PackML HMI Evaluation

Question Set B

Thank you for contributing to this HMI study. In this evaluation, you will be asked to exercise three separate HMI designs. The insight derived from your feedback will be used to help direct the PackML HMI standardization effort. Please complete the following evaluation tasks and answer the associated questions, beginning with a brief set of demographic questions to help us understand your position in the packaging industry. Please be sure to complete each section in order.

Age:
Circle the range representing your age…

18-30   30-40   40-50   50-60   60+

Packaging HMI Experience:
Circle the description best representing your level of experience using packaging machine HMIs…

Never Used   Novice   Intermediate   Advanced

Packaging Industry Experience:
Circle the range representing the number of years you have worked in the packaging industry…

0-5 years   5-15 years   15-30 years   30+ years

Packaging Company Category:
Circle the description best representing your current company with respect to HMIs…

End User   Technology Provider   System Integrator   Machine Builder

Packaging HMI Role:
Circle the description best representing your current role with respect to equipment HMIs…

Operator   Decision Maker   Engineer   Other

If other, please specify: _____

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Beckhoff / Nestlé HMI Evaluation

Beginning with the Beckhoff / Nestlé interface, find the following pieces of information. For each question, indicate your level of confidence that your answer is correct and the level of difficulty you experienced searching for the data. Complete each question in this section before continuing to other HMI sections.

Beckhoff / Nestlé Communicating Device Count:
What is the currently reported number of communicating devices?

0	7	12	19

What is your level of confidence in the answer above?

Not Confident at All ○ ○ ○ ○ ○ Very Confident

How difficult did you find this task?

Very Difficult ○ ○ ○ ○ ○ Very Easy

Beckhoff / Nestlé Sealer Temperature:
What is the currently reported sealer temperature in degrees Celsius?

130	160	100	204

What is your level of confidence in the answer above?

Not Confident at All ○ ○ ○ ○ ○ Very Confident

How difficult did you find this task?

Very Difficult ○ ○ ○ ○ ○ Very Easy

Beckhoff / Nestlé Bad Product Count:
What is the current Bad Product count?

0   less than 60   60   more than 60

What is your level of confidence in the above answer?

Not Confident at All   ○ ○ ○ ○ ○   Very Confident

How difficult did you find this task?

Very Difficult   ○ ○ ○ ○ ○   Very Easy

Beckhoff / Nestlé Alarm:
Which of the following is the most recent alarm?

a. Reject bin full, clear reject bin and press start

b. Low Temperature at Sealer

c. Material Low, please refill and quit

d. Connection lost with upstream equipment

e. None of the above

What is your level of confidence in the above answer?

Not Confident at All   ○ ○ ○ ○ ○   Very Confident

How difficult did you find this task?

Very Difficult   ○ ○ ○ ○ ○   Very Easy

Overall, how difficult was the Beckhoff / Nestlé interface for the above tasks?

Very Difficult   ○ ○ ○ ○ ○   Very Easy

Siemens / Qimarox HMI Evaluation

Now, switching to the Siemens / Qimarox interface, find the following pieces of information. Again, for each question, indicate your level of confidence that your answer is correct and the level of difficulty you experienced searching for the data. Complete each question in this section before continuing to the final section.

Siemens / Qimarox Upstream Machine Speed:
What is the reported speed of the upstream machine in packages per minute (ppm)?

0	30	60	200

What is your level of confidence in the above answer?

Not Confident at All ○ ○ ○ ○ ○ Very Confident

How difficult did you find this task?

Very Difficult ○ ○ ○ ○ ○ Very Easy

Siemens / Qimarox PLC IP Address:
What is the reported PLC IP Address?

172.21.117.205	127.0.0.1	192.168.2.1	192.168.100.60

What is your level of confidence in the above answer?

Not Confident at All ○ ○ ○ ○ ○ Very Confident

How difficult did you find this task?

Very Difficult ○ ○ ○ ○ ○ Very Easy

Siemens / Qimarox Reject Count:

What is the currently reported reject count?

0   less than 60   60   more than 60

What is your level of confidence in your above answer?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Siemens / Qimarox Alarm:

Which of the following is the most recent alarm?

a. Reject bin full, clear reject bin and press start

b. Low Temperature at Sealer

c. Material Low, please refill and quit

d. Connection lost with upstream equipment

e. None of the above

What is your level of confidence in your above answer?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Overall, how difficult was the Siemens / Qimarox interface for the above tasks?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Would it be difficult working on a production line that included a mix of Beckhoff / Nestlé and Siemens / Qimarox interfaces?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Lenze HMI Evaluation

Now, switching to the Lenze interface, find the following pieces of information. Again, for each question, indicate your level of confidence that your answer is correct and the level of difficulty you experienced searching for the data.
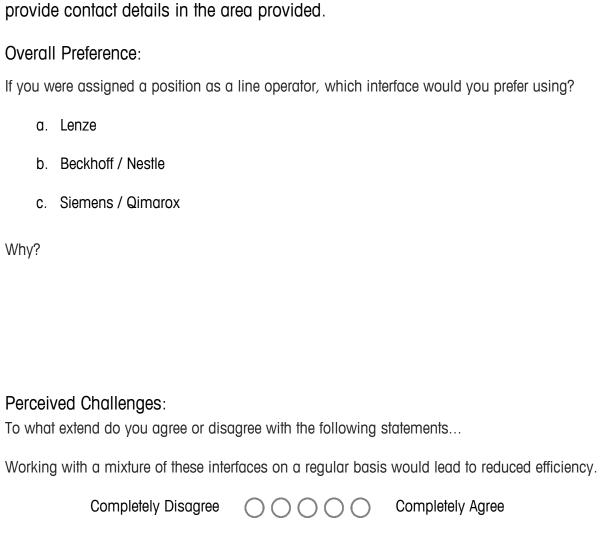
Lenze Equipment Current State:
What is the numeric code representing the Current Equipment State?

4   5   6   7

What is your level of confidence in the answer above?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Lenze IP Address:
What is the IP address of this Lenze device (i.e., Own IP Address)?

192.168.2.1   192.168.100.11   172.21.117.220   127.0.0.1

What is your level of confidence in the answer above?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Lenze Mode Current Time:

What is the current value of Mode Current Time?

0   less than 90   90   more than 90

What is your level of confidence in the answer above?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Lenze Held Alarm:

Which of the following is the most recent alarm produced in the Held category?
Circle the letter label of the correct answer (a, b, c, d, or e)

     a. Reject bin full, clear reject bin and press start

     b. Low Temperature at Sealer

     c. Material Low, please refill and quit

     d. Connection lost with upstream equipment

     e. None of the above

What is your level of confidence in the answer above?

Not Confident at All   ◯ ◯ ◯ ◯ ◯   Very Confident

How difficult did you find this task?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Overall, how difficult was the Lenze interface for the above tasks?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

Would it be difficult working on a production line mixing Lenze and Siemens / Qimarox interfaces?

Very Difficult   ◯ ◯ ◯ ◯ ◯   Very Easy

HMI Evaluation Summary

Now, having used each of the interfaces, please answer the questions below. If you would like to be contacted to discuss your evaluation experience further, please provide contact details in the area provided.

Overall Preference:

If you were assigned a position as a line operator, which interface would you prefer using?

      a. Lenze

      b. Beckhoff / Nestle

      c. Siemens / Qimarox

Why?

Perceived Challenges:

To what extend do you agree or disagree with the following statements…

Working with a mixture of these interfaces on a regular basis would lead to reduced efficiency.

           Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Why?

Working with a mixture of these interfaces on a regular basis would lead to safety issues.

Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Why?

Standardizing on my preferred interface would significantly reduce downtime.

Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Why?

Standardizing on my preferred interface would increase job satisfaction for line operators.

Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Why?

Standardizing on my preferred interface would reduce operator errors caused by poor HMI design.

Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Why?

Participating in this evaluation in no way changed my opinion regarding HMI standardization.

Completely Disagree   ◯ ◯ ◯ ◯ ◯   Completely Agree

Additional Comments:

If you have any additional comments, please include them here. If you would like to be contacted to discuss the evaluation further, please leave contact information below. Thank you for your participation!