**Types of Alarm Data**

There are three types of alarm data which are process alarm, operator action and process event data type. Process event data type includes just only binary numbers(0-1) and appears when a fault is occurred on the equipment such as pump, compressor. We will be sending to you only process alarm datas and explanations that you see below are belong to process alarm data file.

The columns in the process alarm excel file expressed following information:

* **Machine Name**: It expresses the related unit and its database location. For pulling the alarm data by SQL, this machine name is used. For example, in the excel machine name is called as PHD47B and it represents Plant-47(Hydrocracker Unit) in the İzmit Refinery.
* **ServerProgID & SubcriptionName**: The descriptions are the same in both of these columns. When we talked with our colleague from process control team, he said that it is not so important and it does not affect the data analysis part.
* **SourceName**: SourceName columns includes controller, transmitter and calculator block names. An alarm can be appeared related with controller, transmitter and any calculator block parts. There are five types of controller such as temperature, pressure, flow, level, composition and their abbreviations are respectively TIC, PIC, FIC, LIC and AIC. Three types of transmitter such as TI (temperature), FI (flow), LI (level) can be located in the unit. For example, in the excel 48TIC2026 is a temperature controller, 47TI931A represents transmitter for temperature.
* **Message:** In the message column, it composed of sourcename, description of sourcename tag, the value of process value, velocity of the deviation from the alarm limit. An example from the excel file is explained as following:

48TIC2026 E208 CKS TEMIZ MDEA PV = -4.4 C VEL-

Velocity of process value changes

Process value of tag

Description of source tag

SourceName

If ‘RECOVER’ term is in the message text, the alarm is deactivated. If ‘IOP’ term is in the message text, the communication between the DCS and field is cut off and so an alarm is created. But if ‘IOP RECOVER’ term is in the message text, it means that this communication problem is solved. However, except IOP errors, if any message text include ‘RECOVER’ text, it means that this alarm is deactivated.

Moreover, sometimes in the message text ALM or NR abbreviations can be seen. Some tags can just take 0 or 1 values and they express that alarm is appeared and then disappeared. If an alarm appeared related with like tags, the message text should include ALM abbreviation. If this alarm disappeared, then alarm should include NR (return to normal). Before alarm data analysis, if ALM, NR and RECOVER messages are seen, these rows must be deleted.

* **EventTime:** The date when an alarm is appeared is written to this column.
* **NewState, AckReq, ActorID:** These columns are not so important, so they can be assumed as negligible. However, documentation for the explanation of these columns will be sharing later.

Some terms such as alarm-off and shelving of alarms are so important that it should be well understood before going in detail for analysis. When the alarm limit is removed for any process values, then it can be said that alarm is off until the limit is putting on the process value. If an alarm or alarms are putting on the shelf, we can say that alarm is off for the limited time range. For example, if an alarm is off for 8 hours, it will not appear in front of the operator screen during this period.