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For More Information in North America:
Swisslog Healthcare Solutions
Email: healthcare@swisslog.com
USA: (800) 764-0300
Canada: (877) 294-2831 | (905) 629-2400

WWW.SWISSLOG.COM

SYSTEM DESIGN ANALYSIS (SDA) FOR THE PNEUMATIC TUBE SYSTEM

Learn how Swisslog’s System Design Analysis group can optimize your transport system and help improve patient care.

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Changes in operation, facility growth and increased patient-care services are all factors impacting a system’s performance. Inside you will find dramatic results of “Before” and “After” hospital case studies. Our SDA team utilizes custom analysis tools to illustrate inadequate materials transport system performance. Real-time simulations are performed to pinpoint the source of the problem and to determine a solution.

Experience
Swisslog’s SDA group has more than 100 years of pneumatic tube system design and combined consulting experience.

Justification
An inefficient material transport system can lead to users manually transporting critical materials. Manual material transport costs a facility significant lost time and money by pulling professionals from their intended work, leading to a reduction in quality patient care. Typical system capacity improves 10-15% after an SDA, yielding payback in as little as a few months.

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Traffic Study

Current or projected traffic between all facility departments is examined by Swisslog’s SDA group. Understanding the dynamics of your day-to-day operation is key to correcting an inefficient system — or implementing an optimal new system design.

Wait Time Study

Wait Time is defined as the delay between the time a user presses their station SEND button and the time the carrier begins to be processed by the system. Excessive wait time is a major complaint of pneumatic tube system users.

Travel Time/Transaction Time Study

Transaction Time is the sum of Wait Time and Travel Time. Short Wait Times are often not enough—carrier routing must also be fast and efficient. A Travel Time/Transaction Time Study reveals “bottlenecks” within the system to help the SDA group achieve the optimal system design.

Inbound/Outbound Laboratory/Pharmacy Transaction Time Study

Administrators can view transaction travel times to or from any destination within the system. This information is critical for time-sensitive transactions such as a hospital blood bank wishing to use the pneumatic tube system for blood transport.

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Uptime reports can be significantly important to hospital administrators when measuring the availability of the pneumatic tube system to the hospital users. Comparing actual system performance against industry benchmarks is helpful when looking at system preventive maintenance and alarm issues.

Competitive Systems

Swisslog performs SDAs on non-Swisslog systems! Contact our SDA group for more information.

Before SDA

Quantity transactions sent from pharmacy: 768
Average transaction time: 141.7 seconds
Maximum transaction time: 915 seconds

After SDA

Quantity transactions sent from pharmacy: 776
Average transaction time: 111.3 seconds
Maximum transaction time: 420 seconds
Transaction Time Study

Inbound to Lab

266-Bed Hospital
San Antonio, TX

Transaction time is defined as the total amount of time required to process a transaction from the moment the SEND button is pressed at the sending station, to the moment the carrier arrives at the destination station.

Before SDA

- Quantity transactions received at laboratory: 381
- Average transaction time: 101.8 seconds
- Maximum transaction time: 496 seconds

After SDA

- Quantity transactions received at laboratory: 384
- Average transaction time: 69.7 seconds
- Maximum transaction time: 235 seconds

Examining System Performance

Why SDA?
Excessive wait time at a pneumatic tube station reduces throughput and erodes user confidence. What is the result? An expenditure of valuable professional staff time to manually transport items and a decrease in the quality of patient care.

SDA Charts

The charts on the following pages are actual studies performed by Swisslog’s SDA group. They illustrate a range of hospital facilities – small to large, experiencing system challenges. Long wait times indicate the need for analysis and optimization.
Before SDA
The average peak hour dispatch wait time was 80+ seconds with system transactions at an average of 990 transactions per day. Transactions departing within 2 minutes was 81%.

After SDA
> Daily 24-hour average wait time decreased from 40 seconds to 6.4 seconds
> Daily traffic increased to over 1,100 per day
> Transactions departing within 2 minutes increased to 98.4%

<table>
<thead>
<tr>
<th>24-Hour Average Transaction Wait Time</th>
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<tbody>
<tr>
<td>Before</td>
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<table>
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<tr>
<th>24-Hour Transaction Quantity</th>
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<tbody>
<tr>
<td>Before</td>
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<tr>
<td>1,350</td>
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Before SDA
The average peak hour dispatch wait time was 25+ seconds with system transactions at an average of 2,599 per day. Transactions departing within 2 minutes was 86.5%.

After SDA
> Daily 24-hour average wait time decreased from 25.1 seconds to 15.3 seconds
> Daily traffic increased to over 2,874 per day
> Transactions departing within 2 minutes increased to 97.8%

<table>
<thead>
<tr>
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<th>24-Hour Transaction Quantity</th>
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<td>Before</td>
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<td>2,750</td>
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Before SDA
The average peak hour dispatch wait time was 215+ seconds with system transactions at an average of 4,100 per day. Transactions departing within 2 minutes was 60.5%.

After SDA
> Daily 24-hour average wait time decreased from 122.2 seconds to 47.8 seconds
> Daily traffic increased to over 5,002 per day
> Transactions departing within 2 minutes increased to 82.2%

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<thead>
<tr>
<th>24-Hour Average Transaction Wait Time</th>
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<th>24-Hour Transaction Quantity</th>
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<tr>
<td>Before</td>
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<td>5,500</td>
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Before SDA

The average peak hour dispatch wait time was 80+ seconds with system transactions at an average of 990 transactions per day. Transactions departing within 2 minutes was 91%.

After SDA

> Daily 24-hour average wait time decreased from 25 seconds to 8.3 seconds
> Daily traffic increased to over 1,100 per day
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<tr>
<td>2750</td>
<td>1250</td>
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Medium Hospital

264-bed facility in Wisconsin
4-inch system with 19 stations

Before SDA

The average peak hour dispatch wait time was 100+ seconds with system transactions at an average of 1,978 per day. Transactions departing within 2 minutes was 80%.

After SDA

> Daily 24-hour average wait time decreased from 40 seconds to 6.4 seconds
> Daily traffic increased to over 2,499 per day
> Transactions departing within 2 minutes increased to 99.4%

24-Hour Average Transaction Wait Time

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Large Hospital

821-bed facility in Pennsylvania
6-inch system with 54 stations

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Competitor’s System

856-bed facility in Michigan
6-inch system with 70 stations

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