COSMO*line*

User Documentation

Technology Dept. PML

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1 Contents

2 Efficiency

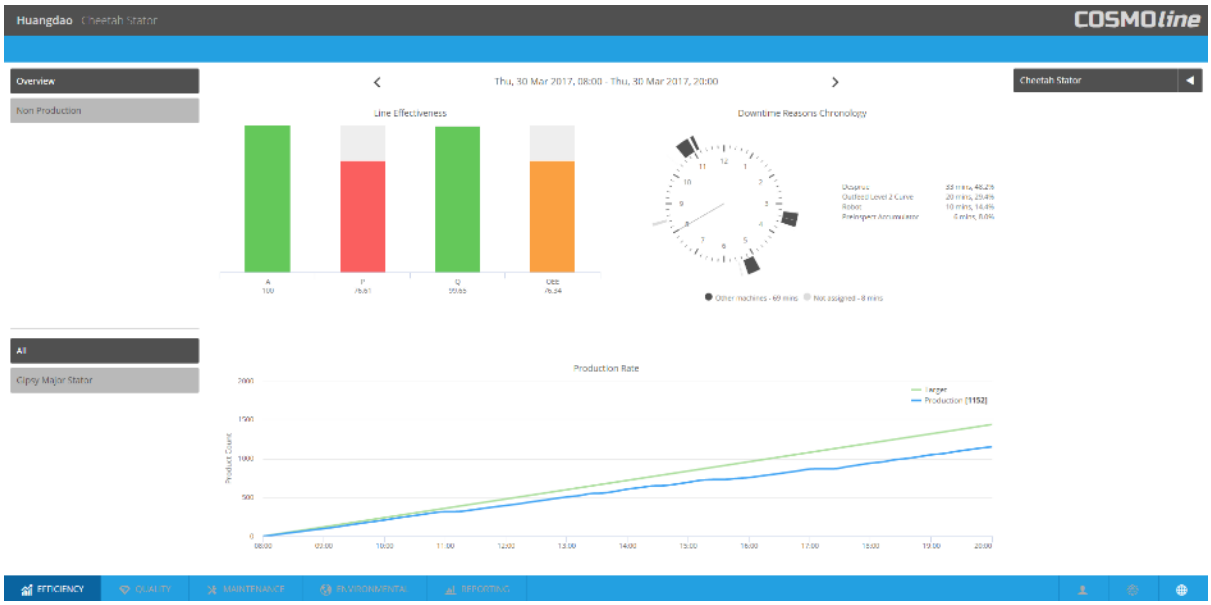

Figure 2.1: Efficiency landing page

2.1 General Navigation

The layout of the Efficiency Environment is comprised of a ***function selector*** (top left pane), a ***model selector*** (bottom left pane), ***shift toggle*** (top centre), ***content area*** (centred space), and ***functional location selector*** (right pane).

2.1.1 Function Selector

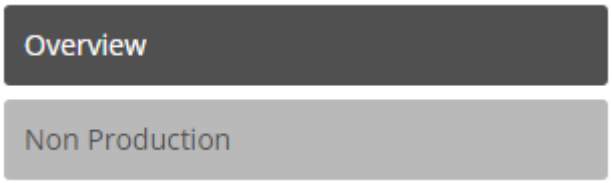

Figure 2.2: Function selector

The top left pane of the landing page signifies which function of the environment is selected. The default function selected is ***Overview***.

Overview provides an informative look at relevant production data from an equipment-centric point of view.

Non-production is a calendar-style interface to schedule any non-production time for a line. Scheduled non-production is a key input into OEE statistics (further explained in appendix).

2.1.2 Model Selector

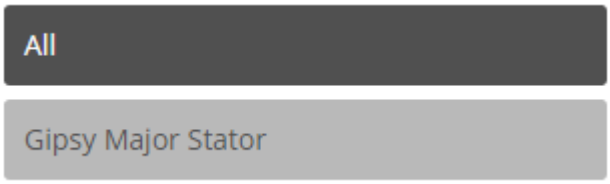

Figure 2.3: Model selector

The bottom left pane allows selection of a particular model. This will result in the content area displaying data particular to that selected model. The default selection for this is ***All*** (meaning the data returned will not be related to any one particular model).

2.1.3 Shift Toggle

The shift toggle gives the user selection ability based on time. Using the forward and back arrows (right and left respectively), the user can fetch content for different shifts.

2.1.4 Functional location selector

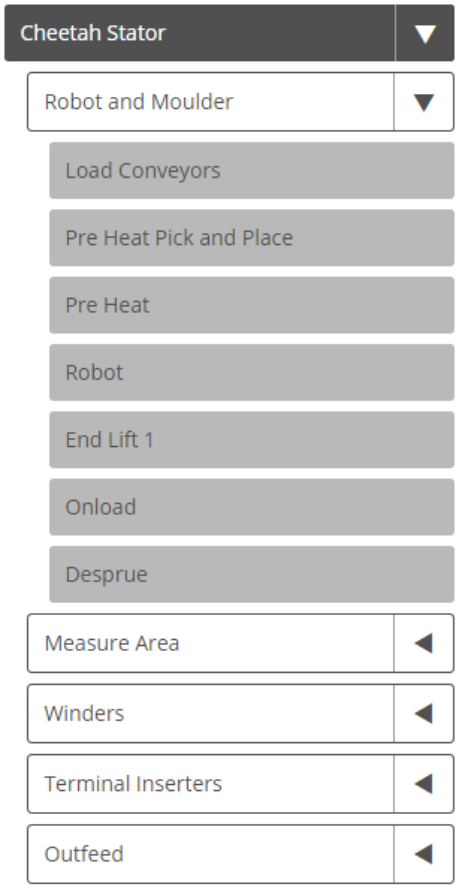

Figure 2.4: Functional location selector

The right pane enables selection of a precise functional location. ***Functional locations are a physical and hierarchical representation of the plant floor***. In the figure above, we see an example of the Cheetah Stator line at the top of the tree. Within this line there five main areas (Robot & Moulder, Measure Area, etc.), and within these areas are machines e.g. the Robot & Moulder group contain Load Conveyors, Pre Heat Pick & Place, etc. The content returned in the content area is related to which ever functional location has been selected.

2.2 Overview Function

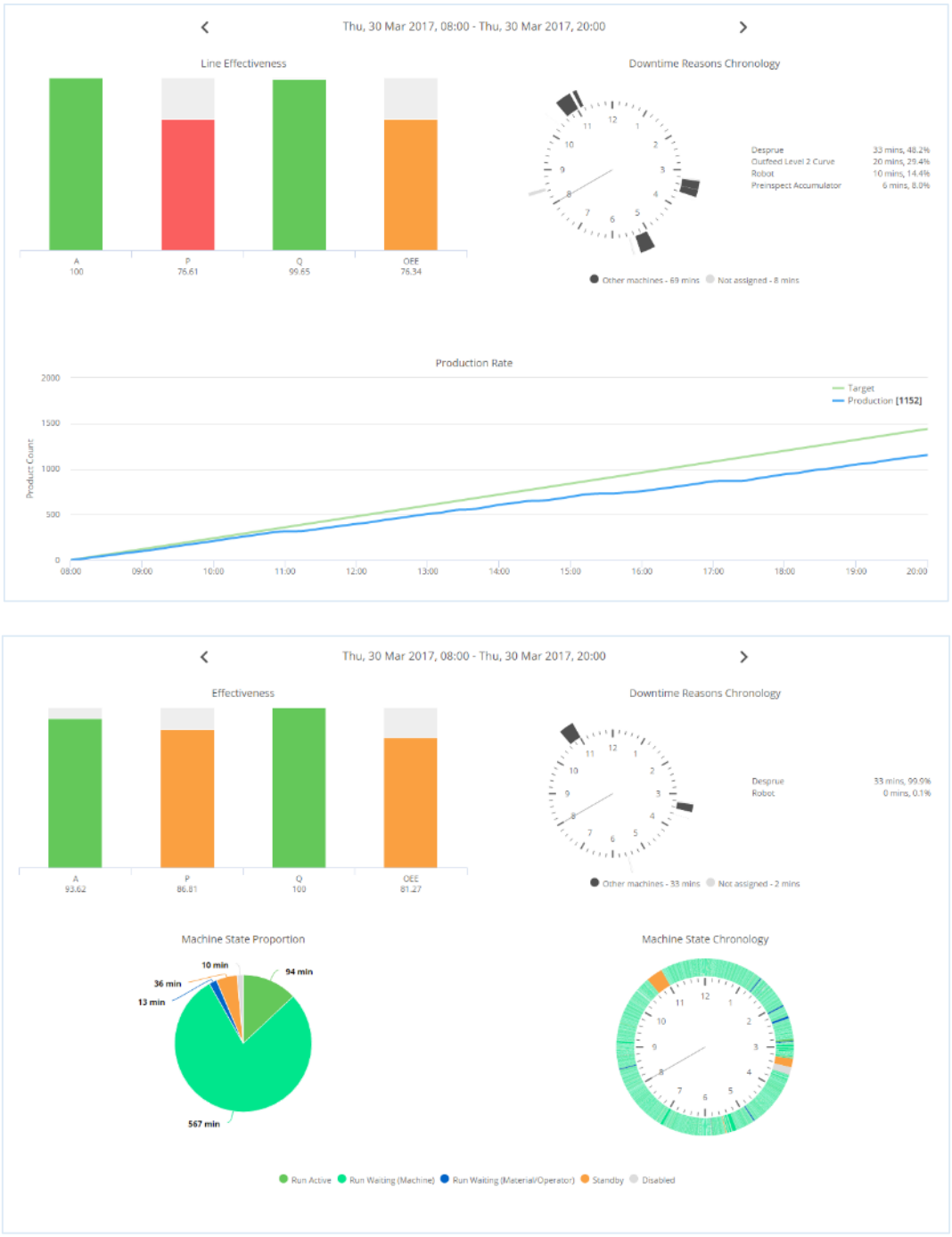

Figure 2.5: Overview Function content area with line selected (top) and machine selected (bottom)

The Overview Function provides shift-based production data on either lines or machines. The overview function is comprised of the following components:

2.2.1 OEE Graph

The OEE (Overall Equipment Effectiveness) Graph is a simple bar graph that displays Availability, Performance, and Quality of a selected functional location, for a selected shift, for selected models. For a further explanation on OEE definition and how it is calculated, please refer to the appendix.

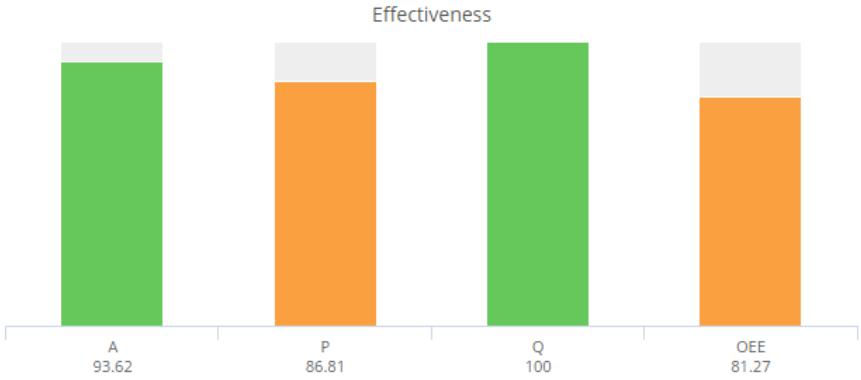

Figure 2.6: Example OEE Graph

2.2.2 Production Rate Worm

The Production Rate Worm is a simple line graph showing accumulative product count of a selected line for a selected shift, for selected models. The blue line represents the current product count, and the green light represents the target.

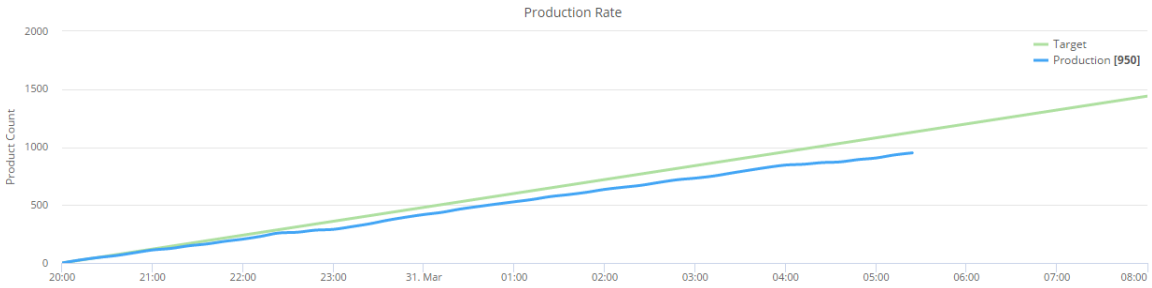

Figure 2.7: Production Rate Example

2.2.3 Downtime Chronology

The Downtime Chronology is a chronological graph, displaying the downtime events and associated reasons for a selected functional location, for a selected shift, for a selected model. Each block on the graph represents a downtime event of the selected functional location. The legend portrays the reasons for those downtime events. If the reason of a particular downtime event is due to the downtime of another functional location (machine), those machines are grouped into an “other machines” category, as is shown in the example figure below. The radial lines on the graph represent the start and end times of shift.

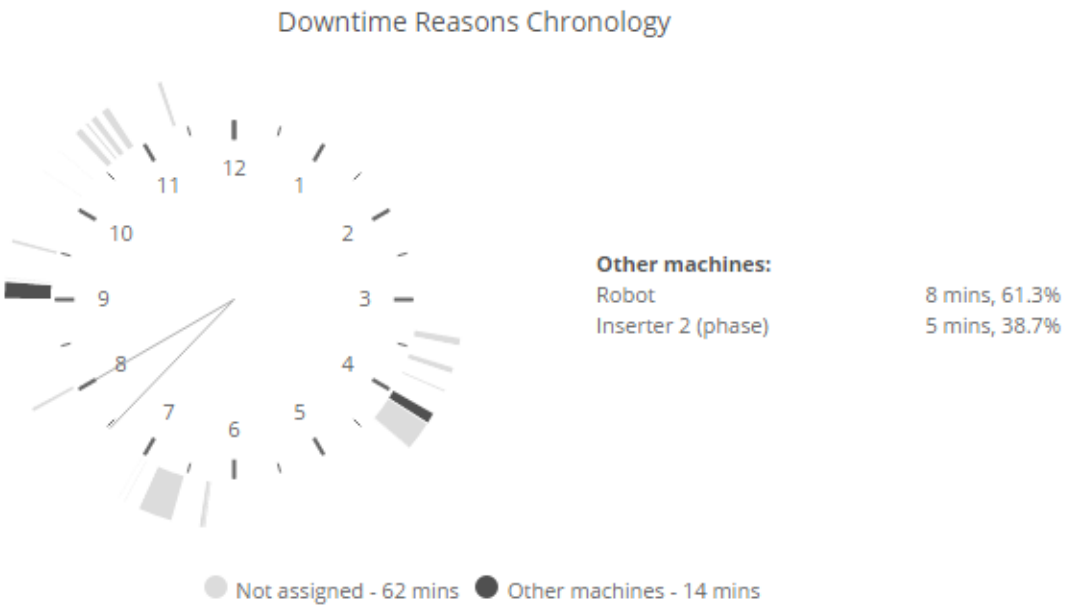

Figure 2.8: Downtime Chronology example

2.2.4 Machine State Chronology

Machine State Chronology is similar to Downtime Chronology, however it instead represents the states of machines, as opposed to downtime events. A further definition of these states can be found in the appendix.

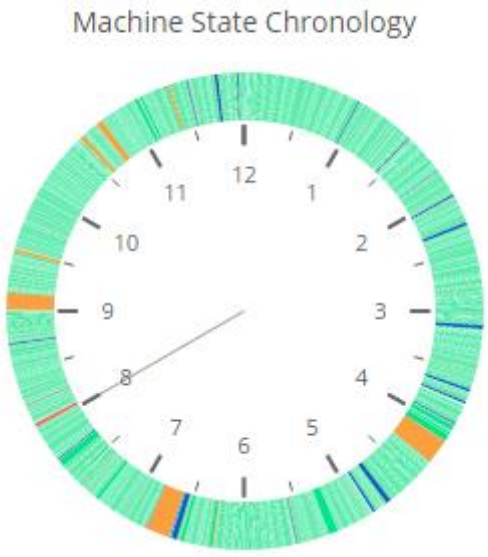

Figure 2.9: Machine State Chronology

2.2.5 Machine State Proportion

This pie graph represents the same states as the Machine State Chronology, however, it allows the user to see the state durations in a summarised view, allowing them to easily deduce the state proportions for any given shift, machine, and model.

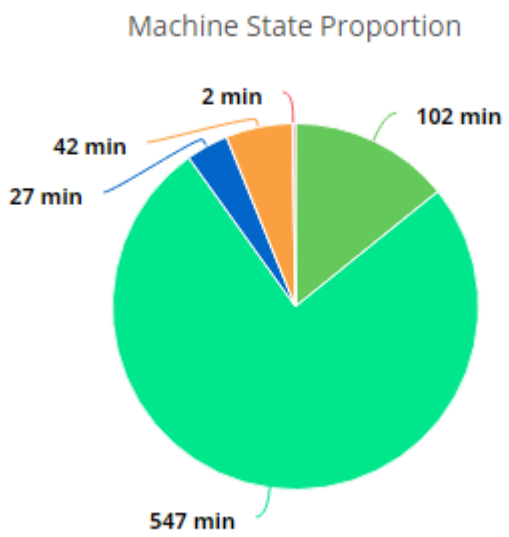

Figure 2.10: Machine State Proportion

2.3 Non Production

The Non Production environment is a calendar-style interface to schedule any non-production time for a line.

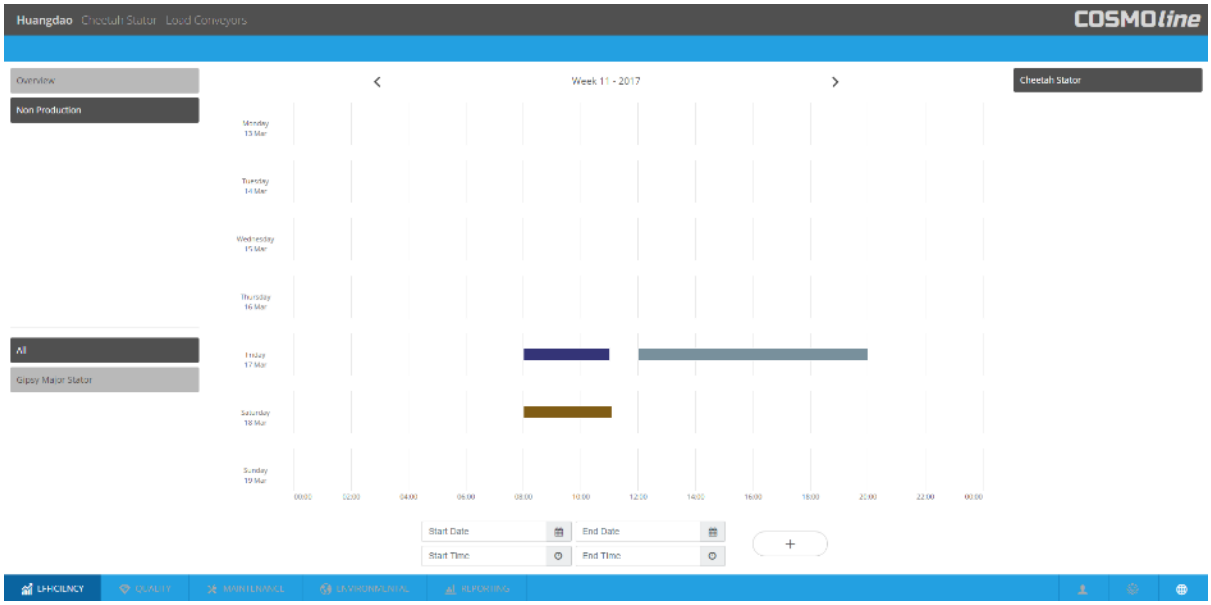

Figure 2.11: Non Production Function

To add a schedule of non-production (a segment of time when the line is not planned to be in production), fill in a start and end time and press the add icon, located at the bottom of the page.

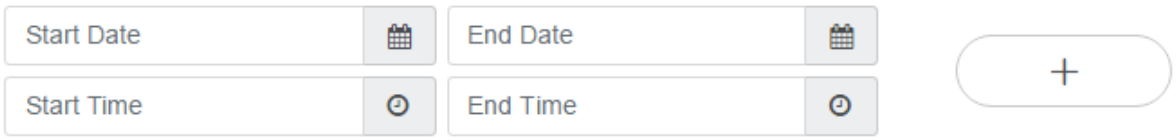

Figure 2.12: Interface for adding non-production

All non-production schedules that have been added, will show as coloured bars in the calendar-styled content area. To delete a particular schedule, click on its bar, and then click delete.

2.4 Line Status

Line status provides a current overview of all machine states within a given line. It is presented in a graphical form, with a legend, as shown in the figure below.

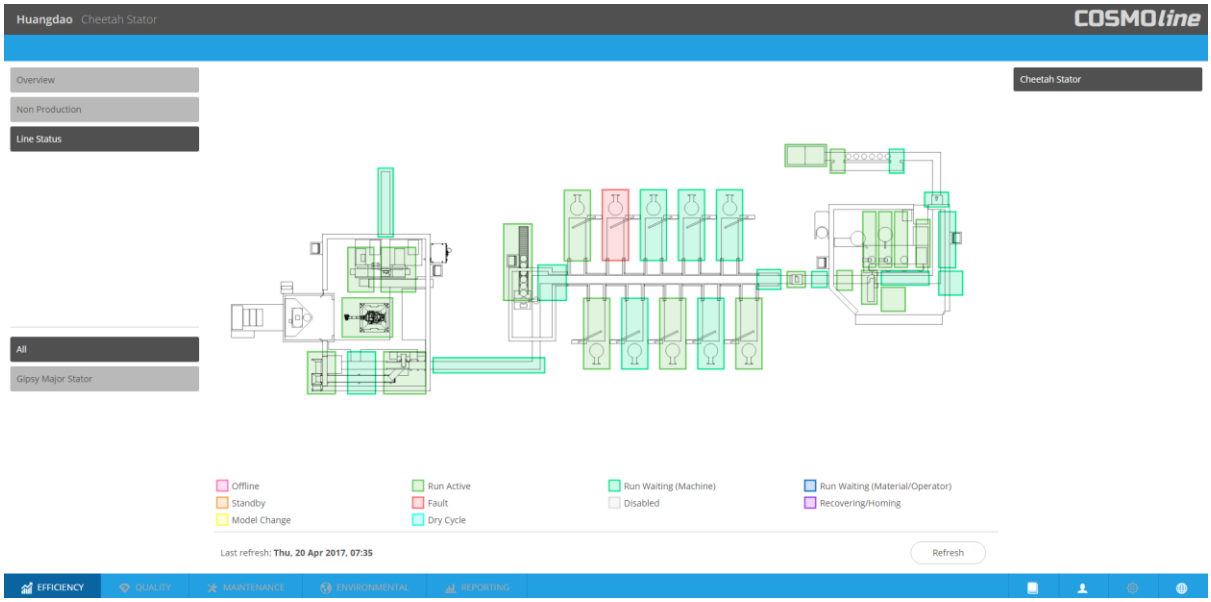

Figure 2.13: Line Status

Pushing the 'refresh' button at the bottom right of the page will fetch the latest active machine states. The date and time next to 'last refresh', is the date and time of the last state change logged to the database.

3 Quality

Currently in development.

4 Maintenance

Currently in development.

5 Environmental

Currently in development.

6 Reporting

Currently in development.

7 Console

Currently in development.

8 Appendix

8.1 Efficiency Theory

8.1.1 Line-based Efficiency

8.1.2 Machine-based Efficiency