

Spring Automation Example WCS

Example WCS Screens:

- ▶ Order ID Tracking
- ▶ Order Assignment
- ▶ Conveyor Graphics
- ▶ Scanner Screens
- ▶ Alarm Screens
- ▶ Sorter Hit Points
- ▶ System Log

The screenshot displays two overlapping windows from the 'Test HMI - User: Access Level0' application. The top window shows a 3D conveyor system layout with green pipes and various components. The bottom window is a data table with search filters and a log view.

Barcode	Scanner	Sorter	Location	Time Stamp
Barcode00399	Scanner1	Sorter		2019-06-06 12:49:02.169
Barcode00110	Scanner1	Sorter		2019-06-06 12:49:01.733
Barcode00399	Scanner1	Sorter		2019-06-06 12:49:01.241
Barcode00253	Scanner1	Sorter		2019-06-06 12:49:00.801
Barcode00303	Scanner1	Sorter		2019-06-06 12:49:00.335
Barcode00291	Scanner1	Sorter		2019-06-06 12:48:59.849
Barcode00481	Scanner1	Sorter		2019-06-06 12:48:59.382
Barcode00458	Scanner1	Sorter		2019-06-06 12:48:58.951
Barcode00379	Scanner1	Sorter		2019-06-06 12:48:58.493
Barcode00061	Scanner1	Sorter		2019-06-06 12:48:58.053
Barcode00068	Scanner1	Sorter		2019-06-06 12:48:57.636
Barcode00102	Scanner1	Sorter		2019-06-06 12:48:57.192
Barcode00446	Scanner1	Sorter		2019-06-06 12:48:56.739
Barcode00407	Scanner1	Sorter		2019-06-06 12:48:56.195
Barcode00487	Scanner1	Sorter		2019-06-06 12:48:55.751
Barcode00308	Scanner1	Sorter		2019-06-06 12:48:55.281
Barcode00435	Scanner1	Sorter		2019-06-06 12:48:54.842
Barcode00391	Scanner1	Sorter		2019-06-06 12:48:54.391
Barcode00376	Scanner1	Sorter		2019-06-06 12:48:53.901
Barcode00327	Scanner1	Sorter		2019-06-06 12:48:53.443
Barcode00394	Scanner1	Sorter		2019-06-06 12:48:52.993
Barcode00433	Scanner1	Sorter		2019-06-06 12:48:52.561
Barcode00165	Scanner1	Sorter		2019-06-06 12:48:52.091
Barcode00077	Scanner1	Sorter		2019-06-06 12:48:51.669
Barcode00379	Scanner1	Sorter		2019-06-06 12:48:51.142
Barcode00139	Scanner1	Sorter		2019-06-06 12:48:50.699
Barcode00229	Scanner1	Sorter		2019-06-06 12:48:50.245
Barcode00250	Scanner1	Sorter		2019-06-06 12:48:49.791
Barcode00390	Scanner1	Sorter		2019-06-06 12:48:49.341
Barcode00185	Scanner1	Sorter		2019-06-06 12:48:48.892
Barcode00220	Scanner1	Sorter		2019-06-06 12:48:48.577
Barcode00078	Scanner1	Sorter		2019-06-06 12:48:47.951

Time: 2019-06-06 11:00:00.000
2019-06-06 11:00:00.000
2019-06-06 11:00:00.000
2019-06-06 11:00:00.000
2019-06-06 11:00:00.000
2019-06-06 11:00:00.000
2019-06-06 11:00:00.000

Time	Device	Message
2019-06-06 11:00:00.000	Device 11	Device 11 Disconnected
2019-06-06 11:00:00.000	Device 11	Device 11 Disconnected
2019-06-06 11:00:00.000	Device 10	Device 10 Disconnected
2019-06-06 11:00:00.000	Device 10	Device 10 Disconnected
2019-06-06 11:00:00.000	Device 09	Device 09 Disconnected
2019-06-06 11:00:00.000	Device 09	Device 09 Disconnected

Order ID Tracking:

- ▶ Reduce wasted time hunting down misplaced orders in the conveyor system.
- ▶ Our WCS can track your order's last position and report back where it was last scanned or diverted in the system.

The screenshot displays a software interface titled "Test HMI - User: test, Access Level: 30". It features a menu bar with options: Cartons, Lanes, Sorter, Sorter Hit Points, Scanners, Scan History, Alarms, Alarm History, System Log, and User Maintenance. Below the menu is a search bar and a "Search" button. To the right, there are date selection controls for "Start" and "End" (both set to 6/6/19) and a "Refresh" button. A table displays order tracking data with columns: ID, Timestamp, Barcode, Order Number, Location, Sorted, and Divert Confirmed. The table contains 33 rows of data. At the bottom, a log window shows messages with columns: Time, Device, and Message. The log entries include timestamps and messages such as "Motor 20 Disconnect" and "Motor 28 Disconnect".

ID	Timestamp	Barcode	Order Number	Location	Sorted	Divert Confirmed
2	None	Barcode00000	Order01		0	0
3	None	Barcode00001	Order02		0	0
4	None	Barcode00002	Order03		0	0
5	None	Barcode00003	Order04		0	0
6	None	Barcode00004	Order05		0	0
7	None	Barcode00005	Order06		0	0
8	None	Barcode00006	Order07		0	0
9	None	Barcode00007	Order08		0	0
10	None	Barcode00008	Order09		0	0
11	None	Barcode00009	Order10		0	0
12	None	Barcode00010	Order11		0	0
13	None	Barcode00011	Order12		0	0
14	None	Barcode00012	Order13		0	0
15	None	Barcode00013	Order14		0	0
16	None	Barcode00014	Order15		0	0
17	None	Barcode00015	Order01		0	0
18	None	Barcode00016	Order02		0	0
19	None	Barcode00017	Order03		0	0
20	None	Barcode00018	Order04		0	0
21	None	Barcode00019	Order05		0	0
22	None	Barcode00020	Order06		0	0
23	None	Barcode00021	Order07		0	0
24	None	Barcode00022	Order08		0	0
25	None	Barcode00023	Order09		0	0
26	None	Barcode00024	Order10		0	0
27	None	Barcode00025	Order11		0	0
28	None	Barcode00026	Order12		0	0
29	None	Barcode00027	Order13		0	0
30	None	Barcode00028	Order14		0	0
31	None	Barcode00029	Order15		0	0
32	None	Barcode00030	Order01		0	0
33	None	Barcode00031	Order02		0	0

Time	Device	Message
2019-06-06 11:10:33.096		Motor 20 Disconnect
2019-06-06 11:10:33.678		Motor 20 Disconnect
2019-06-06 11:10:33.852		Motor 20 Disconnect
2019-06-06 11:10:33.712		Motor 20 Disconnect
2019-06-06 11:10:33.681		Motor 20 Disconnect
2019-06-06 11:10:33.576		Motor 28 Disconnect
2019-06-06 11:10:33.576		Motor 28 Disconnect

Order Assignments:

- ▶ Spring's WCS enables you to assign certain order types to specific destinations.
- ▶ Assignments can include directing certain shipping carriers, order types, or other criteria to specific sort lanes in your system.

Lane	Orders	Count	Last Barcode
1	Order08,Order15		
2	Order07,Order14		
3	Order06,Order13		
4	Order01,Order05,Order12		
5	Order04,Order11		
6	Order03,Order10		
7	Order02,Order09		

Lane	Order	Required	Sorted Count
1	Order08	33	0
1	Order15	33	0
2	Order07	34	0
2	Order14	33	0
3	Order06	34	0
3	Order13	33	0
4	Order01	34	0
4	Order05	34	0
4	Order12	33	0
5	Order04	34	0
5	Order11	33	0
6	Order03	34	0
6	Order10	33	0
7	Order02	34	0
7	Order09	33	0

Configure Lanes

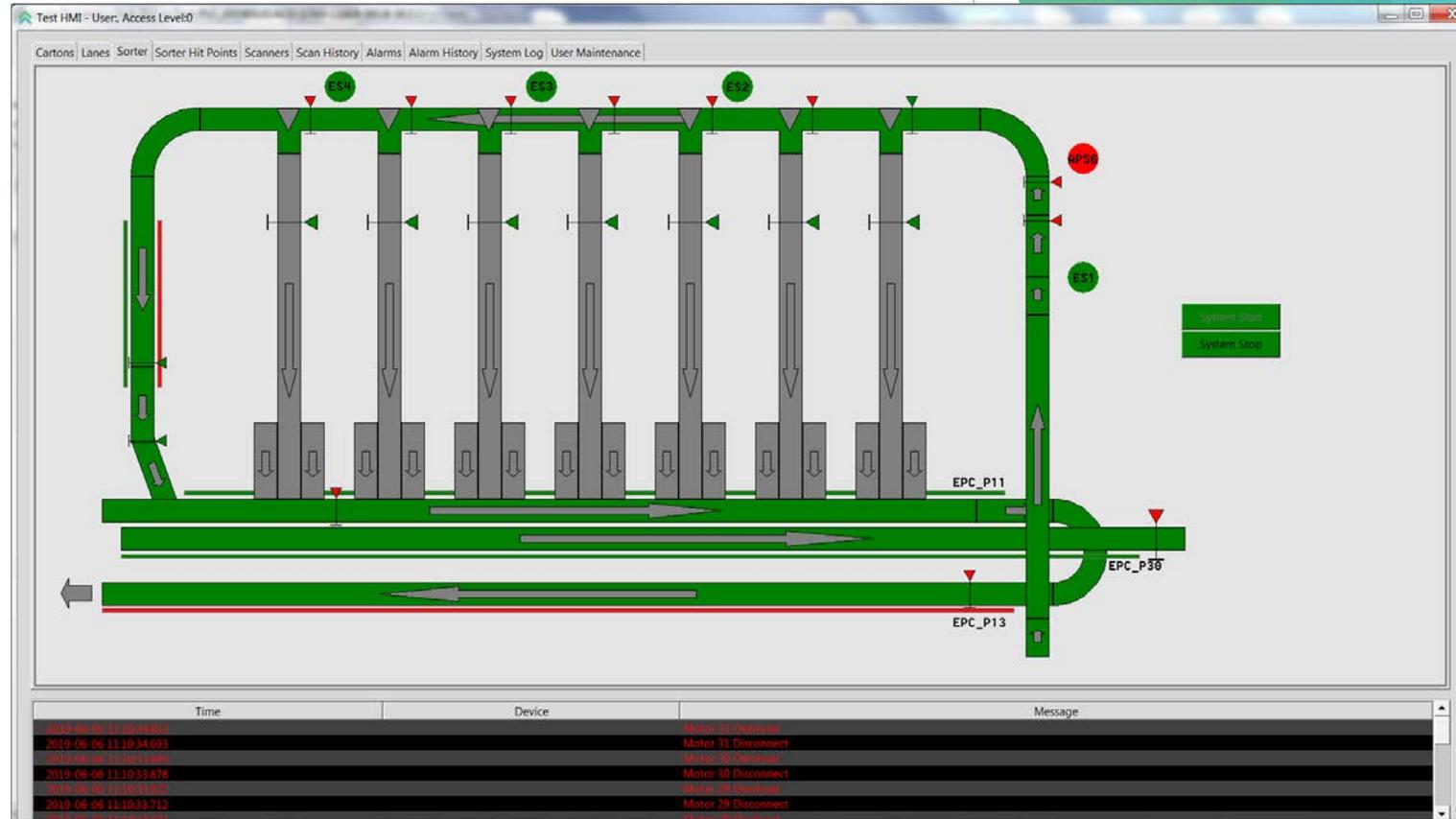
Order Number:

Lane Number:

Time	Device	Message
2019-06-06 11:10:33.646		Motor 28 Disconnect
2019-06-06 11:10:33.876		Motor 28 Disconnect
2019-06-06 11:10:33.880		Motor 28 Disconnect
2019-06-06 11:10:33.712		Motor 29 Disconnect
2019-06-06 11:10:33.691		Motor 28 Disconnect
2019-06-06 11:10:33.576		Motor 28 Disconnect
2019-06-06 11:10:33.519		Motor 27 Disconnect

Spring Powered Graphics:

- ▶ You have options
 - ▶ Looking for a simple, all-in-one graphics package? Spring offers an in-house WCS & HMI solution. Programmed in Python, a widely accepted coding language, our solution doesn't require licensing and isn't tied to one provider.
 - ▶ Do you prefer 3rd party HMI platforms such as Ignition? No problem, Spring can integrate our WCS into a multitude of HMI offerings.



Scanner Screens:

- ▶ Scanner screens showcase statistics and history:
 - ▶ Statistics Screen
 - ▶ Good Reads
 - ▶ No Reads
 - ▶ Multi Reads
 - ▶ Read %
 - ▶ Lifetime Statistics
 - ▶ Scanner History
 - ▶ Query a specific order to see when and where it was scanned in your system

The screenshot displays the 'Test HMI - User, Access Level:0' interface. The top navigation bar includes 'Cartons', 'Lanes', 'Sorter', 'Sorter Hit Points', 'Scanners', 'Scan History', 'Alarms', 'Alarm History', 'System Log', and 'User Maintenance'. The 'Scanners' tab is active, showing a summary table for two scanners.

Scanner	Location	Description	Triggers	Good Reads	No Reads	Multi	Read Rate	Life Triggers	Life Good Reads	Life No Reads	Life Multi	Life Read Rate	Last Activity
Scanner1	Sorter	Cognex thingy	6611114	6480119	65775	65220	98.02%	6617533	6486438	65824	65270	98.02%	2019-06-06 12:51:49.166
Scanner2	Pick Module	0	0	0	0	0	0.00%	97	97	0	0	100.00%	2019-04-29 10:20:56.192

Below the summary table is a search interface with a search box, a 'Search' button, and a date range selector (Start/End: 6/6/19). There are also radio buttons for record counts: 100 Records, 1,000 Records, and 50,000 Records, along with a 'Refresh' button.

The main data table shows a list of scanned items with columns: Barcode, Scanner, Location, and Time Stamp.

Barcode	Scanner	Location	Time Stamp
Barcode00393	Scanner1	Sorter	2019-06-06 12:49:02.169
Barcode00110	Scanner1	Sorter	2019-06-06 12:49:01.703
Barcode00399	Scanner1	Sorter	2019-06-06 12:49:01.241
Barcode00253	Scanner1	Sorter	2019-06-06 12:49:00.801
Barcode00303	Scanner1	Sorter	2019-06-06 12:49:00.335
Barcode00291	Scanner1	Sorter	2019-06-06 12:48:59.849
Barcode00041	Scanner1	Sorter	2019-06-06 12:48:59.382
Barcode00438	Scanner1	Sorter	2019-06-06 12:48:58.953
Barcode00375	Scanner1	Sorter	2019-06-06 12:48:58.493
Barcode00061	Scanner1	Sorter	2019-06-06 12:48:58.053
Barcode00068	Scanner1	Sorter	2019-06-06 12:48:57.636
Barcode00092	Scanner1	Sorter	2019-06-06 12:48:57.102
Barcode00446	Scanner1	Sorter	2019-06-06 12:48:56.703
Barcode00407	Scanner1	Sorter	2019-06-06 12:48:56.195
Barcode00147	Scanner1	Sorter	2019-06-06 12:48:55.753
Barcode00203	Scanner1	Sorter	2019-06-06 12:48:55.283
Barcode00435	Scanner1	Sorter	2019-06-06 12:48:54.842
Barcode00491	Scanner1	Sorter	2019-06-06 12:48:54.391
Barcode00175	Scanner1	Sorter	2019-06-06 12:48:53.901
Barcode00327	Scanner1	Sorter	2019-06-06 12:48:53.443
Barcode00194	Scanner1	Sorter	2019-06-06 12:48:52.993
Barcode00433	Scanner1	Sorter	2019-06-06 12:48:52.561
Barcode00165	Scanner1	Sorter	2019-06-06 12:48:52.091
Barcode00077	Scanner1	Sorter	2019-06-06 12:48:51.669
Barcode00179	Scanner1	Sorter	2019-06-06 12:48:51.142
Barcode00135	Scanner1	Sorter	2019-06-06 12:48:50.690
Barcode00229	Scanner1	Sorter	2019-06-06 12:48:50.245
Barcode00250	Scanner1	Sorter	2019-06-06 12:48:49.791
Barcode00350	Scanner1	Sorter	2019-06-06 12:48:49.341
Barcode00283	Scanner1	Sorter	2019-06-06 12:48:48.902
Barcode00220	Scanner1	Sorter	2019-06-06 12:48:48.577
Barcode00028	Scanner1	Sorter	2019-06-06 12:48:47.953

At the bottom, there is a log window with columns 'Time', 'Device', and 'Message'. The log shows messages such as 'Motor 21 Disconnect', 'Motor 21 Disconnect', 'Motor 20 Disconnect', 'Motor 20 Disconnect', 'Motor 19 Disconnect', 'Motor 19 Disconnect', 'Motor 18 Disconnect', 'Motor 18 Disconnect', 'Motor 20 Disconnect', and 'Motor 20 Disconnect'.

Alarm Screens:

- ▶ Our Alarm and Alarm History screens enable you to identify and track faults in the system.
 - ▶ Our built-in search bar enables you to query on a specific device or description.
 - ▶ Filter based on a specific date or timeframe to narrow your search further.

Test HMI - User: Access Level0

Cartons | Lanes | Sorter | Sorter Hit Points | Scanners | Scan History | Alarms | Alarm History | System Log | User Maintenance

Enable Date Search?

Search

Dates: Start: 6/6/19 End: 6/6/19

100 Records
1,000 Records
50,000 Records

Refresh

Time Stamp	Status	Device	Message
2019-06-06 11:10:34.861	On		Motor 31 Overload
2019-06-06 11:10:34.767	On		Motor 31 Disconnect
2019-06-06 11:10:34.011	On		Motor 30 Overload
2019-06-06 11:10:33.925	On		Motor 30 Disconnect
2019-06-06 11:10:33.846	On		Motor 29 Overload
2019-06-06 11:10:33.744	On		Motor 29 Disconnect
2019-06-06 11:10:33.677	On		Motor 28 Overload
2019-06-06 11:10:33.611	On		Motor 28 Disconnect
2019-06-06 11:10:33.551	On		Motor 27 Overload
2019-06-06 11:10:33.492	On		Motor 27 Disconnect
2019-06-06 11:10:33.433	On		Motor 26 Overload
2019-06-06 11:10:33.367	On		Motor 26 Disconnect
2019-06-06 11:10:33.308	On		Motor 25 Overload
2019-06-06 11:10:33.251	On		Motor 25 Disconnect
2019-06-06 11:10:33.189	On		Motor 24 Overload
2019-06-06 11:10:33.126	On		Motor 24 Disconnect
2019-06-06 11:10:32.990	On		Motor 23 Overload
2019-06-06 11:10:32.907	On		Motor 23 Disconnect
2019-06-06 11:10:32.848	On		Motor 22 Overload
2019-06-06 11:10:32.794	On		Motor 22 Disconnect
2019-06-06 11:10:32.731	On		Motor 21 Overload
2019-06-06 11:10:32.672	On		Motor 21 Disconnect
2019-06-06 11:10:32.597	On		Motor 20 Overload
2019-06-06 11:10:32.530	On		Motor 20 Disconnect
2019-06-06 11:10:32.437	On		Motor 19 Overload
2019-06-06 11:10:32.375	On		Motor 19 Disconnect
2019-06-06 11:10:32.300	On		Motor 18 Overload
2019-06-06 11:10:32.188	On		Motor 18 Disconnect
2019-06-06 11:10:32.070	On		Motor 17 Overload
2019-06-06 11:10:32.010	On		Motor 17 Disconnect
2019-06-06 11:10:31.932	On		Motor 16 Overload
2019-06-06 11:10:31.778	On		Motor 16 Disconnect

Time	Device	Message
2019-06-06 11:10:34.861	Motor 31	Motor 31 Overload
2019-06-06 11:10:34.861	Motor 31	Motor 31 Disconnect
2019-06-06 11:10:34.011	Motor 30	Motor 30 Overload
2019-06-06 11:10:33.925	Motor 30	Motor 30 Disconnect
2019-06-06 11:10:33.846	Motor 29	Motor 29 Overload
2019-06-06 11:10:33.744	Motor 29	Motor 29 Disconnect

Sorter Hit Points:

- ▶ Our WCS + HMI offering provides you with the insights into the lower-level PLC controls as well as the upper-level WCS.
- ▶ Do you need to tune up the hit points of your sorter? Use our Hit Points screen to conveniently adjust PLC settings.

Address	Description	Value
Sorter_Hit_Points[0]	G8A	110
Sorter_Hit_Points[1]	G8B	222
Sorter_Hit_Points[2]	G8C	300
Sorter_Hit_Points[3]	G8D	400
Sorter_Hit_Points[4]	G8E	500
Sorter_Hit_Points[5]	G8F	600
Sorter_Hit_Points[6]	G8G	700

Time	Device	Message
2019-06-06 11:10:33.831		Motor 31 Disconnect
2019-06-06 11:10:34.693		Motor 31 Disconnect
2019-06-06 11:10:35.893		Motor 30 Disconnect
2019-06-06 11:10:33.878		Motor 30 Disconnect
2019-06-06 11:10:33.831		Motor 29 Disconnect
2019-06-06 11:10:33.752		Motor 29 Disconnect

System Log:

- ▶ Our System Log shows highlighted events in your day-to-day operations.
- ▶ See both real time feedback and past history logs of wave assignments, hit points adjustments, lane activations, and more.

Test HMI - User: Access Level:0

Cartons | Lanes | Sorter | Sorter Hit Points | Scanners | Scan History | Alarms | Alarm History | System Log | User Maintenance

Enable Date Search? 100 Records 1,000 Records 50,000 Records

Search [] Refresh

Dates Start: 6/6/19 End: 6/6/19

Time Stamp	Source	Type	Message
2019-06-06 12:49:01.913	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 12:49:01.807	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 12:31:24.605	SA_IO_Data	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 12:31:23.579	SA_IO_Data	SA_IPCWrite	Write error - [Erno 104] Connection reset by peer
2019-06-06 11:50:12.631	SA_IO_Data	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:50:11.118	SA_IO_Data	SA_IPCWrite	Write error - [Erno 104] Connection reset by peer
2019-06-06 11:36:46.437	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:36:46.341	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:34:01.231	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:34:01.123	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:19:13.602	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:19:13.517	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:17:59.632	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:17:59.532	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:15:40.456	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:15:40.368	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:12:44.845	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:12:44.752	Spring_Demo	SA_IPCConnect	Connected to IPC server at 192.168.32.20
2019-06-06 11:10:30.576	SA_Alarms	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:10:27.660	SA_Demo_BC_Writer	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:10:27.610	SA_Scanners	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:10:27.609	SA_IO_Data	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:10:27.409	Spring_Demo	SA_PLCLConnect	Connected to PLC at 192.168.32.28
2019-06-06 11:10:18.337	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:10:08.934	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:59.531	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:50.128	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:40.725	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:31.322	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:21.918	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:12.515	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake
2019-06-06 11:09:03.113	SA_Demo_BC_Writer	SA_PLCLReadTag	ReadTag failed reading BarcodeFeedHandshake

Time	Device	Message
2019-06-06 11:10:34.832		Motor 31 Overload
2019-06-06 11:10:34.693		Motor 31 Disconnect
2019-06-06 11:10:33.945		Motor 30 Overload
2019-06-06 11:10:33.878		Motor 30 Disconnect
2019-06-06 11:10:33.822		Motor 29 Overload
2019-06-06 11:10:33.712		Motor 29 Disconnect
2019-06-06 11:10:33.661		Motor 28 Overload

User Configuration:

- ▶ Do you need operators to have access to graphics screen but not to assignment screens?
 - ▶ Our WCS can be configured for multiple users with various levels of access.

The screenshot displays a software interface for user configuration. The main window is titled "Test HMI - User, Access Level:0" and features a menu bar with options: Cartons, Lanes, Sorter, Sorter Hit Points, Scanners, Scan History, Alarms, Alarm History, System Log, and User Maintenance. A table lists existing users with their names, login IDs, and access levels.

User Name	Login	Access Level
Fritz the cat	ftc	100
eddy	eddy	100
test	test	30

On the right side, there is a "Login" panel with input fields for "User" and "Password", and buttons for "Login" and "Logout". Below it is an "Add/Edit Users" panel with input fields for "Name", "User", "Access Level", and "Password", and buttons for "Save" and "Delete".