DAILY STATISTICS FILES

The daily statistics files were introduced into the boards of MEP machines starting from September 2005. These files contain a list of significant events for the machine such as switchings on and off, start-cycle, end-cycle, alarms triggered, machine down times etc.

The board saves the files each day. The name of each file consists of:

- 6 characters that represent the date to which the statistics in the file refer. The date is in the following format: YYMMDD where YY are the last two numbers of the year, MM is the month (01, 02, ..., 12) and DD the day (01, 02, ..., 31);
- a full stop;
- an extension that may be:

1. LOG if it is a file that the board has generated on the day that it downloaded the daily statistics files from the machine;
2. ZIP if it is a file of “old” daily stats, in other words it predates the current daily statistics files. The board compacts each of the daily files with the .LOG extension and generates the corresponding file with the .ZIP extension (to optimise space on the hard disc).
   Eg. 060217.LOG or 060217.ZIP

The files contained in the daily statistics file use the CSV (Comma Separated Value) format: they are text files consisting of many lines; the fields in the lines (that we will call record from now on) are separated by commas. In some particular records, to be able to distinguish the fields more easily, the fields themselves may even be separated by a semicolon ';' or by the character '|'. Where necessary, this will be specified in the description of the individual fields.

The records are of variable length and are associated to significant events that the machine has recorded. The first two fields of each record represent the time when the event was recorded (the date may be obtained from the file name) and the event code:

- The time is written in the format HH:MM:SS where HH represents the hour (00,01, ..., 23), MM represents the minutes (00, 01, ..., 59) and SS seconds (00, 01,..., 59);
- The event code is a numerical field of 3 digits. The same codes refer to events of the same type. Events of a different type have been assigned different codes.
  Eg. 10:24:20,001

The following is an example of a daily statistics file (taken from a Simplex Weld):

```
08:00:25,001,C:\060125SL.IN\
08:00:30,011,947,31,1,28,2,0
08:00:30,011,699,51,2,47,7,7
08:00:33,011,947,31,1,28,2,0
08:01:19,021,1
08:22:55,007
08:22:55,003,699,24,1,1408,2,1,          0,       0,160
08:23:04,004,24,10,0,0,     ,         ,65535
```

08:23:04,008,16000,0,0,1500,92,92,1,1,0,700,160
08:23:04,015,310
08:23:06,017
08:23:06,011,535,51,2,43,6,5
08:23:18,021,3
08:23:40,007
08:23:40,003,699,24,1,1408,2,1, 0, 0,160
08:24:28,004,25,48,0,0, , ,65535
08:24:28,008,16000,1,0,1500,92,92,1,1,0,700,160

As mentioned earlier, the first two fields of each record are always the time and code of the event. Other fields that may be present in a record have a structure that depends on the type of event associated to the record itself.
Below is a description of the main events present in the daily statistics files. Each item of the point list represents on field of the record.

New events may be created in the future and an incremental event number will be associated to them.

001: “MACHINE ON” EVENT
This event is generated the moment the machine is switched on.

- Path and name of the directory where the board program of the MEP machine resides

Eg. 11:11:54,001,C:\stdmesh\StdMesh.exe

002: “MACHINE OFF” EVENT
This event is generated the moment the machine is switched off. The only fields present are the time and event code fields.
Eg. 11:31:43,002

003: “START CYCLE” EVENT
This event is generated the moment that the start cycle for a position is carried out.
The structure of the record varies depending on the machine from which the daily statistic files were downloaded, whether it’s a machine that uses bars (therefore with a cutting table eg Cutform 32, Cutform 40 and Syntax Line 25), or whether it’s a machine that uses coils.
For machines that use bars (and therefore have a cutting table), the structure of the fields is as follows:

- Progressive
- Initial quantity
- Number of repetitions
- Total length (Development)
- Number of sides of the pattern
- Index of the first side of the pattern processed in shaping mode (if it is greater than the number of sides it means that the pattern is processed in stirrup mode, in other words it doesn’t contain the shaping side)
- Client
- Schedule
- Rod diameter (multiplied by 10) (rev. 1)
- Job order (rev. 2)

- Total active energy (Wh) (rev. 8)

Eg. 11:21:43,003,197,996,1,3094,5,3,0,0,160,,

For machines that use coils (and therefore DO NOT have a cutting table), the structure of the fields is as follows:

- Progressive
- Initial quantity
- Reserved field
- Total length (Development)
- Number of sides of the pattern
- Index of the first side of the pattern processed in shaping mode (if it is greater than the number of sides it means that the pattern is processed in stirrup mode, in other words it doesn't contain the shaping side)
- Client
- Schedule
- Rod diameter (multiplied by 10)
- Job order (rev. 2)

Eg. 11:21:43,003,197,996,1,3094,5,3,0,0,160

004: "END CYCLE" EVENT
This event is generated the moment that a position is terminated. Processing may be terminated for a variety of reasons; because the entire position has been completed, because an alarm has been triggered that has interrupted the automatic cycle, because the mode selector has been turned etc. etc…
For machines that use bars (and therefore have a cutting table), the structure of the fields is as follows:

- Final quantity
- Total time taken to produce the line
- Steelworks code first rod
- Steelworks code second rod
- Casting code first rod
- Casting code second rod
- Operator code (65535=no valid code)
- Index of the "type of steel". It's a numeric code that represents the "type of steel" used to produced the pieces, as written in the list of type of steels that the customer prepared (rev.5)
- Reserved (1)
- Reserved (2)
- Reserved (3)
- Reserved (4)
- Reserved (5)
- Reserved (6)
- Reserved (7)
- Reserved (8)
- Total active energy (Wh) (rev.8)

Eg. 11:32:54,004,1008,168,0,0, , ,65535,,,,,,,,

For machines that use coils (and therefore DO NOT have a cutting table), the structure of the fields is as follows:

- Final quantity
- Reserved field
- Steelworks code first rod
- Steelworks code second rod
- Casting code first rod
- Casting code second rod
- Operator code (65535=no valid code)
- Index of the “type of steel”. It’s a numeric code that represents the “type of steel” used to produced the pieces, as written in the list of type of steels that the customer prepared (rev.5)
- Reserved (1)
- Reserved (2)
- Reserved (3)
- Reserved (4)
- Reserved (5)
- Reserved (6)
- Reserved (7)
- Reserved (8)
- Total active energy (Wh) (rev.8)

Eg. 11:32:54,004,1008,0,0,0, , ,65535,,,,,,,,

005: RESERVED EVENT

006: RESERVED EVENT

007: “START PAGE” EVENT
This event is present ONLY in those machines that have a cutting table and it is generated the moment that the processing of a page begins. The only fields present are the time and event code fields.
Eg. 11:20:02,007

008: “END PAGE” EVENT
This event is present ONLY in those machines that have a cutting table and it is generated the moment that the processing of a page terminates. The process may be terminated for a variety of reasons; because the entire page has been completed, because an alarm has been triggered that has interrupted the automatic cycle, because the mode selector has been turned etc. etc…

- Number of the processed page
- Number of page cycles completed
- Reserved field
- Bar length
- Scrap length
- Scrap length in the last cycle of the page
- Bars used per cycle
- Bars used per cycle in the last cycle of the page
- Common time
- Minimum scrap that is recoverable

- Rod diameter (multiplied by 10)

Eg. 11:21:13,008,16000,1,0,16000,1121,1121,2,2,0,700,160

The events from 001 to 008 are the same events that are written inside the statistics file STATS.DAT.

009: “OPERATOR LOGIN” EVENT
This event is generated the moment that the operator code is entered in the login window.
• Operator code. The operator code is considered to be valid if it is greater than or equal to 0 and less than 65535. A value equal to 65535 means that no operator code has been entered.
Eg. 16:11:00,009,1

010: “MACHINE SHUTDOWN REASON” EVENT
This event is generated the moment that the machine shutdown reason is entered in the appropriate reason entry window.
• Reason number. This is a numerical code that represents the reason for the machine shutdown, as set out in the codes list prepared by the client.
Eg. 16:11:14,010,9

011: “ALARM MESSAGE” EVENT
This event is generated the moment that an alarm appears on screen (when the machine is not
in an automatic cycle).
• Code of the alarm description string (GLS)
• Type of alarm
• Level
• Index
• Number of the byte (or led)
• Number of the bit.
Eg. 09:20:15,011,644,51,0,46,7,6

012: RESERVED EVENT

013: “MACHINE IN SAFETY MODE” EVENT
Only for U2000 boards, this event is generated that moment that the machine enters safety mode (red page).

- Code of the description string of the triggered alarm
- Outputs (each one separated by ‘;’)
- Inputs (each one separated by ‘;’)
- Other data about the alarm (each one separated by ‘;’)
- Active phases (each one separated by ‘;’. In board programs prior to 020617 they may even be separated by the character ‘|’)

Eg.08:37:40,013,324,0;0;0;0;0;0;0;0;0;0;0;0;0,0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;4;0;17,1;0;0;0;0;0

014: “CLOSE THE SAFETY PAGE (RED PAGE)” EVENT

Only for U2000 boards, this event is generated the moment that the red page is closed (it must represent the acknowledgement of the alarm by the operator). The only fields present are the time and event code fields.
Eg. 08:37:42,014

015: “MACHINE IN SAFETY MODE” EVENT
Only for Multibox or Mepworld boards, this event is generated that moment that the machine enters safety mode (red page).

- Code of the alarm description string (GLS)
- Second code of the alarm description (GLS). Ignored if equal to 0 (rev.3)
- First additional alarm string (rev.5)
- Second additional alarm string (rev.5)
- Third additional alarm string (rev.5)

Eg. 11:19:36,015,836

016: RESERVED EVENT

017: “CLOSE THE SAFETY PAGE (RED PAGE)” EVENT
Only for Multibox and MepWorld boards, this event is generated the moment that the red page is closed (it must represent the acknowledgement of the alarm by the operator). The only fields present are the time and event code fields.
Eg. 11:19:53,017

018: ”RESET SHAPES COLLECTION CAR” EVENT
Only for machines that have one (or two) shapes collection cars, this event is generated the moment that an operator has reset the shapes collection car. The only fields present are the time and event code fields.
Eg. 13:31:41,018

019: “RESET BUNDLES CAR” EVENT
Only for machines that have one (or two) bundles cars, this event is generated the moment that an operator has reset the bundles car. The only fields present are the time and event code fields.
Eg. 11:20:58,019

020: “CHANGE SYSTEM DATE/TIME” EVENT
The event occurs when the operator changes the date or the time of the system using the menu on the control board. In order to write the statistics files correctly, it is very important for the date and time of the system to be always up to date.

- New date for the system, written in the format DD-MM-YYYY where DD is the day (01,02, ..., 31), MM is the month (01, 02, ..., 12) and YYYY is the year
- New time for the system, written in the format HH:MM:SS where HH represents the hour (00, 01, ..., 23), MM represents the minutes (00, 01, ..., 59) and SS the seconds (00, 01,..., 59)

Eg. 08:03:16,020,17-02-2006,08:04:51

021: “CHANGE SYSTEM PASSWORD” EVENT
The event occurs when the operator enters a password in the MEP board.

- Level of the password entered

Eg. 08:09:01,021,1

022: “MACHINE IDENTIFICATION” EVENT (rev.2)
If specified inside the install variable MachineCode, this events is the first event of the daily statistics file and contains the machine identification string. It allows to distinguish the daily statistics files of two different MEP machines.

- Machine identification string

Eg. 08:09:00,022,MINISYNTAX

023: “COIL ENDED OR BUNDLE ENDED” EVENT (rev.2)
The event occurs when a coil is ended (for machines working from coils) or a bundle is ended (for machines working from bars). It contains the information of the coil/bundle just ended:

- Rod diameter (multiplied by 10)
- 0 for a coill; 1 for a bundle;
- Length of the bars of the bundle. 0 for a coil;
- Steel mill code;
- Heat number

Eg. 08:15:00,023,160,0,0,1,ABCD

024: “TEMPERATURES MEASUREMENT” EVENT (rev.2)
The event occurs periodically and store some important temperatures for the correct working of the machine. The event is available only in some MEP machines:

- Temperature of the oil in the power pack (in degrees)
- Internal temperature of the main panel (in degrees)
- External temperature of the main panel (in degrees)

Eg. 08:23:56,024,43,24,18

025: “BUNDLE COMPLETED” EVENT (rev.2)
For straightening machines, the events occurs if a bundle has been completed and is ready tobe tied.

- Quantity of bars in the bundle

Eg. 08:35:06,025,150

028: “P.O.S. SELECTION” EVENT
Only for machines with automatic Pay Off Stations, this events occurs when the working P.O.S. are changed. If there machines works only one wire, the other fields are set to 0.

- First Pay Off Station in work
- Second Pay Off Station in work
- Third Pay Off Station in work (rev.4)

Eg. 08:40:07,028,1,3,0

030: “NEW PACKAGE PRODUCED” EVENT (rev.5)
This event is related to the production of a new package. If a code of the positions is not present, it will be written NULL instead of the code.

- Code of the schedule
- Identification code of the package
- Code of the first position present in the package
- Code of the second position present in the package
- Code of the third position present in the package

- Code of the fourth position present in the package
- Code of the fifth position present in the package
- Code of the sixth position present in the package
- Code of the seventh position present in the package
- Code of the eight position present in the package
- Code of the nine position present in the package
- Operator code

Eg. 08:18:56,030,042065,1,010,011,012,013,014,015,016,017,017,18

031: “CHANGE OF THE BENDING PIN” EVENT (rev.5)
This event occurs when there is a change of the bending pin.

- Bending pin type
- Diameter of the central bending pin
- Distance between the central bending pin and the lateral
- Diameter of the lateral bendino pin

Eg. 08:02:47,031,1,32,16,30

032: “BUNDLE PRODUCED” EVENT (rev.5)
For straightening machines, the events occurs when a bundle is produced and is ready to be tied.

- Progressive code
- Number of bars in the bundle
- Client
- Schedule
- Job order
- Bars length
- Number of the cart in which is deposited the bundle

Eg. 10:58:49,032,777,9999,def,abc,ghj,12000,2

033: “DATA WAITING” EVENT (rev.5)
For straightening machines, the events occurs when the machine is ready to receive data or when the machine becomes not ready to receive data

- 1 if the machine is ready to receive data or 0 if the machine is in automatic cycle and the machine is not ready to receive data.

Eg. 07:43:03,033,1

034: “REGENERATION OF LOG FILE” EVENT (rev.5)
If the machine remains ON during the day change (at midnight), the first event that is written in the daily statistics file of the next day is the “regeneration of log file” event.

- Path and name of the Directory where the board programme of the MEP machine resides

Eg. 17:23:59,034,C:\060125SL.IN\

035: “WEIGHING” EVENT (rev.5)
For straightening machines, the events occurs when the machine weighs a bundle of bars.

- Status of the weighing (exadecimal code):
  - bit 5: always 1;
  - bit 4: always 1;
  - bit 3: tare inserted;

    - o bit 2: minimum weighing;
    - o bit 1: stable weight;
    - o bit 0: zero center;
- value of the net weight [kg]
- value of the tare (only of the cart) [kg]
- a number (that can be 1 or 2) that represents the cart that is under weighing.

Eg. 14:14:10,035,3A,345,1840,1

036: “ETHERNET LOG” EVENT (rev.6)

037: “SERIAL COM PC ON” EVENT (rev.7)
This event is generated the moment that serial communication begins between computers and control.
Eg. 09:27:56,037

038: “SERIAL COM PC OFF ” EVENT (rev.7)
This event is generated the moment that serial communication between computers and control is interrupted.
Eg. 09:35:56,038

039: “MESH START CYCLE” EVENT (rev.7)
This event is generated the moment that the start cycle for a position is carried out.
The structure of the record varies depending on the machine from which the daily statistics files were download, whether it’s a machine that uses bars (therefore with a cutting table), or whether it’s a machine that uses coils, or whether it’s a machine that produces meshes.

For machines that produces meshes, the structure of the fields is as follows:

- Reserved field
- Initial quantity
- Reserved field
- Reserved field
- Reserved field
- Reserved field
- Reserved field
- Reserved field
- Reserved field
- Reserved field
- Mesh name (max 12 char)
- Template

Eg. 11:17:40,003,0,1,0,0,0,0,0,0,0,0,aBcDeF123456,1

040: “MESH END CYCLE” EVENT (rev.7)
This event is generated the moment that a position is terminated. Processing may be terminated for a variety of reasons; because the entire position has been completed, because an alarm has been triggered that has interrupted the automatic cycle, because the mode selector has been turned etc etc…

For machines that produces meshes, the structure of the fields is as follows:

- Final quantity

- Total time taken to produce current mesh panel
- Reserved
- Reserved
- Reserved
- Reserved
- Operator Code (65535=no valid code)
- Reserved
- Template

Eg.11:16:28,040,1,25,0,0,0,0,0,0,0

041: "MESH PRODUCTION RECEIVED" EVENT (rev.7)
This event is present ONLY for mesh machine. It is generated when a new mesh production is received. Last field is the template (or slot) where panel mesh is sent to be produced.
Eg. 11:13:22,041,0

042: "MESH PRODUCTION ERASED" EVENT (rev.7)
This event is present ONLY for mesh machine. It is generated when a mesh production is terminated and erased. Last field is the template (or slot) where panel mesh is sent to be produced.
For machines that produces meshes, the structure of the fields is as follows:

- Final quantity
- Total time taken to produce all meshes programmed
- Template

Eg.11:31:43,042,10,563,0

043: "MESH BUNDLE COMPLETED" EVENT (rev.7)
For mesh machines, the events occurs if a bundle has been completed and is ready to be tied.

- Quantity of meshes in the bundle
- Template

Eg. 08:35:06,043,50,0

044: "MESH DATA WAITING" EVENT (rev.7)
For mesh machines, the events occurs when the machine is ready to receive data.

- 1 if the machine is ready to receive data.
- Template

Eg. 07:43:03,044,1,0

045: "MESH ALARM MESSAGE" EVENT(rev.7)
This event is generated the moment that an alarm appears on screen.

- Code of the alarm

Eg. 09:20:15,045,110

046: "ENERGY MEASUREMENT" EVENT(rev.8)
This event logs the total active energy used by the machine.

- Energy measument (Wh)

Eg. 11:34:15,046,564352