batch timers from running if the dryer is shut down due to a safety.
- Fixed the problem of burner and fan both coming on at the same time if the purge delay is still running when the cool timer expires.
- Fixed a problem in batch mode concerning the dryer staying in temp hold after hitting stop, reset, and then the start button while in temp hold.
- Changed the message of unknown safety to 'SAFETY SYSTEM FAILED'. You should never see this warning unless the jumper to j1-10 is gone.
==
GSI AIRSTREAM SOFTWARE -- VERSION 3.00.01 RELEASE NOTES   Release Date: 06/25/95
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- Changed the way the dryer reports an open circuit in the 20 second flame detection circuit. If dryer is turned on with flame detection circuit being open then "20 SECOND SAFETY CIRCUIT FAILURE" is displayed. The same message is displayed when the dryer is already operating, after a 20 second delay, except when ANY burner is on or ANY purge delay is running.

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GSI AIRSTREAM SOFTWARE -- VERSION 3.00.00 RELEASE NOTES   Release Date: June 5, 1995
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- Holding in on the Load Delay switch on power up now displays the factory version number instead of the consumer version number. If changes are made at the factory which the consumer need not be aware of then only the factory number is incremented. Factory number is designated by the last two digits.
- Fixed the problem concerning the intermittence of dryers shutting down due to the out of grain timer expiring. The out of grain timer only fuctions correctly if the load delay and aux 1 delay have something besides zero in them. Now these timers can only go as low as .1 minute.
- Changed the screen accessed by the out of grain timer switch. Now when you enter this screen the out of grain timer count down is displayed and the TIME the last load cycle ran is displayed. This will be displayed until "enter" is pressed and at this time you will be able to modify the out of grain timer time if that is your wish.
- Fixed the problem of the dryer not entering emergency cooling mode if you have a right or left fixed grain high limit. This concerned only single fan dryers.
- Fixed problem of the emergency cool timer starting its count down, before start button was even pressed.
- Holding in on the "enter" switch on power up will allow you to go directly to the screen where reset initiates program operation.
- Fixed the problem of out of grain timer being reset after the end of a batch cycle. Now the timer is reset only upon entering the program, pressing the stop or reset switch, or by the mercury switch itself.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.17P RELEASE NOTES   Release Date: May 11, 1995
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- This programming change concerns only those dryers specifically associated with drying pistachios. The FAN x PLENUM messages have been altered to FAN x ADJ. PLENUM.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.17 RELEASE NOTES   Release Date: May 11, 1995
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- Now when wiring a two-module stack dryer, instead of connecting the upper fixed and upper adjustable hi temp grain limit wires to the middle fixed and middle adjustable hi temp grain limit inputs, connect them directly to the upper fixed and upper adjustable hi temp grain limit inputs on the I/O board.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.16 RELEASE NOTES   Release Date: March 7, 1995
       Stephen Logue / Grain Systems, Inc. / Ext. 1184
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- Changed the way the single fan dryer reports grain hi temperature errors. Now instead of reporting lower fixed and lower adjustable grain hi temperature errrors the dryer reports either a right or left fixed grain hi temperature error. This only concerns the single fan unit.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.15 RELEASE NOTES   Release Date: December 14, 1994
       Tim McDonough / Illini Technology, Inc.
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- Changed the default user message to indicate 1995 series serial numbers when the factory presets the data.
- Changed the power up sequence so that any time the power is first applied to the controls, the air switch testing is always set to "yes".

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GSI AIRSTREAM SOFTWARE -- VERSION 2.14 RELEASE NOTES   Release Date: October 19, 1994
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- Changed Emergency Cooling Mode so that the diodes are no longer required. NOTE: diodes should be removed from the dryer when installing this version of software as well as future versions.
- Fixed problem that caused the Total Bushels to not accumulate when the BPH Calibration Factor was set to a value larger than 1.00.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.13 RELEASE NOTES   Release Date: October 6, 1994
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- Re-designed the software that detects left and right merering roll failures to improve reliability. The number of meter roll pulses counted by the computer (tested once each second) must be different for at least 1/2 a minute before a failure is assumed. When this situation occurs it is assumed that the side with the least number of pulses is the failed side.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.12 RELEASE NOTES   Release Date: September 22, 1994
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- Modified the error testing code to be more tolerant of supply voltage dips during fan and motor starting. Error conditions will not shut down the dryer unless they persist after the 2 second hi current timer has completed running.
- Made the left and right metering roll failure detectiion less sensitive. The counts from each shaft can now differ by as many as 50 pulses where before they could only differ by 20 before a failure was detected.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.11 RELEASE NOTES   Release Date: September 14, 1994
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- Corrected a bug in setting the factory defaults that caused the meter roll reversing feature to default to "on". This feature now defaults to "off" as it should.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.10 RELEASE NOTES   Release Date: September 9, 1994
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- More data has been added to the stream transmitted to the remote computer. A total of 54 bytes are now transmitted taking an average time of 84 mS @ 9600 bps.

Note that due to the new higher possible meter roll speeds the RPM value is now sent as a word where it was previously a byte value. All data that is sent after RPM is now in a different place in the data stream. There is a new status byte sent that is packed with bit values to indicate warnings, emergency cooling mode, meter roll testing, air switch testing, bypass hold in effect, etc. For complete information on the data that's transmitted search the AIRPLM file for a procedure named "transmit_status". The comments describe every byte transmitted from the dryer. There is not a status bit in the software to indicate the dryer is holding for temperature. The system is out of available memory and it might be difficult (impossible?) to add one. The software detects a temperature hold situation when the following conditions are met:
   1) The dry timer has gone to zero   2) The cool timer is not running   3) Moisture control is turned on
   4) The thermostat indicates temperature is below the setpoint.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.09 RELEASE NOTES          Release Date: September 7, 1994
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- Dryers used in applications where rice is dried need to operate in excess of the original 20 RPM design limit. The routines that calculate RPM and BPH have been rewritten so they can cope with larger numbers. Both RPM and BPH calculations should work properly up to meter roll speeds of 100 RPM or so.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.08 RELEASE NOTES          Release Date: September 2, 1994
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- Additional data has been added to the status transmitted out the serial port once each second. There are now a total of 48 bytes of data transmitted. Newly added bytes are as follows:

      Bytes 43,44: Number of batch cycles processed.   Bytes 45,46: Amount of time left on OOG timer. *
      Bytes 47,48: Amount of time programmed into the OOG timer. *

  * These two words need to be adjusted in your "Watchdog" software in the same manner as the dry, cool, and unload timer values.

  For complete information on the information that's transmitted search the AIRPLM file for a procedure named "transmit_status". The comments describe every byte transmitted from the dryer.   The model number of the dryer corresponds to the 42nd byte transmitted. It can be correlated to the GSI model designation by searching the AIRPLM file for " dryer_model(*)" and examining the table. A value of 0 means it's a Model 1108, a value of 17 means it's a Model 1220S, etc.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.07 RELEASE NOTES          Release Date: August 18, 1994
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- The display alignment mode now clears the run time meter to zero. This is required due to a change in Illini's factory burn-in and testing procedures.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.06 RELEASE NOTES          Release Date: August 9, 1994
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- Changed the default text for the message editor to read   "SERIAL NUMBER 94000".
- When the NOVRAM is preset to factory defaults, meter roll reversing is now disabled.
- The difference in counts between the left and right metering roll tach signals that must occur before a failure has occurred has been increased from 10 to 20. This will help prevent bogus failures on longer dryers where there is more slop in the drive system.
- Corrected a problem that caused the SCR Drive to mementarily shut off a few seconds after starting when meter roll reversing was disabled

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GSI AIRSTREAM SOFTWARE -- VERSION 2.05 RELEASE NOTES          Release Date: July 25, 1994
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- Corrected a bug that allowed the meter rolls to briefly run when the unload switch was off and it was time for them to reverse.
- Corrected a problem that caused 5 and 6 fan dryers to not shut down properly during a loss of flame.
- Changed the default text for the message editor to be "SERIAL NUMBER". GSI is going to start manually programming in the serial number of the dryer on the startup screens.
- Added setup screens to allow the user/dealer to adjust the times used for the meter roll reversing feature.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.04 RELEASE NOTES          Release Date: July 12, 1994
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- Added support for Meter Roll Reversing in Continuous Flow Mode.
  1. Connect a jumper from J9-09 to J7-16. 120 VAC is available on J9-09 (Switched L1) any time the computer is powered up and no errors are detected in the system. J7-16 is the common terminal of relay RL3.
  2. Connect J7-17 (RL3 Normally Open) to one side of the relay coil you're mounting externally.
  3. Connect the other side of the relay coil to one of the AC neutral connections on the Power Board.
     By using the Switched L1 voltage from the power board to activate your relay the computer will still be able to reliably shut off all AC coming out of the Power Board if dryer problems are detected.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.03 RELEASE NOTES          Release Date: June 30, 1994
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- Added support for a 2nd Load Auger in Center Fill dryers.
  + The contactor for Load Auger #2 connects to J7-01.
  + The out of grain switch for #2 connects to J4-01.
  + The out of grain timer runs only if both paddle switches sense the dryer is low on grain.
  + There are seperate load delay timers for each auger. The value programmed by the user for the LOAD DELAY is used for both timers.
  + Both load augers will not normally start at the same time because of the starting delay on large electrical loads.
  + By default, the software controls only one load auger. A new menu option in the system setup menus lets the user or service person enable control of the second auger system by using the up and down arrow keys to toggle between "END FILL SYSTEM" and "CENTER FILL SYSTEM". The computer will default to an end fill system when the NOVRAM is initialized.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.02 RELEASE NOTES          Release Date: June 21, 1994
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- Corrected a problem that caused the Emergency Cooling display to report middle and upper grain temperature problems as lower grain temperature problems.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.01 RELEASE NOTES   Release Date: June 17, 1994
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Changes:
- Added display of the failure history to the diagnostics mode.
- Added Plenum Safety messages to the Emergency Cooling Mode display.
- Corrected a problem with the BPH Calibration that caused problems with the Total Bushels accumulation.
- Changed the order of testing the burner flame probes so that when a loss of flame occurs, the correct burner is reported on the display screen and failure history.
- Modified the display update so that flashing messages during burner purging are less erratic. Some inconsistencies may still occur--it's more important that the burner purge properly than the display flash precisely.
Unresolved Issues: -   Jeff F. reported two items that are not easily resolved:
  1. Multiple safety shutdowns in Emergency Cooling Mode will lock up the computer because the computer system runs out of room to store information about what is going on in the system. The new controls with more available memory will resolve this problem.
  2. Erratic Timer Adjustment while the dryer is operating is due to the computer having to run the dryer and process the running timers while the user is trying to adjust their values at the same time. The software is written so that the dryer operation always wins when there are multiple requests for service from the computer.

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GSI AIRSTREAM SOFTWARE -- VERSION 2.00L RELEASE NOTES   Release Date: [NOT FOR CUSTOMER USE]
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| With this software release, the version number has been bumped to 2.00 to reflect major software changes required to implement new features for 1994 |
| and later dryers. Versions with numbers such as 2.00A, 2.00B, etc. are for GSI use only. The first "official" version for customer use will be 2.00 |
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Pre-Release "L" (March 30, 1994):
- Added the ability to remotely stop the dryer using the GSI "Watchdog" program. If the dryer computer receives 11 or more "S" characters during a one second period, the dryer is shut down as if the user pressed the stop switch. When the dryer is shut down remotely, a "REMOTE SHUTDOWN" indication is stored in the TIC history.
Pre-Release "K" (March 15, 1994):
- Worked on meter roll testing software so that overall failures and seperate left and right failures are detected more reliably.
Pre-Release "J" (February 22, 1994):
- Added a 42nd byte to the transmitted status information. This byte is the "gsi_model" value that indicates the dryer model being controlled.
- Emergency Cooling Mode: If the grain cools while the operator is away and the fans shut down, the shutdown history screen is displayed so the user knows why the dryer has stopped running.
- Fixed a batch display problem that did not erase all the characters from the shutdown history message when the **** were displayed if meter rolls were not being tested.
Pre-Release "I" (February 2, 1994):
- Modified the Emergency Cooling Mode displays so that the most likely cause of the shutdown is displayed rather than the more generic "grain high temperature" message.
Pre-Release "H" (February 1, 1994):
- Added software to send a limited amount of dryer status information out the programming port. The data is sent at 9600 baud, 8N1 format once each second. The custom program DRYER.EXE should be used to decode and display the data on a PC. You must connect a "straight through" serial cable between COM1 of the PC and the 9-pin Flash Programming port on the dryer control for this feature to work.
Pre-Release "G":
- More work on emergency cooling mode...
Pre-Release "F":
- Added extra condition tests to make it more difficult for the computer to get into the factory test routines accidentally.
- Removed code used in the Illini Factory Burn-In test from the software that gets shipped to GSI. This eliminates the chance that it can ever be run on a customer's dryer.
- Removed the "contrast adjustment" code since we don't adjust the IEE Displays.
- Changed warning testing so that the 12V Lost condition is properly tested and identified. Gary and Brian reported that the User Safety message was beng displayed when they turned off the circuit breaker for the 12V.
- If the dryer is operating and the INCREASE switch is pressed, the software version number is now displayed in addition to the total run time.
Pre-Release "E":
- Corrected a problem with the cleanout cycle that would not allow the user to stop the dryer if the auger was cleaning out after an out of grain shutdown.
- Corrected a problem that caused the a warning messaged to be stuck on the screen if a warning occured during an auger cleanout after an out of grain shutdown.
- Changed emergency cooling mode...
Pre-Release "D":
- More work on the emergency cooling mode system.
Pre-Release "C":
- Changed warning system so that the auger runs through a clean out cycle before an Out Of Grain warning is issued.
- Fixed several display glitches in timer, delay, and other modify modes.
Pre-Release "B":
- Added the Plenum Temperature sensors to the emergency cooling mode.
- Added a time delay at the end of the emergency cooling mode to provide time for the safety system to stabilize before it resumes testing the temperature sensors. This prevents the computer from falsely sensing a warning.
- Increased the maximum number of Total Bushels that can be displayed from 65,535 to 999,999.

Pre-Release "A":

- Added additional testing for fans to check for loss of airflow when just the fans are running. If air switch testing is enabled then a warning will be generated if airflow is lost once the fan has started. The warning is displayed on the LCD and logged to the error history file.
- Implemented the capability to display and edit a user programmable message that may be used to personalize the dryer with the customer's or dealer's name. Operation of this feature is described in the CUSTOM MESSAGE EDITOR document faxed to GSI on November 24, 1993.
- Implemented the "emergency cooling mode" for overheated grain. If the "COOL" switch is pressed and held while a grain temperature warning is displayed a special mode will be entered where the fans may be run to cool the grain. This special mode is exited when either 1) the user presses STOP, 2) the emergency cooling mode timer expires, or 3) all grain temperature sensors reset. Further details are provided in the EMERGENCY COOLING MODE documentation dated December 2, 1993. Some changes to the dryer wiring are required for this feature to work properly.
- Implemented the capability to allow the dryer to continue running while the operator views the error history. If the error history is being viewed while the dryer is operating the systems checks for warnings once each second vs. 4 or more times per second during regular operation.
- Added an auxilliary "user supplied" safety input at J1-20 on the power board. As with all other shutdowns, a message is displayed and the error logged in the error history memory of the TIC. If this safety input is not used by the customer, J1-20 must be connected to 12 volts to prevent bogus dryer shutdowns.
- Any time the dryer is running in batch operation or continuous flow, the AUX 2 triac output is energized.
- Changed setup, testing, and reset function access as described in the 12/1/93 Fax from V. Rhodes.
- When the LOAD control switch is in the MANUAL position the load auger is controlled by the paddle switch in the top of the dryer regardless of the amount of time programmed into the LOAD DELAY timer.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.22 RELEASE NOTES   Release Date: November 16, 1993
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- Viewing the programmed Dry, Cool, or Unload timer values no longer causes the running timers to be effected unless the "modify" switch is pressed to enter the change mode.
- Corrected a problem that caused indefinite unload operation in batch mode when the unload time was set to zero. The dryer now stops when this occurs.
- In diagnostics mode, the user is given the option of clearing the error history.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.21 RELEASE NOTES   Release Date: November 9, 1993
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- Corrected a problem that caused the run time hour meter to stop when the dryer was operated in continuous flow mode.
- Corrected a problem that caused the dryer to restart unexpectedly if there was a safety shutdown and the user pressed the start switch before pressing the stop switch to clear the warning.
- Corrected a problem that caused the dryer to never unload if a shutdown occurred in batch mode while the system was holding for low temperature. When restarted, the dryer will now run through the cool cycle and then unload as expected.
- Timer values can now be set over a range of 0.0 to 199.9 minutes to accomodate processing high moisture content grain.
- When the dryer is preset by holding the AUX 1 key during power up the following values are applied as defaults:

Dry Timer:	60.0 Minutes		Cool Timer:	20.0 Minutes			
Unload Timer:	0.1 Minutes		Load Delay:	1.0 Minutes			
Unload Delay:	0.5 Minutes		Out of Grain Timer: 8.0 Minutes			Fan Delay:	5 Seconds	

- The total run time display now displays the run time in hours and minutes, i.e.-- 00000:00 .
- Pressing the INCREASE switch when you are not in one of the modify modes briefly displays the total run time accumulated on the dryer.
- The system date and clock may now be set from within the diagnostics mode. This provides a means to reset the clock without having to restore the dryer to factory default values.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.20 RELEASE NOTES   Release Date: November 2, 1993
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- Changed the timer processing for the Out of Grain and Load Delay timers so that the Out of Grain Timer does not run while the Load Delay is running. This should prevent Out of Grain shutdowns when these timers are set to low values.
- Altered the timer and delay modify procedures so that timer processing and safety tests continue while a timer value is being modified.
- Fan Air Switch testing can now be disabled by holding the RESET button down and selecting "no" at the TEST AIR SWITCH screen.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.19 RELEASE NOTES   Release Date: October 28, 1993
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- Changed RPM calculation software to correctly handle zero RPM situations. This corrects the situation where if the meter rolls were slowed to zero, the displayed RPM would jump between 0 and 6 or 7 RPM. Similar behavior in the Bushels Per Hour display was being caused by the RPM calculation.
- Improved testing for a loss of airflow condition to reduce the chance of a false "loss of airflow" shutdown. GSI believes that turbulence in the fan housing occurs when the burners cycle between high and low heat that can momentarily direct airflow away from the pitot tube connected to the air pressure switch. This revised airflow test requires the loss of airflow to persist for approximately 2 seconds before the dryer is shut down.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.18 RELEASE NOTES   Release Date: October 11, 1993
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- Added a selection screen that lets the user disable metering roll failure testing and modified error checking software to ignore failures when the user has turned them off. This setup screen is available along with the ones that allow clearing the counters, etc. when the diagnostics/reset switch is held down for 5 seconds. Any time metering roll processing is disabled, asterisks (****) are displayed instead of an RPM value so the user has an indication that he has a safety system overridden.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.17 RELEASE NOTES   Release Date: October 8, 1993
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- Added a feature to alert the user that a fan air switch is preventing a fan from being started. When a fan is supposed to start but cannot, a message is displayed on lines 2 and 3 of the LCD that indicates which fan air switch is closed. The dryer continues to operate normally in either batch or continuous mode. As soon as the condition goes away either because the fan quits spinning or the switch is adjusted, the message reverts back to the normal display.
- Added a feature to assist the operator in setting the value of the Out Of Grain Timer. When the OUT OF GRAIN switch is pressed, a message is displayed that shows the amount of time remaining on the timer and the amount of time that was spent loading grain during the previous batch cycle.
- Added a test so that the Out of Grain Timer is reset if the user switches the "LOAD" switch off. This allows users to avoid a Grain Out warning when initially filling the dryer with grain if they are filling by using the "AUTO" position instead of the "MANUAL" position on the LOAD switch.
- Revised Metering Roll tachometer processing software so that low speed accuracy is improved and the displayed values for RPM and Bushels per Hour are steady.
- Corrected a problem with the Bushels/Hour calculations that caused the calculated value to be 1/2 of what it should have been.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.16 RELEASE NOTES   Release Date: October 1, 1993
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- Decreased the sensitivity of the metering roll failure detection to avoid false shutdowns. Previously, the left and right rolls had to read within 3 counts of one another; Now the counts have to be within 10 of one another.
- Changed the run time meter so that it only increments while batch or continuous operations are in progress. It no longer increments once a shutdown has occurred or when the user has pressed the stop switch.
- Modified the portion of the software that allows changes in the timer and delay values. When "enter" is pressed after changing a value, only the timer whose value is changed is reset. The current running values of the other timers are preserved.
- Modified timer processing software to allow for any timer to be set to "0.0". This causes that cycle of the grain processing (dry, cool, unload) to be bypassed.
- Changed the RPM calculation and display routines so the displayed data does not "jump" around as much. Actual RPM is now only calculated once per second and is a weighted average of the number of pulses counted from the meter roll sensors.
- Added a "total batch cycles" counter to batch mode operation. When the dryer is running in batch mode the counter is incremented each time the unload cycle finishes. A display of this counter value replaces the "Bushels Per Hour" display in batch mode. The front panel BPH switch now selects among the batch cycle count, RPM during unload, or the total bushels display. The counter can be reset to zero from the diagnostics mode similar to the total bushels counter.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.15 RELEASE NOTES   Release Date: September 22, 1993
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- Changed start up display sequence to include a screen that shows the currently programmed model number.
- Corrected a problem that sometimes caused setup parameters to be changed if the increase or decrease keys were pressed during the startup sequence, i.e.--before the RESET button was pressed after the date/time display appears.
- Corrected a problem that caused the load auger to momentarily run if the start switch was pressed in batch mode with no fan control switches turned to the on or auto positions.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.14 RELEASE NOTES   Release Date: August 20, 1993
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- While the dryer was running the flame detector on a burner would briefly indicate a loss of flame causing a dryer shutdown. The software has been revised to allow the loss of flame indication to persist for upto 20 seconds before the dryer shuts down.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.13 RELEASE NOTES   Release Date: August 19, 1993
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- Improved Meter Roll Failure Detection. If 0 RPM is reported for longer than 2 minutes when the Metering Roll Drive system should be turning the dryer is shut down and the message "METER ROLL DRIVE SYSTEM FAILURE" appears on the LCD display. The two minute grace period gives the user a chance to briefly have the pot adjusted to zero long enough to force the auger to clean out, etc. without causing a system failure. This error is logged to the history record.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.12 RELEASE NOTES   Release Date: August 18, 1993
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- Added a "Calibration Factor" to the Bushels/Hour and Total Bushels calculations. When you enter the setup mode for fan delays, etc. you can now program in a multiplier from 0.01 to 2.00. This adjustment of +/- 100% of the measured BPH can be used to adjust for different grain sizes, etc. Setting the value to 1.00 causes no adjustment to be made to the value; settings less than 1.00 cause the BPH value to be less than measured; and settings greater than 1.00 cause the BPH value to be larger than measured.
- Revised the routines that turn on electrical loads to start and test a two second timer whenever they are called. This prevents any two "high current" loads from starting at the same time in either Batch or Continuous Flow. The SCR Drive for the Metering Rolls and the Unload Auger are considered to be a single load for this purpose since they need to start together.
- Reversed the warning messages for the left and right metering roll failures--GSI designates "left" and "right" as viewed from the front of the dryer, not from the back.
- Changed the procedures that detect metering roll failures so that false warnings are not generated when the SCR Drive isn't running.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.11 RELEASE NOTES   Release Date: August 16, 1993
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- Changed the warning message for motor overloads to read "MOTOR OVERLOAD" instead of "FAN MOTOR OVERLOAD".
- Added software to force the meter roll counters to "0" when the START switch is pressed to help prevent erroneous meter roll failure warnings when the dryer is first started.
- Added software to help determine which meter roll fails when a problem occurs. The faulure is attributed to the side with the least number of counts since it's drive system has probably started slipping or its sensor is broken.

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GSI AIRSTREAM SOFTWARE -- VERSION 1.10 RELEASE NOTES   Release Date: August 13, 1993
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- Modified NOVRAM/TIC preset procedure so the timer values are displayed properly the first time the computer is started.
- Corrected RPM calculation routines so that higher RPMs are calculated and displayed properly.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.09 RELEASE NOTE   Release Date: August 12, 1993
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- On multi-fan, multi-burner dryers, the fans now start top to bottom instead of bottom to top. This causes the fans with the highest startup current consumption to start when current load is at a minimum.
- Implemented a new algorithm for calculating Total Dry Time per instructions provided by Dave Morrison @ GSI.
- On multi-module dryers, the upper moisture control temperature probe is selected as follows: On 2300, 2400, 3400, 3600 Series dryers if Burner 2 is "on" or "auto" then the lower temperature probe is used. On 2200 and 3300 Series dryers if Burner 1 is "on" or "auto" then the lower temperature probe is selected. In any other case, the upper probe is selected.
- Corrected a problem that I beleive caused the LCD screen to blank out when the mode switch was moved slowly from continuous flow mode to batch mode.
- Changed the threshold for detecting metering roll failures when the left and right sensors report different numbers of pulses per second. This should improve the detection of failures.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.08 RELEASE NOTES   Release Date: August 3, 1993
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- Implemented "Dryer Shutdown History" feature. Anytime the dryer shuts down abnormally, the date, time, and reason are logged to the non-volatile memory in the TIC. The historical data is accessed while the dryer is stopped by holding down the MODIFY key for 4-5 seconds. Once in the review mode, historical data is accessed using the up and down arrow keys. Pressing the enter key at any point exits the history mode.
- Corrected RPM display. When RPM goes to zero, the display now changes accordingly.
- Made corrections that should keep the LCD display from going blank when switching from Batch to Continuous modes.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.07 RELEASE NOTES   Release Date: August 2, 1993
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- Bug fix. The unload auger no longer runs continuously in Continuous Flow mode when the moisture control system shuts off the metering roll drive.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.06 RELEASE NOTES   Release Date: July 27, 1993
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- Revised all procedures that detect and report warnings. This should correct several of the bugs that have been reported such as incorrect warning messages, etc. All warning messages should now remain on the LCD until the user corrects the problem and presses the STOP switch.
- Removed all access to the procedures that allow LCD contrast adjustment. The computer board circuitry that provides contrast adjustment has been disconnected while IEE and Illini work to resolve the LCD failure problems.
- The RPM displays should now show "0 RPM" when the metering rolls are stopped. Previously, when a new value could not be calculated the old value remained on the display.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.05 RELEASE NOTES   Release Date: July 19, 1993
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- This release corrects a program bug that caused erroneous Burner 3 Vapor Warnings to be issued. The bug effected all dryer units with 3 or more fans/burners.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.04 RELEASE NOTES   Release Date: July 14, 1993
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- If you hold down the OUT OF GRAIN timer switch when you turn on the computer board, the LCD contrast adjustment screen is displayed. This lets the factory get a new computer up and running easily.
- Fan starting sequence has been revised so that a fan must have nearly stopped turning before it can be restarted. This is implemented by testing the fan air switch before turning on the fan motor.
- The values of the running dry, cool, and unload timers are now stored to non-volatile memory once each minute. When the dryer controls are turned on, the timer values are read from this memory. This scheme allows the user to resume batch operation from the point at which a power failure occured rather than starting from the beginning of a new cycle.
- Implemented the "run time meter" feature. During startup a screen is displayed that shows the total number of hours the dryer has had power applied. The "count" on the run time meter is reset to "0" when the factory technician initializes the NOVRAM during initial dryer setup.
- Added a safety check to alert the user when the L1 AC power is not available to the Power Board. This safety can be tested by powering up the system and opening circuit breaker CB1 on the power board.
- Added a safety check to alert the user when the power supply for the 12 volt safety circuits is not operating. In addition to troubleshooting in the field this will help manufacturing testing as well. This safety can be tested by powering up the system and opening circuit breaker CB2 on the power board.
- Corrected a bug that caused the unload auger to run briefly when the start switch was pressed. This problem occured only in certain situations.
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GSI AIRSTREAM SOFTWARE -- VERSION 1.03 RELEASE NOTES
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- The user can now switch from batch mode to continuous mode while the dryer is operating without a shutdown.
- Fixed a bug that would not allow changing the display mode from bushels/hour to either RPM or total bushels.
- Fixed a bug that caused the out of grain timer to function improperly in some cases.