

ProHelp® EPM

Production & Process Monitoring System

**Data Exchange Manual
For ProHelp® EPM, Release 6.2.0**

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TABLE OF CONTENTS

| | | |
|-------|---|------|
| 1. | Introduction to ProHelp® EPM..... | 1-2 |
| 1.1 | Conventions | 1-3 |
| 1.2 | Copyright Notice | 1-3 |
| 1.3 | Contacting Mattec..... | 1-4 |
| 2. | Data Import..... | 2-5 |
| 2.1 | File and Record Format | 2-5 |
| 2.2 | Create or Modify a Tool ID | 2-6 |
| 2.3 | Create or Modify a Part ID | 2-7 |
| 2.4 | Create or Modify a Process Sheet (Basic Information) | 2-8 |
| 2.5 | Create or Modify a Process Sheet (Process-specific Information) | 2-9 |
| 2.6 | Create or Modify a Job Descriptor..... | 2-10 |
| 2.7 | Delete a Machine Schedule..... | 2-11 |
| 2.8 | Create or Append to a Machine Schedule..... | 2-12 |
| 3. | Data Export..... | 3-13 |
| 3.1 | Limiting The Amount Of Exported Data..... | 3-13 |
| 3.2 | Weighted Values..... | 3-14 |
| 3.3 | Production History Data Export | 3-15 |
| 3.4 | SPC History Data Export..... | 3-17 |
| 3.5 | Job Descriptor Data Export..... | 3-18 |
| 3.6 | Process Sheet Data Export..... | 3-20 |
| 3.7 | Part ID Data Export | 3-21 |
| 3.8 | Tool ID Data Export | 3-22 |
| 3.9 | Operator Tracking Data Export | 3-23 |
| 3.10 | DTR Data Export..... | 3-24 |
| 4. | Operation | 4-25 |
| 5. | Automatic Execution | 5-26 |
| 5.1 | Automatically Run Data Import..... | 5-26 |
| 5.2 | Automatically Run Data Export..... | 5-28 |
| 6. | Direct Database Operation (Advanced Users Only)..... | 6-31 |
| 6.1 | Exporting Data Using Views (Advanced Users Only) | 6-32 |
| 6.2 | Importing Data Using Stored Procedures (Advanced Users Only)..... | 6-33 |
| 6.3 | Sample Programs (Advanced Users Only) | 6-34 |
| 6.3.1 | Example 1 – Data Import..... | 6-35 |
| 6.3.2 | Example 2 – Data Export..... | 6-36 |

1. Introduction to ProHelp® EPM

Mattec Corporation's ProHelp® EPM Production and Process Monitoring System is specifically designed for real-time monitoring of all types of production equipment. It is used extensively in the plastics injection molding, extrusion, blow molding, blown film, metal stamping, die casting, printing, painting, and assembly industries. The basis behind the benefits from the ProHelp® EPM system is the rationale that plant managers and operational people will take corrective actions to solve problems on production equipment when they are aware of such problems. ProHelp® EPM is the device to alert employees to problems immediately when the problems occur. Therefore, tremendous savings can occur in increased productivity and decreased scrap parts.

The ProHelp® EPM system combines computer hardware, computer software, and Machine Interface Units (MIUs) into an efficient system to provide real-time production monitoring, production reports, process alarms, plant scheduling aids, and SPC process and part capability analysis. Floor personnel can make use of the machine-mounted terminals to signal different departments for help, to view production results at the machine site, and to enter downtime reasons or scrap reasons. Production, downtime, and scrap reports may be generated on a shift and daily basis, or the user may generate these reports for extended time periods by specifying a start and end date for the desired report. Job history data is continuously summarized and available for management's review.

This manual describes the ProHelp® EPM facilities that support the sharing of data with other computer systems or applications. Each of these facilities accomplishes its task by reading or writing to a file system accessible to the user. ProHelp® EPM utilizes the Microsoft Windows 2000 operating system and the Microsoft SQL 2000 Server database. Users may connect to the system from most Microsoft Windows operating systems. As a result, ProHelp® EPM is quite powerful in its ability to share information with external systems.

Three facilities are described here:

Data Import

This optional feature is, for historical reasons, often referred to as "Download". It allows Tool IDs, Part IDs, Process Sheets, Job Descriptors, and Machine Schedules to be imported into ProHelp® EPM from an external database. The format for data import is a MATTEC-defined, delimited ASCII file. Reference Section 2 for additional information.

Data Export

This optional feature allows raw data from Production History, SPC History, Job Descriptors, Process Sheets, Part IDs, and Tool IDs to be exported from ProHelp® EPM. Reference Section 3 for additional information.

DTR Data Export

This optional feature allows the ProHelp® EPM system to be easily integrated with DTR Software International's *The Manufacturing Manager*™ (TMM) software. Reference Section 3.10 for additional information.

1.1 Conventions

Much of this document consists of record descriptions, which in turn consist of field descriptions. Fields are identified by their position in the record and the sequence of the field descriptions reflects that. Required fields for Data Import are indicated by “(required)” in the “FIELD” column.

In addition to its position or name, each field entry includes a type, format, and description. A field’s type may be one of the following:

| FIELD TYPE | DESCRIPTION | EXAMPLES |
|--------------|---|--|
| Alphanumeric | Text that is a combination of letters, numbers, or both. | abc 123 abc123 |
| Float | A "real number" that may include decimal places. | 1.23 1.00 1 |
| Integer | A "whole number" that may not include decimal places. | 1 23 456 |
| Date | The month, day, and 4-digit year, in the form MM/DD/YYYY, DD/MM/YYYY, or YYYY/MM/DD, depending upon System Configuration ("Units" tab). A 4-digit year is required. When data is output using Data Export, the date delimiter will either be a "/" or ".", depending upon System Configuration. | 08/18/1999 12/31/2001 01/02/2003 |
| Time | The time of day, using a 24-hour clock. Specified in the format hh:mm, where <i>hh</i> = hours using the 24-hour clock and <i>mm</i> = minutes. One or two digits are accepted for hours (hh), however, two digits are always required for minutes (mm). When data is output using Data Export, the time delimiter will either be a ":" or ".", depending upon System Configuration. | 00:30 01:15 23:59 01:02 |

1.2 Copyright Notice

The Data Import / Export program, the DTR Data Export program, database stored procedures, database views, and other related utilities are protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program or related tools and utilities, or any portion thereof, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under law.

It is a violation of Mattec's copyright to use the Data Import / Export program, related database stored procedures, related database views, or other related utilities without purchasing the Data Import / Export Option from Mattec Corporation.

It is a violation of Mattec's copyright to use the DTR Data Export program, related database stored procedures, related database views, or other related utilities without purchasing the DTR Data Export Option from Mattec Corporation.

1.3 Contacting Mattec

Before executing Data Import, Data Export, or the DTR Data Export you must purchase the Data Import / Export option and/or the DTR Data Export option from Mattec Corporation. For additional information, please contact Mattec's Sales Department at 1-513-683-1802.

It is easiest to obtain technical support by visiting Mattec's website at <http://www.mattec.com> or by emailing the help desk at helpdesk@mattec.com.

2. Data Import

The optional Data Import program provides a means for transferring Tool IDs, Part IDs, Process Sheets, Job Descriptors, and Machine Schedules from an external system, such as a mainframe, into ProHelp® EPM. This program reads an appropriately formatted ASCII text file and uses the information it contains to create or modify data. If errors are encountered during processing, ProHelp® EPM generates an error report and the user is notified.

2.1 File and Record Format

Each record in the ASCII file is essentially an action request and causes specific functions to occur during processing of that record by ProHelp® EPM. Several such actions may be requested:

| SUGGESTED ORDER | ACTION | REQUEST CODE |
|-----------------|--|--------------|
| 1 | Create or modify a Tool ID. Refer to Section 2.2. | TI |
| 2 | Create or modify a Part ID. Refer to Section 2.3. | PI |
| 3 | Create or modify a Process Sheet (basic information). Refer to Section 2.4. | PP |
| 4 | Create or modify a Process Sheet (process-specific information). Refer to Section 2.5. | PE |
| 5 | Create or modify a Job Descriptor. Refer to Section 2.6. | JB |
| 6 | Delete a Machine Schedule. Refer to Section 2.7. | SD |
| 7 | Create or append to a Machine Schedule. Refer to Section 2.8. | SA |

The suggested order takes into account dependencies between the various actions. For example, a PE (Process Sheet, process-specific information) record can only include existing process sheets, including those created by PP records in the same file; before a PP or PE record can reference a Tool ID or Part ID, the Tool ID and Part ID must already exist, and so forth.

All types of records need not be present in the file. For example, if a record requests the creation of a Process Sheet (PP/PE) using Part ID "123", and ProHelp® EPM already has a record for Part ID "123", then there is no need to precede the request with a Part ID (PI) creation request.

All fields within a record are separated by commas (","). All records must be terminated with a carriage return and line feed. The first field of each line always consists of one of the two-character request codes listed above.

Character fields can optionally be included in double quotes (" "). However, single quotes (') may not be used. Because of this, it is preferred that you do NOT use quote marks at all.

2.2 Create or Modify a Tool ID

The Tool ID action request record consists of a two-character request code (TI), the name of the Tool Number (up to 18 characters), and additional fields as defined below:

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|--|
| 1 (required) | Alphanumeric | 2 | The request code (TI). |
| 2 (required) | Alphanumeric | 18 | The name of the Tool Number. |
| 3 | Integer | | Total cavities for the tool. |
| 4 | Integer | | Active cavities for the tool. May not exceed the total cavities. |
| 5 | Float | | Runner weight specified in grams. |
| 6 | Alphanumeric | 20 | Description. |
| 7 | Integer | | The setup time for the tool specified in minutes. |

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record. If an optional field is omitted and the Tool ID record already exists, the field is not modified. If an optional field is omitted and the Tool ID record does not already exist, the field is set to blanks (Alphanumeric type) or 0 (Integer or Float types).

The "Last Update" field for the Tool ID will be automatically updated with the current date and time. Other fields in the Tool ID record will not be modified.

Examples:

```
TI,Tool1,3,2,4.5,My Tool,60  
TI,Tool2,3,3,3,Another Tool
```

2.3 Create or Modify a Part ID

The Part ID action request record consists of the two-character request code (PI), the name of the Part Number, and additional fields as defined below:

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|---------------------------------|
| 1 (required) | Alphanumeric | 2 | The request code (PI). |
| 2 (required) | Alphanumeric | 18 | The name of the Part Number. |
| 3 | Alphanumeric | 25 | Material ID. |
| 4 | Alphanumeric | 25 | Color ID. |
| 5 | Float | | Percent regrind. |
| 6 | Float | | Part weight specified in grams. |
| 7 | Float | | Part cost. |
| 8 | Float | | Material cost. |
| 9 | Alphanumeric | 20 | Description. |
| 10 | Integer | | Parts per case. |

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record. If an optional field is omitted and the Part ID record already exists, the field is not modified. If an optional field is omitted and the Part ID record does not already exist, the field is set to blanks (Alphanumeric type) or 0 (Integer or Float types).

The "Last Update" field for the Part ID will be automatically updated with the current date and time. Other fields in the Part ID record will not be modified.

Examples:

```
PI,Part1,Material1,Color1,10.1,2,3,4,,1000  
PI,Part2,Material2,,6,1.1,2.2,3.3,4.4
```

2.4 Create or Modify a Process Sheet (Basic Information)

The Process Sheet (Basic Information) action request record consists of the two-character request code (PP), the name of the Machine Number, the name of the Tool Number, the name of the Part Number, and additional fields as defined below:

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|--|
| 1 (required) | Alphanumeric | 2 | The request code (PP). |
| 2 (required) | Alphanumeric | 6 | The name of the Machine Number. |
| 3 (required) | Alphanumeric | 18 | The name of the Tool Number. |
| 4 (required) | Alphanumeric | 18 | The name of the Part Number. |
| 5 (*) | Float | | Expected percent up. |
| 6 (*) | Float | | Expected cycle time specified in seconds. |
| 7 (*) | Float | | Expected percent good. |
| 8 | Float | | Labor hour factor. |
| 9 | Float | | Labor cost. |
| 10 | Alphanumeric | 20 | Description 1. |
| 11 | Alphanumeric | 20 | Description 2. |
| 12 (*) | Float | | Non-production limit specified in seconds. |

* - This field is required if this is a new record, otherwise, the field is optional.

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record. If an optional field is omitted and the Process Sheet record already exists, the field is not modified. If an optional field is omitted and the Process Sheet record does not already exist, the field is set to blanks (Alphanumeric type) or 0 (Integer or Float types).

The "Last Update" field for the Process Sheet will be automatically updated with the current date and time. Other fields in the Process Sheet record will not be modified.

When creating a Process Sheet, you must have one PP action request and multiple PE action requests, one for every parameter that is defined in the machine's configuration. The PP action request must be executed before the PE action request.

Note: If the PP and PE action requests are not done properly, the user will not be able to edit the Process Sheet via Edit Facilities. The Process Sheet record must be corrected using valid PP and PE action requests before Edit Facilities will work properly. In particular, the PE requests must correspond precisely with the parameter numbers that are defined in the machine's configuration program. Reference Section 2.5 for additional information.

Examples:

```
PP,Mach1,Tool1,Part1,99,10.5,94,1.5,4.53,Description1,Description2,30.0
PP,01,123501,124F-13,98.5,10,94.5
```

2.5 Create or Modify a Process Sheet (Process-specific Information)

The Process Sheet (Process-specific Information) action request record consists of the two-character request code (PE), the name of the Machine Number, the name of the Tool Number, the name of the Part Number, and additional fields as defined below:

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|---|
| 1 (required) | Alphanumeric | 2 | The request code (PE). |
| 2 (required) | Alphanumeric | 6 | The name of the Machine Number. |
| 3 (required) | Alphanumeric | 18 | The name of the Tool Number. |
| 4 (required) | Alphanumeric | 18 | The name of the Part Number. |
| 5 (required) | Integer | | The parameter number. This number may have the values 0-63 and must correspond precisely with the parameters that are defined in the machine's configuration (and stored in the dbo.MachParm table in the field ParmNo). |
| 6 | Float | | The parameter's upper limit. |
| 7 | Float | | The parameter's nominal value. This value may not exceed the parameter's upper limit or be below the parameter's lower limit. |
| 8 | Float | | The parameter's lower limit. |

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record. Any fields not present in the record are set to 0 (Integer or Float types).

The "Last Update" field for the Process Sheet will be automatically updated with the current date and time. Other fields in the Process Sheet record will not be modified.

When creating a Process Sheet, you must have one PP action request and multiple PE action requests, one for every parameter that is defined in the machine's configuration. The PP action request must be executed before the PE action request.

Note: If the PP and PE action requests are not done properly, the user will not be able to edit the Process Sheet via Edit Facilities. The Process Sheet record must be corrected using valid PP and PE action requests before Edit Facilities will work properly. In particular, the PE requests must correspond precisely with the parameter numbers that are defined in the machine's configuration program (and stored in the MachParm database table).

Examples:

```
PE,01,Too11,Part1,0,10,9.5,9
PE,01,Too11,Part2,5,21,20.5,20
PE,01,Too11,Part3,60,21.3,21.2,21.1
```

2.6 Create or Modify a Job Descriptor

The Job Descriptor action request record consists of the two-character request code (JB), the name of the Job Number, the name of the Machine Number, the name of the Tool Number, the name of the Part Number, and additional fields as defined below:

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|--|
| 1 (required) | Alphanumeric | 2 | The request code (JB). |
| 2 (required) | Alphanumeric | 18 | The name of the production Job Number. |
| 2 (required) | Alphanumeric | 6 | The name of the Machine Number. |
| 3 (required) | Alphanumeric | 18 | The name of the Tool Number. |
| 4 (required) | Alphanumeric | 18 | The name of the Part Number. |
| 5 (required) | Date | 10 | The job's desired start date. |
| 6 | Time | 5 | The job's desired start time. |
| 7 (required) | Date | 10 | The job's desired stop date. |
| 8 | Time | 5 | The job's desired stop time. |
| 9 (required) | Integer | | The lot size. |
| 10 | Alphanumeric | 18 | The name of the Customer. |
| 11 | Alphanumeric | 20 | Comment 1. |
| 12 | Alphanumeric | 20 | Comment 2. |

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record.

The Job Number that is specified must be a unique identifier for this job. Although ProHelp® EPM supports non-unique Job Numbers (that is, multiple Job Descriptors with the same Job Number), the Data Import function requires unique Job Numbers.

The following describe the action that is taken for the "JB" action request:

- If the specified Job Descriptor doesn't exist, the job will be created. It may then be scheduled using an Append to Machine Schedule ("SA") request.
- If the specified Job Descriptor exists, all fields except the Machine Number, Tool Number, and Part Number will be updated. Any fields not present in the record are set to blanks (Alphanumeric) or 0 (Integer or Float types).

Examples:

```
JB,Job1,Mach1,Tool1,Part1,01/31/2001,23:01,12/31/2003,03:59,1000,cust1,comment 1,c2  
JB,2-CHR,Mach1,Tool1,Part2,12/15/2001,12:00,12/25/2001,12:00,1500
```

2.7 Delete a Machine Schedule

The Delete Machine Schedule action request record consists of the two-character request code (SD) and the name of the Machine Number. Job Descriptors that are scheduled on the current machine are deleted from the machine's schedule (except for the currently running job).

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|---------------------------------|
| 1 (required) | Alphanumeric | 2 | The request code (SD). |
| 2 (required) | Alphanumeric | 6 | The name of the Machine Number. |

The Delete Machine Schedule action request can be used in combination with one or more Machine Schedule action requests (SA) to rewrite a machine's schedule.

Examples:

```
SD,Mach1  
SA,Mach1,Job1  
SA,Mach1,Job2
```

2.8 Create or Append to a Machine Schedule

The Machine Schedule action request record consists of the two-character request code (SA), the name of the Machine Number, and the name of the Job Number to be scheduled.

The Job Number in the action request record is appended to the end of the current schedule. If the Job Number is already scheduled, or if the job is currently running, the action request is aborted and an error is reported.

| FIELD | TYPE | LENGTH | DESCRIPTION |
|--------------|--------------|--------|--|
| 1 (required) | Alphanumeric | 2 | The request code (SA). |
| 2 (required) | Alphanumeric | 6 | The name of the Machine Number. |
| 3 (required) | Alphanumeric | 18 | The name of the production Job Number. |

Machine Schedule action requests may only contain jobs for which Job Descriptors already exist. The Job Descriptor may have just been created using a previous Job Descriptor action request (JB).

The Job Number that is specified must be a unique identifier for this job. Although ProHelp® EPM supports non-unique Job Number (that is, multiple Job Numbers with the same name), the Data Import function requires unique Job Numbers.

Examples:

```
SA,Mach1,Job1  
SA,Mach1,Job2
```

3. Data Export

The Data Export program is actually comprised of many separate programs that allow the user to export the following information:

| DATA EXPORT TYPE |
|---|
| Production History. Refer to Section 3.3. |
| SPC History. Refer to Section 3.4. |
| Job Descriptor information. Refer to Section 3.5. |
| Process Sheet information. Refer to Section 3.6. |
| Part ID Information. Refer to Section 3.7. |
| Tool ID information. Refer to Section 3.8. |
| DTR data export. Refer to Section 3.10. |

The following sections describe each of these Data Export programs.

3.1 Limiting The Amount Of Exported Data

When you select to export Production History data and specify the "Specific Shift" filter, the "Shift" that is displayed always includes the numbers 1-10. These correspond to the internal "ShiftSeq" field that is used in the database (ShiftProd.ShiftSeq), where "1" represents the first shift of the specified day, "2" represents the second shift of the specified day, etc.

These numbers are not the "Shift Name" that is specified in the Shift Boundaries Edit Facilities program.

3.2 Weighted Values

Weighted values apply primarily to the Production History data export (Section 3.3) and the Job Descriptor data export (Section 3.5).

Weighted values are used for family molding. Weighted values are stored for bachelor jobs, but the weighted value (e.g., weighted down time) will contain the same value as the non-weighted value (e.g., down time).

When considering family molding, however, weighted values are very important. These values allow for the display of overall family-specific information.

Consider this example: Component jobs “son1” and “son2” ran for 8 hours at the same time. These are related family jobs. A production report would display 8 hours of run time for “son1” and 8 hours of run time for “son2”. However, the total and grand total for the report would show only 8 hours of run time, not 16 hours of run time. That’s because the family only ran for 8 hours.

If you looked at the raw data, the Production History database table would contain 8 hours of total time for “son1” and 4 hours of weighted total time for “son1”. The same would be true for “son2”. Thus, the detail records in the report would display total time, whereas the total lines would display the sum of the weighted total times.

(Some people want to see the sum of the non-weighted values in the totals and grand totals displays. Thus, in the example above, the report would display 8 hours of run time for “son1”, 8 hours of run time for “son2”, and 16 hours of total run time. Obviously this can be accomplished by displaying the sum of the non-weighted total times.)

Weighted values are accumulated in real-time and vary depending on the number of son jobs that are currently running for the family. Thus, if two son jobs are running, each job gets $\frac{1}{2}$ of the run time (actually total time), down time, etc. stored in its weighted values. If three son jobs are running, each job gets a $\frac{1}{3}$ rd weighting, etc.

3.3 Production History Data Export

The Production History data export selection allows the user to export production-related information by shift. This program can be useful for updating external systems with production-related information for jobs by shift, including the number of parts produced for a shift and the number of packed parts for a shift.

The Production History data export is very similar to the Job History data export. The Production History selection exports data by shift, whereas the Job History selection exports data for the entire job. Data may be exported for the current day, previous day, or a date/shift range for one or all departments.

The following table describes the fields that are exported in the Production History data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|-------------|-------------------|-----------|--|
| 1 | JobID | Alphanumeric (18) | JobQueue | The name of the Job Number. |
| 2 | MachID | Alphanumeric (6) | MachCon | The name of the Machine Number. |
| 3 | PartID | Alphanumeric (18) | PartIDs | The name of the Part Number. |
| 4 | MoldID | Alphanumeric (18) | MoldIDs | The name of the Tool Number. |
| 5 | MatlID | Alphanumeric (25) | PartIDs | The name of the Material ID. |
| 6 | ColorID | Alphanumeric (25) | PartIDs | The name of the Color ID. |
| 7 | CustomerID | Alphanumeric (18) | JobQueue | The name of the Customer. |
| 8 | Shift Date | Date | ShiftProd | The date of the shift. |
| 9 | Shift Index | Integer | ShiftProd | The shift index for the day. The first shift of the production day is 1. Values can range from 1-10. |
| 10 | CycCnt | Integer | ShiftProd | Total number of machine cycles for the shift. |
| 11 | WtCycCnt | Float | ShiftProd | The "weighted" total number of machine cycles for the shift. See Section 3.2. |
| 12 | CycOutSpec | Integer | ShiftProd | Total number of out-of-spec cycles for the shift. Any cycle in which one or more process parameters are out-of-spec is an out-of-spec cycle. |
| 13 | ExpProdQty | Integer | ShiftProd | Expected number of parts to be produced based on information in the process sheet. |
| 14 | CalProdQty | Integer | ShiftProd | The total number of parts produced for the shift as monitored by the MIU. |
| 15 | PakProdQty | Integer | ShiftProd | Packed parts reported for the shift. |
| 16 | DefectQty | Integer | ShiftProd | Scrap parts reported for the shift. |

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|-------------|---------------|-----------|--|
| 17 | TotTime | Integer | ShiftProd | Total time (run time plus down time) in seconds for the shift. |
| 18 | WtTotTime | Float | ShiftProd | The “weighted” total time in seconds for the shift. See Section 3.2. |
| 19 | DownTime | Integer | ShiftProd | Down time in seconds for the shift. |
| 20 | WtDownTime | Float | ShiftProd | The “weighted” down time in seconds for the shift. See Section 3.2. |
| 21 | NumDownTm | Integer | ShiftProd | The number of downtime occurrences for the shift. |
| 22 | WtNumDownTm | Float | ShiftProd | The “weighted” number of downtime occurrences for the shift. See Section 3.2. |
| 23 | LaborTime | Integer | ShiftProd | Amount of labor time in seconds calculated for the shift. |
| 24 | WtLaborTime | Float | ShiftProd | The “weighted” amount of labor time in seconds calculated for the shift. See Section 3.2. |
| 25 | MinCycTm | Float | ShiftProd | Minimum cycle time value that occurred during the shift. |
| 26 | MaxCycTm | Float | ShiftProd | Maximum cycle time value that occurred during the shift. |
| 27 | SumCycTm | Float | ShiftProd | Sum of the cycle time values that occurred during the shift. Useful in calculating the average for cycle time. |
| 28 | SumSqCycTm | Float | ShiftProd | Sum of the squares of the cycle time values that occurred during the shift. Useful in calculating the standard deviation for cycle time. |
| 29 | NumCavs | Float | MoldIDs | The total cavities for the tool. |
| 30 | RunnerWt | Float | MoldIDs | Runner weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 31 | PctReg | Float | PartIDs | Percentage regrind of total for the material. |
| 32 | PartWt | Float | PartIDs | Part weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 33 | PcsPerCtn | Integer | PartIDs | Pieces per carton or box. |
| 34 | PartCost | Float | PartIDs | Part cost in \$ per unit. |
| 35 | MatlCost | Float | PartIDs | Material cost in \$ per unit. |

3.4 SPC History Data Export

The SPC History data export selection allows the user to export information about Automatic SPC. This program can be useful for updating external systems with SPC data that has been collected by an MIU. Data may be exported for the current day, previous day, or a date range for one or all departments.

The following table describes the fields that are exported in the SPC History data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|---|--------------|-------------------|-------------|--|
| 1 | MachID | Alphanumeric (6) | MachCon | The name of the Machine Number. |
| 2 | JobID | Alphanumeric (18) | JobQueue | The name of the Job Number. |
| 3 | Name | Alphanumeric (10) | ParmSet | The name of the Parameter. |
| 4 | Sample Date | Date | LongTermEng | The date the sample was taken. |
| 5 | Sample Time | Time | LongTermEng | The time the sample was taken. |
| 6 | ParmNo | Integer | LongTermEng | The zero-based parameter number. |
| 7 | LtCycleIndex | Integer | LongTermEng | The long-term cycle index for each period (0 for the first cycle, up to "N-1", where N is the subgroup size). |
| 8 | Value | Float | LongTermEng | The process parameter value. |
| 9 | Flag | Alphanumeric (1) | LongTermEng | A flag indicating the status of this particular sample, where: <ul style="list-style-type: none"> • ‘.’ is in spec; • ‘-’ is below lower spec, • ‘+’ is above upper spec, • ‘x’ is invalid parameter value (unable to calculate), • ‘?’ is unknown. |

3.5 Job Descriptor Data Export

The Job Descriptor data export selection allows the user to export information about all jobs that have been run. Data for running, suspended, and completed jobs is included in the data export. This program can be useful for updating external systems with production-related information for jobs, including the total number of parts produced and the total number of packed parts.

The Job History data export is very similar to the Production History data export. The Job History selection exports data for the entire job, whereas the Production History selection exports data by shift.

The following table describes the fields that are exported in the Job Descriptor data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|------------|-------------------|-----------|--|
| 1 | JobID | Alphanumeric (18) | JobQueue | The name of the Job Number. |
| 2 | MachID | Alphanumeric (6) | MachCon | The name of the Machine Number. |
| 3 | PartID | Alphanumeric (18) | PartIDs | The name of the Part Number. |
| 4 | MoldID | Alphanumeric (18) | MoldIDs | The name of the Tool Number. |
| 5 | MatlID | Alphanumeric (25) | PartIDs | The name of the Material ID. |
| 6 | ColorID | Alphanumeric (25) | PartIDs | The name of the Color ID. |
| 7 | CustomerID | Alphanumeric (18) | JobQueue | The name of the Customer. |
| 8 | StartDate | Date | JobQueue | The job's actual start date. |
| 9 | StartTime | Time | JobQueue | The job's actual start time in the format hh:mm. |
| 10 | StopDate | Date | JobQueue | The job's actual stop date. If the job has not ended yet, the value 0/0/0 will be used. |
| 11 | StopTime | Time | JobQueue | The job's actual stop time in the format hh:mm or hh.mm. If the job has not ended yet, the value 0:0 will be used. |
| 12 | SchedQty | Integer | JobQueue | The lot size. |
| 13 | CycCnt | Integer | JobProd | Total number of machine cycles for the job. |
| 14 | WtCycCount | Float | JobProd | The "weighted" total number of machine cycles for the job. |
| 15 | CycOutSpec | Integer | JobProd | Total number of out-of-spec cycles for the job. Any cycle in which one or more process parameters are out-of-spec is an out-of-spec cycle. |
| 16 | ExpProdQty | Integer | JobProd | Expected number of parts to be produced based on information in the process sheet. |
| 17 | CalProdQty | Integer | JobProd | The total number of parts produced for the job as monitored by the MIU. |

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|-------------|------------------|-----------|--|
| 18 | PakProdQty | Integer | JobProd | Packed parts reported for the job. |
| 19 | DefectQty | Integer | JobProd | Scrap parts reported for the job. |
| 20 | TotTime | Integer | JobProd | Total time (run time plus down time) in seconds for the job. |
| 21 | WtTotTime | Float | JobProd | The "weighted" total time in seconds for the job. |
| 22 | DownTime | Integer | JobProd | Down time in seconds for the job. |
| 23 | WtDownTime | Float | JobProd | The "weighted" down time in seconds for the job. |
| 24 | NumDownTm | Integer | JobProd | The number of downtime occurrences for the job. |
| 25 | WtNumDownTm | Float | JobProd | The "weighted" number of downtime occurrences for the job. |
| 26 | LaborTime | Integer | JobProd | Amount of labor time in seconds calculated for the job. |
| 27 | WtLaborTime | Float | JobProd | The "weighted" amount of labor time in seconds calculated for the job. |
| 28 | MinCycTm | Float | JobProd | Minimum cycle time value that occurred during the job. |
| 29 | MaxCycTm | Float | JobProd | Maximum cycle time value that occurred during the job. |
| 30 | SumCycTm | Float | JobProd | Sum of the cycle time values that occurred during the job. Useful in calculating the average for cycle time. |
| 31 | SumSqCycTm | Float | JobProd | Sum of the squares of the cycle time values that occurred during the job. Useful in calculating the standard deviation for cycle time. |
| 32 | NumCavs | Float | MoldIDs | The total cavities for the tool. |
| 33 | RunnerWt | Float | MoldIDs | Runner weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 34 | PctReg | Float | PartIDs | Percentage regrind of total for the material. |
| 35 | PartWt | Float | PartIDs | Part weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 36 | PcsPerCtn | Integer | PartIDs | Pieces per carton or box. |
| 37 | PartCost | Float | PartIDs | Part cost in \$ per unit. |
| 38 | MatlCost | Float | PartIDs | Material cost in \$ per unit. |
| 39 | Job Status | Alphanumeric (4) | JobQueue | The job's status, PEND (Pending), RUN (Running), SUSP (Suspended), or COMP (Completed). |

3.6 Process Sheet Data Export

The Process Sheet data export selection allows the user to export information about process sheets. This program can be useful for updating external systems with process parameter-related information from process sheets.

The following table describes the fields that are exported in the Process Sheet data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|-------------|-------------------|---------------------|---|
| 1 | MachID | Alphanumeric (6) | MachCon | The name of the Machine Number. |
| 2 | PartID | Alphanumeric (18) | PartIDs | The name of the Part Number. |
| 3 | MoldID | Alphanumeric (18) | MoldIDs | The name of the Tool Number. |
| 4 | SampID | Alphanumeric (18) | QCSheet | The name of the Sample ID. |
| 5 | Name | Alphanumeric (10) | ParmSet | The name of the Parameter. |
| 6 | ParmNo | Integer | PSEng | The zero-based parameter number. |
| 7 | UpperLim | Float | PSEng | The Engineering upper specification limit. |
| 8 | NomVal | Float | PSEng | The Engineering nominal value. |
| 9 | LowerLim | Float | PSEng | The Engineering lower specification limit. |
| 10 | ExpPctUp | Float | PSProd ¹ | Standard percent uptime. |
| 11 | ExpCycTm | Float | PSProd | Standard cycle time. |
| 12 | ExpGood | Float | PSProd | Standard percent good parts. |
| 13 | HistPctUp | Float | PSProd | Historical percent uptime. |
| 14 | HistCycTm | Float | PSProd | Historical cycle time. |
| 15 | HistGood | Float | PSProd | Historical percent good parts. |
| 16 | LaborFactor | Float | PSProd | Standard labor factor. |
| 17 | LaborCost | Float | PSProd | Cost in \$ per unit time of an operator. Used as a multiplier of labor time to produce a cost of direct labor for a period of time. |
| 18 | NPL | Float | PsProd | Non-Production Limit, specified in seconds. |

¹ Fields from the PSProd table do not vary as the process parameter (ParmNo field in PSEng database table) varies. They are included in this data export file to simplify the process of taking process sheet information to an external system.

3.7 Part ID Data Export

The Part ID data export selection allows the user to export information about parts. This program can be useful for updating external systems with information specific to a produced part or item.

The following table describes the fields that are exported in the Part ID data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|-----------|-------------------|-----------|---|
| 1 | PartID | Alphanumeric (18) | PartIDs | The name of the Part Number. |
| 2 | PartDesc | Alphanumeric (20) | PartIDs | A description for the part. |
| 3 | MatlID | Alphanumeric (25) | PartIDs | Material ID. |
| 4 | PctReg | Float | PartIDs | Percent regrind of total material requirement. |
| 5 | PartWt | Float | PartIDs | Part weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 6 | PcsPerCtn | Integer | PartIDs | Pieces per container. |
| 7 | PartCost | Float | PartIDs | Part cost. |
| 8 | MatlCost | Float | PartIDs | Material cost. |
| 9 | ColorID | Alphanumeric (25) | PartIDs | Color ID. |
| 10 | MiscInfo1 | Alphanumeric (20) | PartIDs | Part description 1. |
| 11 | MiscInfo2 | Alphanumeric (20) | PartIDs | Part description 2. |
| 12 | PartInfo | Alphanumeric (40) | PartIDs | Part information. |

3.8 Tool ID Data Export

The Tool ID data export selection allows the user to export information about tools. This program can be useful for updating external systems with information for a physical tool, mold, die, fixture, or other apparatus that is used in conjunction with a machine to produce a certain part or a group of parts.

The following table describes the fields that are exported in the Tool ID data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|----|------------|-------------------|-----------|---|
| 1 | MoldID | Alphanumeric (18) | MoldIDs | The name of the Tool Number. |
| 2 | MoldDesc | Alphanumeric (20) | MoldIDs | A description of the tool. |
| 3 | MachReq | Alphanumeric (20) | MoldIDs | User-defined description field for machine type. |
| 4 | NumCavs | Integer | MoldIDs | Total cavities for the tool. |
| 5 | ActCavs | Integer | MoldIDs | Active cavities for the tool. May not exceed the total cavities. |
| 6 | Maker | Alphanumeric (20) | MoldIDs | User-defined description field for describing the tool's maker. |
| 7 | Location | Alphanumeric (20) | MoldIDs | User-defined description field for describing the tool's current location. |
| 8 | RunnerWt | Float | MoldIDs | Runner weight in grams. This value does <u>not</u> get converted to the display unit from System Configuration. |
| 9 | MiscInfo1 | Alphanumeric (20) | MoldIDs | Tool description 1. |
| 10 | MiscInfo2 | Alphanumeric (20) | MoldIDs | Tool description 2. |
| 11 | Setup Time | Integer | MoldIDs | The setup time in minutes for the tool. |

3.9 Operator Tracking Data Export

The Operator Tracking data export selection allows the user to export information about all machine operators who have logged in for Operator Efficiency or Operator Tracking. This program can be useful for updating external time tracking systems.

The following table describes the fields that are exported in the Operator Tracking data export program:

| # | FIELD | TYPE (LENGTH) | DB SOURCE | DESCRIPTION |
|---|-------------|-------------------|----------------------------|--|
| 1 | OperatorID | Alphanumeric (18) | OperatorLogin | The Operator's ID. |
| 2 | MachID | Alphanumeric (6) | MachCon | The name of the Machine Number the operator logged in to. |
| 3 | LoginDate | Date | OperatorLogin | The login date. |
| 4 | LoginTime | Time | OperatorLogin | The login time in the format hh:mm. |
| 5 | LogoutDate | Date | OperatorLogin | The logout date. If the operator has not logged out yet, the value 0/0/0 will be used. |
| 6 | LogoutTime | Time | OperatorLogin | The logout time in the format hh:mm. If the operator has not logged out yet, the value 0:0 will be used. |
| 7 | ElapsedTime | Integer | OperatorLogin | The elapsed login time specified in seconds. If the operator has not logged out yet, the value 0 will be used. |
| 8 | Description | Alphanumeric (20) | OperatorLoginTr ansType | A description of the login type, usually "Operator Efficiency" or "Operator Tracking". |

3.10 DTR Data Export

The DTR data export selection is an optional feature.

The DTR Data Export option for ProHelp® EPM allows the ProHelp® EPM system to be easily integrated with DTR Software International's *The Manufacturing Manager*™ (TMM) software. It allows ProHelp® EPM shift history data to be exported using the *TMM Standard* format (revised February 3, 1999).

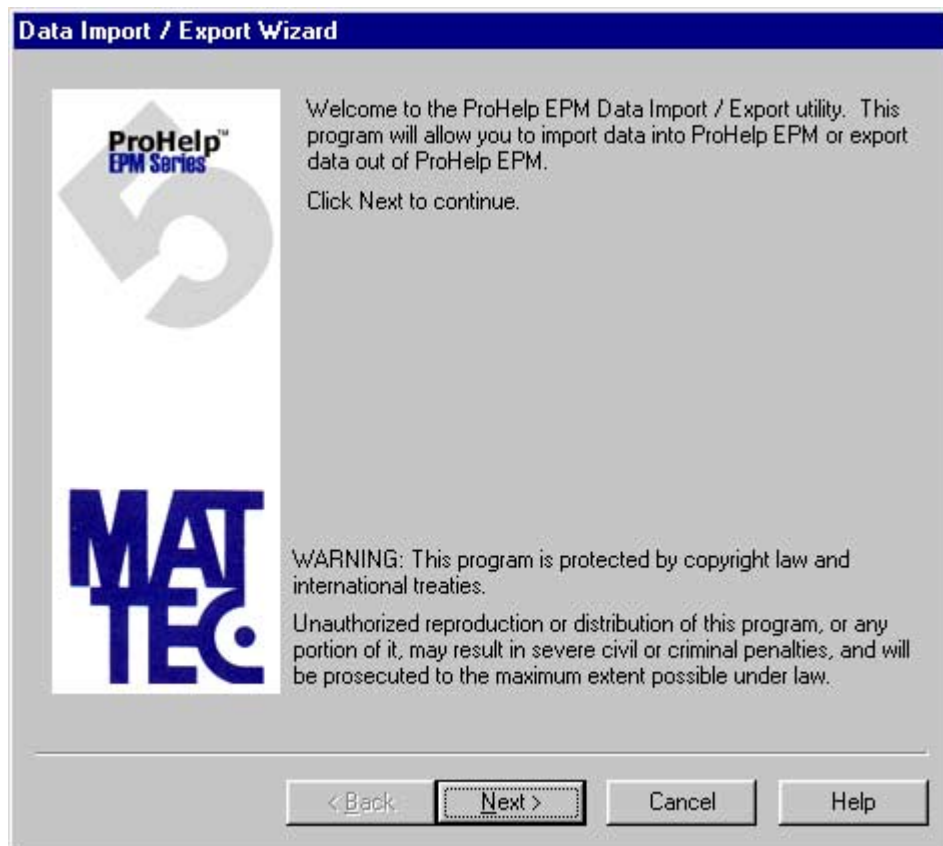
4. Operation

Before executing Data Import, Data Export, or the DTR Data Export you must purchase the Data Import / Export option and/or the DTR Data Export option from Mattec Corporation. For additional information, please contact Mattec's Sales Department at 1-513-683-1802.

To execute the Data Import / Export program, follow these steps:

- Install the ProHelp® EPM software on your computer.
- Click on the **Start Menu**.
- Select **Programs**.
- Select the **Mattec** folder.
- Select the **utilities** folder.
- Select the **Data Import / Export** program.

The Data Import / Export Wizard will be displayed:



Follow the onscreen prompts as required. The status of the Data Import, Data Export, or DTR Data Export will be shown, as appropriate.

5. Automatic Execution

The Data Import/Export program is used to import data into the ProHelp® EPM system or export data out of the ProHelp® EPM system.

The Data Import/Export program is typically located in the installation “bin” directory, for example “C:\Program Files\Mattec\ProHelp\Bin” and is named “DataImportExport.exe”.

The Data Import/Export program may be executed using command line parameters. This permits the program to be scheduled to run automatically via the Scheduled Tasks Wizard (Accessories -> System Tools -> Scheduled Tasks) that is included with Microsoft Windows 2000. Reference the Microsoft documentation that came with your ProHelp® EPM system for additional information.

5.1 Automatically Run Data Import

The Data Import/Export program may be executed from the command line without user interaction. This allows an *advanced* ProHelp® EPM user to automatically execute the Data Import/Export program and instruct the program to perform an “import” to update the ProHelp® EPM database.

To run the Data Import/Export program from the command line to perform an “import”, follow this syntax:

```
DataImportExport.exe -auto -import -file:FILE_TO_BE_IMPORTED [options]
```

where “DataImportExport.exe” is the name of the Data Import/Export program, “-auto”, “-import” and “-file:” are required and must be entered exactly as shown, and “FILE_TO_BE_IMPORTED” should be replaced with the full path name of the data file to be imported.

The following table describes the command line syntax for the Data Import/Export program:

| Description | Default | Allowable Values |
|---------------------|---------|---|
| System Number | | <i>xxx</i> The system number (as defined by the System Names Edit program). <i>xxx</i> is a number that may not be preceded by a “-“ and must be the first command line option that is specified. This field is optional unless more than one system is defined in System Names Edit. |
| Automatic execution | | -auto Indicates that the Data Import/Export program will be run using command line arguments. Failure to specify this option will |

| Description | Default | Allowable Values |
|-------------------------|-----------|--|
| | | cause the program to be run interactively. |
| Data Import | -import | -import Indicates that the Data Import/Export program will be importing data. -export Indicates that the Data Import/Export program will be exporting data. Reference Section 5.2 for additional information. |
| File to be imported | | -file:" <i>FILE_TO_BE_IMPORTED</i> " The name of the data file to be imported. You must replace <i>FILE_TO_BE_IMPORTED</i> with the full path name of the data file to be imported. |
| Import file disposition | -nodelete | -delete Always delete the data file. -nodelete Never delete the data file. -delnoerr Delete the data file only if no errors were encountered during processing. |
| Error logging | | -error: <i>ERROR_FILE_NAME</i> The name of the error file. This value is optional. If you do not specify an error file, the value "C:\DataImportExportError.txt" will be used. |

5.2 Automatically Run Data Export

The Data Import/Export program may be executed from the command line without user interaction. This allows an *advanced* ProHelp® EPM user to automatically execute the Data Import/Export program and instruct the program to perform an “export” of data from the ProHelp® EPM database.

To run the Data Import/Export program from the command line to perform an “export”, follow this syntax:

```
DataImportExport.exe -auto -export -type -file:FILE_TO_BE_EXPORTED
[options]
```

where “DataImportExport.exe” is the name of the Data Import/Export program, “-auto”, “-export”, and “-file:” are required and must be entered exactly as shown, “-type” is the type of data export to be performed (e.g., “-prod”), and “FILE_TO_BE_EXPORTED” should be replaced with the full path name of the data file that will be created.

The following table describes the command line syntax for the Data Import/Export program:

| Description | Default | Allowable Values |
|---------------------|---------|--|
| System Number | | <p>xxx</p> <p>The system number (as defined by the System Names Edit program). xxx is a number that may not be preceded by a “-“ and must be the first command line option that is specified.</p> <p>This field is optional unless more than one system is defined in System Names Edit.</p> |
| Automatic execution | | <p>-auto</p> <p>Indicates that the Data Import/Export program will be run using command line arguments. Failure to specify this option will cause the program to be run interactively.</p> |
| Data Import | -import | <p>-import</p> <p>Indicates that the Data Import/Export program will be importing data. Reference Section 5.1 for additional information.</p> <p>-export</p> <p>Indicates that the Data Import/Export program will be exporting data.</p> |
| File to be exported | | <p>-file:”FILE_TO_BE_EXPORTED”</p> <p>The name of the data file to be created. You must replace FILE_TO_BE_EXPORTED with the full path name of the data file to be exported.</p> |

| Description | Default | Allowable Values |
|-------------------------|-------------------------------|--|
| Export type | | -prod Production history export. -spc SPC history export. -job Job descriptor export. -process Process Sheet export. -part Part ID export. -tool Tool ID export. -operator Operator history export. -dtr DTR Data Export. |
| Quoted text | -noquoted | -noquoted Text fields are exported without quotes. -quoted Text fields are exported with double quotes. |
| Fixed-length text | -nofixed | -nofixed Text fields are variable-length. -fixed Text fields are a fixed-length and padded with spaces. |
| Department (Note 1) | All | -deptno:xxx The internal DeptNo of the department to export, where xxx is a number between 1 and 99. |
| Start date (Note 1) | -startdate:0 (current day) | -startdate:xxx Where xxx is zero or a negative number relative to today (e.g., “-startdate:-1” instructs the program to start one day before today). |
| End date (Note 1, 2) | -enddate:0 (current day) | -enddate:xxx Where xxx is zero or a negative number relative to today (e.g., “-enddate:-1” instructs the program to start one day before today). |
| Shift Index (Note 1, 2) | All | -shift:xxx The shift index for the data to be exported, where xxx is the specific shift index. The first shift of the production day is 1. Values can range from 1-10. |

| Description | Default | Allowable Values |
|---------------|---------|---|
| Error logging | | -error: <i>ERROR_FILE_NAME</i> The name of the error file. This value is optional. If you do not specify an error file, the value “C:\DataImportExportError.txt” will be used. |

Note 1: The department (-deptno), start date (-startdate), and end date (-enddate) or shift index (-shift) are available for the Production history export (-prod), the Operator history export (-operator), and the DTR Data Export (-dtr).

The department (-deptno), start date (-startdate), and end date (-enddate), but not the shift index (-shift), are available for the SPC history export (-spc).

Note 2: The optional settings for end date (-enddate) and shift index (-shift) may not be used together. Both of these settings combine with the setting for start date (-startdate) to limit the amount of data that will be exported.

6. Direct Database Operation (Advanced Users Only)

As noted in Section 1.2, it is a violation of Mattec's copyright to use the Data Import / Export program, DTR Data Export program, database stored procedures, database views, or other related utilities without purchasing the Data Import / Export option or the DTR Data Export option, as appropriate, from Mattec Corporation.

However, if you have purchased the Data Import / Export option or DTR Data Export option, a very knowledgeable database administrator could call the related stored procedures and views to create a sophisticated and/or automated interface between ProHelp® EPM and your ERP system.

Before implementing an advanced interface, it's important to note that the stored procedures and views are subject to change without notice.

6.1 Exporting Data Using Views (Advanced Users Only)

Mattec utilizes database views to extract data from the database for the purpose of exporting it to external systems. The Data Import / Export program calls the appropriate views to extract data, processes that data, then writes the processed data to an ASCII text file.

It's possible for a knowledgeable database administrator to use these same views to create a sophisticated and/or automated interface between ProHelp® EPM and your ERP system, without the need to create an intermediate ASCII text file.

Following is a brief description of the database views that are used by the Data Import / Export program. For the exact format of data that is extracted, refer to the actual views.

| DATABASE VIEW | DESCRIPTION |
|----------------------|--|
| vExportShiftProd | Provides shift history information. This view is used by the "Production History" export option. These fields are described in Section 3.3. |
| vExportLongTermSPC | Provides data related to long-term (automatic) SPC history. This view is used by the "SPC History" export option. These fields are described in Section 3.4. |
| vExportJob | Provides data related to any job that has run. Used by the "Job History" export option. These fields are described in Section 3.5. |
| vExportProcessSheet | Provides data stored in Process Sheets. This view is used by the "Process Sheets" export option. These fields are described in Section 3.6. |
| vExportPartID | Provides data stored in Part IDs. This view is used by the "Part IDs" export option. These fields are described in Section 3.7. |
| vExportToolID | Provides data stored in Tool IDs. This view is used by the "Tool IDs" export option. These fields are described in Section 3.8. |
| vExportOperatorLogin | Provides data related to operator logins. This view is used by the "Operator Tracking" export option. These fields are described in Section 3.9. |

Examples:

```
SELECT * FROM vExportJob

SELECT * FROM vExportShiftProd
WHERE ShiftSeq >= 200108180 AND
      ShiftSeq <= 200108189
```

6.2 Importing Data Using Stored Procedures (Advanced Users Only)

Mattec utilizes database stored procedures to import data into the database. The Data Import / Export program reads an ASCII text file, processes that data, then calls the appropriate stored procedures using that processed data to create or update the appropriate database records.

It's possible for a knowledgeable database administrator to use these same stored procedures to create a sophisticated and/or automated interface between ProHelp® EPM and your ERP system, without the need to create an intermediate ASCII text file.

Following is a brief description of the database stored procedures that are used by the Data Import / Export program. For the exact arguments that are required, refer to the actual stored procedures.

| DATABASE STORED PROCEDURE | DESCRIPTION |
|----------------------------|---|
| pImportAppendJobToSchedule | Schedules an existing, unscheduled job. The job must exist in the Job Descriptor table. This stored procedure is used by the "Create or Append to Machine Schedule (SA)" action request in Section 2.8. |
| pImportJob | Use to create a new job and place it in the Job Descriptor table or to update an existing job. This stored procedure is used by the "Create or Modify a Job Descriptor (JB)" action request in Section 2.6. |
| pImportPart | Used to create or modify a Part ID. This stored procedure is used by the "Create or Modify a Part ID (PI)" action request in Section 2.3. |
| pImportPSEng (*) | Used to create or modify the process-specific information for a Process Sheet. This stored procedure is used by the "Create or Modify a Process Sheet (Process-specific Information) (PE)" action request in Section 2.5. |
| pImportPSProd (*) | Used to create or modify the basic information for a Process Sheet. This stored procedure is used by the "Create of Modify a Process Sheet (Basic Information) (PP)" action request in Section 2.4. |
| pImportScheduleDelete | Used to delete a machine's schedule. This stored procedure is used by the "Delete a Machine Schedule (SD)" action request in Section 2.7. |
| pImportTool | Used to create or modify a Tool ID. This stored procedure is used by the "Create of Modify a Tool ID (TI)" action request in Section 2.2. |

* - If the pImportPSEng and pImportPSProd stored procedures are not done properly, the user will not be able to edit the Process Sheet via Edit Facilities. The Process Sheet record must be corrected manually (using pImportPSEng and pImportPSProd) before Edit Facilities will work properly (for this Process Sheet). Reference Section 2.5 for additional information.

Examples:

```
pImportJob 'Job1', 'Mach1', 'Tool1', 'Part1', 998111111, 1009300000, 1000, 998111111,  
cust1, comment1, c2
```

```
pImportScheduleDelete 'Mach1'
```

```
pImportAppendToSchedule 'Job1', 'Mach1'
```

Note: There are other database stored procedures that have the name **pImportXXX**. Many of those stored procedures are used by the Data Conversion program and are not appropriate for use when importing data from an external ERP system.

6.3 Sample Programs (Advanced Users Only)

A knowledgeable user could create a custom stored procedure to import data directly into ProHelp® EPM from a third-party system and/or to export data from ProHelp® EPM to a third-party system. This stored procedure could then be scheduled to run automatically (using the SQL Server agent). This stored procedure could also execute without the need for an intermediate ASCII text file.

Before connecting to an external database system, it may be necessary to add a “New SQL Server Registration” to the external system on the ProHelp® EPM server. Similarly, it may be necessary to execute the following in the SQL Server Query Analyzer:

```
sp_addlinkedserver MYSERVER
```

Where *MYSERVER* is the name of an external database server. This command only needs to be executed one time.

Reference the SQL Server documentation that came with your system for additional information.

6.3.1 Example 1 – Data Import

Assume the following sample stored procedure exists in the same database as ProHelp® EPM. It will extract a machine schedule from an external system (computer “MYSERVER”, database “MYDATABASE”, table “MyTable”) and import the schedule into ProHelp® EPM using the pImportAppendToSchedule stored procedure.

```
CREATE PROCEDURE SampleCustomDataImport AS
BEGIN

    DECLARE @varJobID VARCHAR(18)
    DECLARE @varMachID VARCHAR(5)

    /* Create a cursor to hold the data from the external system */
    DECLARE JobListCursor CURSOR FOR
        SELECT JobId, MachId FROM MYSERVER.MYDATABASE.dbo.MyTable

    /* Open the cursor */
    OPEN JobListCursor

    /* Loop through the job list cursor */
    FETCH JobListCursor INTO @varJobID, @varMachID
    WHILE (@@fetch_status >= 0)
    BEGIN

        /* Add the Job to ProHelp EPM's schedule */
        EXEC pImportAppendJobToSchedule @varJobId, @varMachId

        /* Fetch the next row from the cursor */
        FETCH JobListCursor INTO @varMachId, @varJobID

    END

    /* Clean Up */
    DEALLOCATE JobListCursor

END
```

For your convenience, the above stored procedure actually exists in the MATTEC_PROHELP database on your ProHelp® EPM system.

6.3.2 Example 2 – Data Export

Assume the user wishes to select Production History data from ProHelp® EPM and insert the data into an external system. The user could select the data by executing the following:

```
SELECT * FROM vExportShiftProd
```

The SQL statement above will select all Production History data that is stored online. To limit this data to a single day, you could execute the following:

```
SELECT * FROM vExportShiftProd
WHERE ShiftSeq >= 200108180 AND
      ShiftSeq <= 200108189
```

In the example above, you'll notice that the ShiftSeq (Shift Sequence Number) 200108180 is used as a starting point and 200108189 is used as an ending point. The first 8 digits of the ShiftSeq represent the date in YYYYMMDD format. In this particular example, year = 2001, month = 08, and day = 18. The last digit of the ShiftSeq represents the shift number, where 0 is the first shift number in a day and 9 is the last possible shift number in a day.

To set variables equal to today's first ShiftSeq and today's last ShiftSeq, you could execute the following:

```
DECLARE @StartingShiftSeq CHAR(9)
DECLARE @EndingShiftSeq CHAR(9)

/* Set the StartingShiftSeq to today */
SET @StartingShiftSeq = (SELECT datepart(year, getdate()) * 100000
                        + datepart(month, getdate()) * 1000
                        + datepart(day, getdate()) * 10
                        + '0')

SET @EndingShiftSeq = (SELECT datepart(year, getdate()) * 100000
                       + datepart(month, getdate()) * 1000
                       + datepart(day, getdate()) * 10
                       + '9')
```

Again, recall that '0' is the first shift number of the day and '9' is the last shift number of the day.

However, you are probably more interested in determining yesterday's first ShiftSeq and yesterday's last ShiftSeq. To do that, execute the following:

```
SET @StartingShiftSeq = (SELECT datepart(year, dateadd(day, -1, getdate())) * 100000
                        + datepart(month, dateadd(day, -1, getdate())) * 1000
                        + datepart(day, dateadd(day, -1, getdate())) * 10
                        + '0')
```

```
SET @EndingShiftSeq = (SELECT datepart(year, dateadd(day, -1, getdate())) * 100000
                        + datepart(month, dateadd(day, -1, getdate())) * 1000
                        + datepart(day, dateadd(day, -1, getdate())) * 10
                        + '9')
```

In the example above, you'll notice that we use the `dateadd` function to subtract 1 from today in order to determine the date for "yesterday".

Finally, we are ready to consider a simple example.

Assume the following sample stored procedure exists in the same database as ProHelp® EPM. It will extract Production History data from yesterday and copy the data to an external system (computer “MYSERVER”, database “MYDATABASE”, table “MyOtherTable”, fields “MyMachNo”, “MyJobId”, “MyShiftSeq”, and “MyProdQty”).

```

CREATE PROCEDURE SampleCustomDataExport AS
BEGIN

    /* Declare variables for the starting ShiftSeq and the ending ShiftSeq */
    DECLARE @StartingShiftSeq CHAR(9)
    DECLARE @EndingShiftSeq CHAR(9)

    /* Determine the first ShiftSeq for "yesterday" */
    SET @StartingShiftSeq = (SELECT datepart(year, dateadd(day, -1, getdate())) * 100000
                            + datepart(month, dateadd(day, -1, getdate())) * 1000
                            + datepart(day, dateadd(day, -1, getdate())) * 10
                            + '0')

    /* Determine the last ShiftSeq for "yesterday" */
    SET @EndingShiftSeq = (SELECT datepart(year, dateadd(day, -1, getdate())) * 100000
                            + datepart(month, dateadd(day, -1, getdate())) * 1000
                            + datepart(day, dateadd(day, -1, getdate())) * 10
                            + '9')

    /* Select the Production History data from ProHelp EPM and write */
    /* it to a table in an external system */
    INSERT INTO MYSERVER.MYDATABASE.dbo.MyOtherTable(MyMachNo,
                                                    MyJobID,
                                                    MyShiftSeq,
                                                    MyProductionQty)

    SELECT MachId, JobId, ShiftSeq, CalProdQty
    FROM vExportShiftProd
    WHERE ShiftSeq >= @StartingShiftSeq AND
           ShiftSeq <= @EndingShiftSeq

END

```

In the example above, you’ll notice that the data is selected from ProHelp® EPM (the last **SELECT** statement) and copied to the external system (the **INSERT** statement) as a single command.

For your convenience, the above stored procedure actually exists in the MATTEC_PROHELP database on your ProHelp® EPM system.