

SWISSLOG RESOURCES

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.

Contact our Customer Solutions group for more information or to schedule your system design analysis at (800) 764-0300.

Swisslog Performance Standards

Swisslog's System Design Analysis (SDA) sets us apart from all others. When considering healthcare facility transport performance, our SDA group provides systematic, customer-based analytical services for new and existing pneumatic tube systems for our clients.

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.

Contact Swisslog to see how our SDA group can help improve the efficiency of your system.

swisslog

Swisslog Improves Pneumatic Tube System Performance



Virtual System Simulation

To improve the performance of a system, Swisslog has designed and built the most sophisticated Pneumatic Tube System Simulator in the world. By using this advanced real-time simulator, system design engineers test the functionality of a design against the overall and specific detailed system performance. Performance criteria such as Wait Time, Throughput, Transaction Times and Carrier Processing Efficiency are tested prior to contract.

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.

Custom System Design Analysis Services

Every healthcare facility has unique, ever-evolving day-to-day challenges, which impact the performance of the materials transport system. Expansion of hospital services create new delivery demands. Swisslog's SDA group provides time-tested techniques to evaluate each situation, and employs an intuitive set of skills unparalleled by any other system provider.

System Uptime/Downtime Study

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.

Examining System Performance

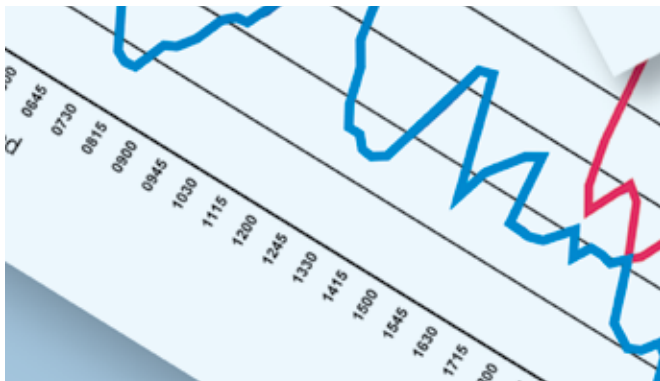
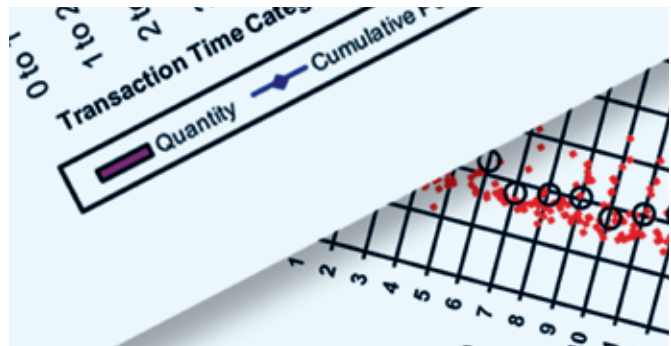
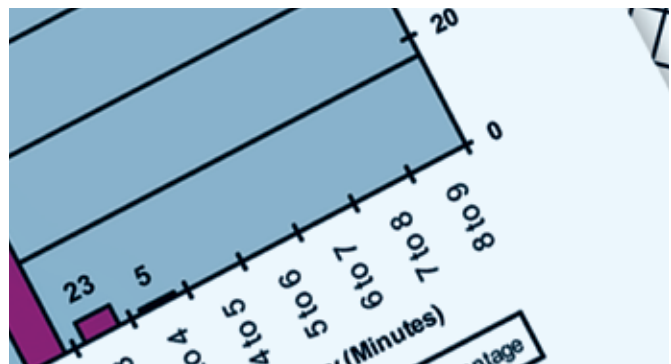


Why SDA?

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.



Small Hospital

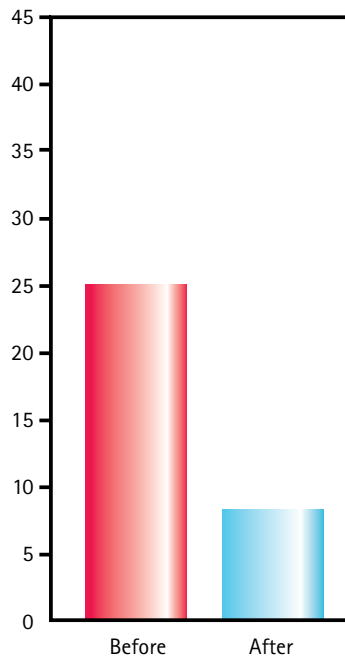
119-bed facility in Florida
6-inch system with 15 stations

Before SDA

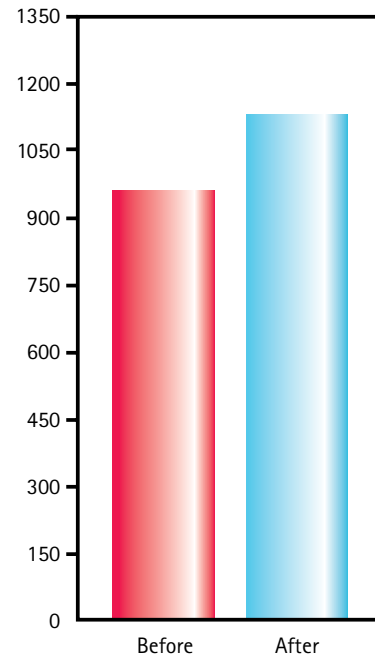
The average peak hour dispatch wait time was 80+ seconds with system transactions at an average of 990 transactions per day. Transactions departing within 2 minutes was 91% .

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
- > Transactions departing within 2 minutes increased to 98.4 %



24-Hour Average Transaction Wait Time



24-Hour Transaction Quantity

Medium Hospital

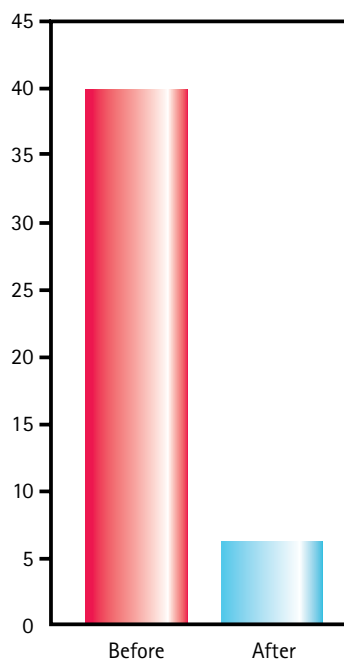
264-bed facility in Wisconsin
4-inch system with 19 stations

Before SDA

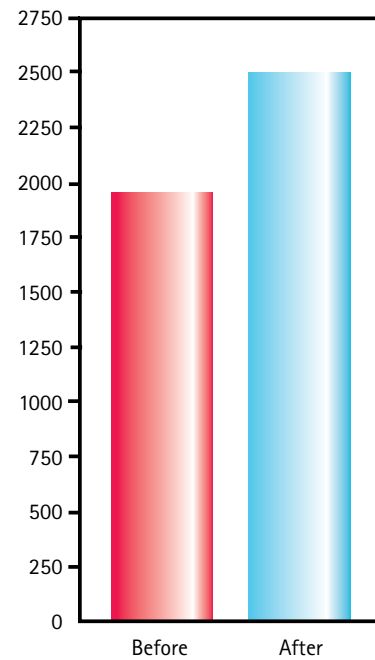
The average peak hour dispatch wait time was 100+ seconds with system transactions at an average of 1,978 per day. Transactions departing within 2 minutes was 80%.

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



24-Hour Transaction Quantity

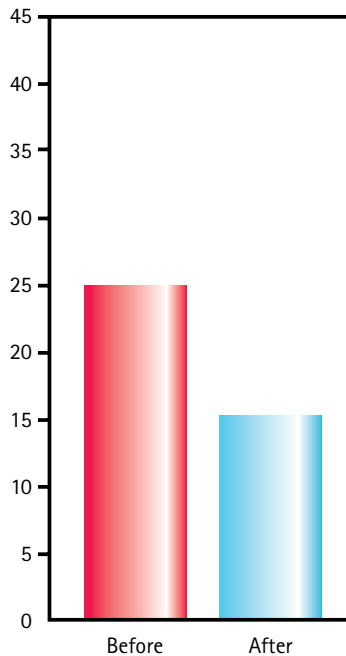
Large Hospital 821-bed facility in Pennsylvania
6-inch system with 54 stations

Before SDA

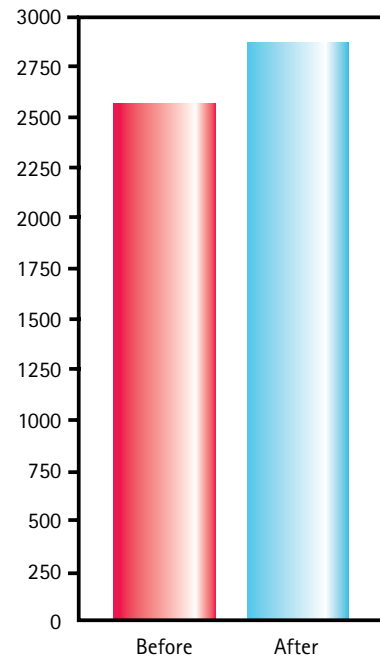
The average peak hour dispatch wait time was 25+ seconds with system transactions at an average of 2,599 per day. Transactions departing within 2 minutes was 86.5%.

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%



24-Hour Average Transaction Wait Time



24-Hour Transaction Quantity

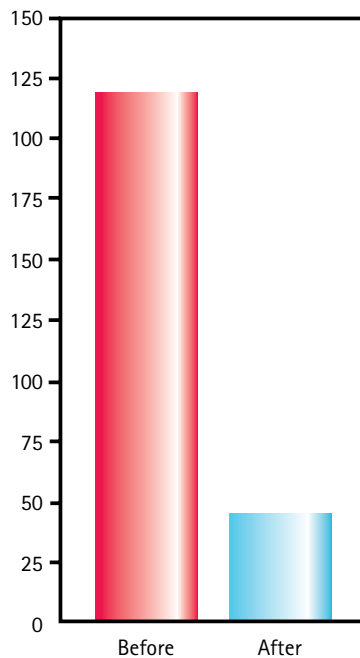
Competitor's System 856-bed facility in Michigan
6-inch system with 70 stations

Before SDA

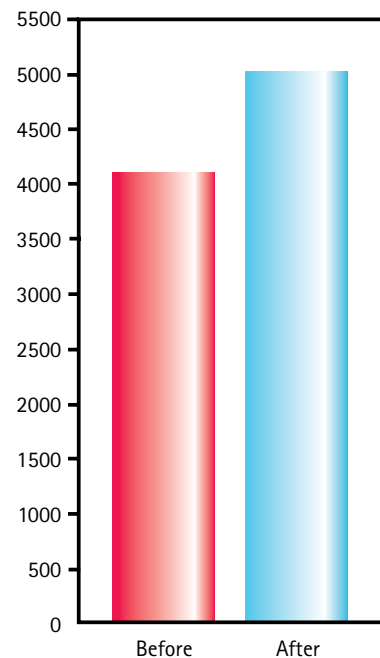
The average peak hour dispatch wait time was 215+ seconds with system transactions at an average of 4,100 per day. Transactions departing within 2 minutes was 60.5%.

After SDA

- > Daily 24-hour average wait time decreased from 122.2 seconds to 47.8 seconds
- > Daily traffic increased to over 5002 per day
- > Transactions departing within 2 minutes increased to 82.2%



24-Hour Average Transaction Wait Time

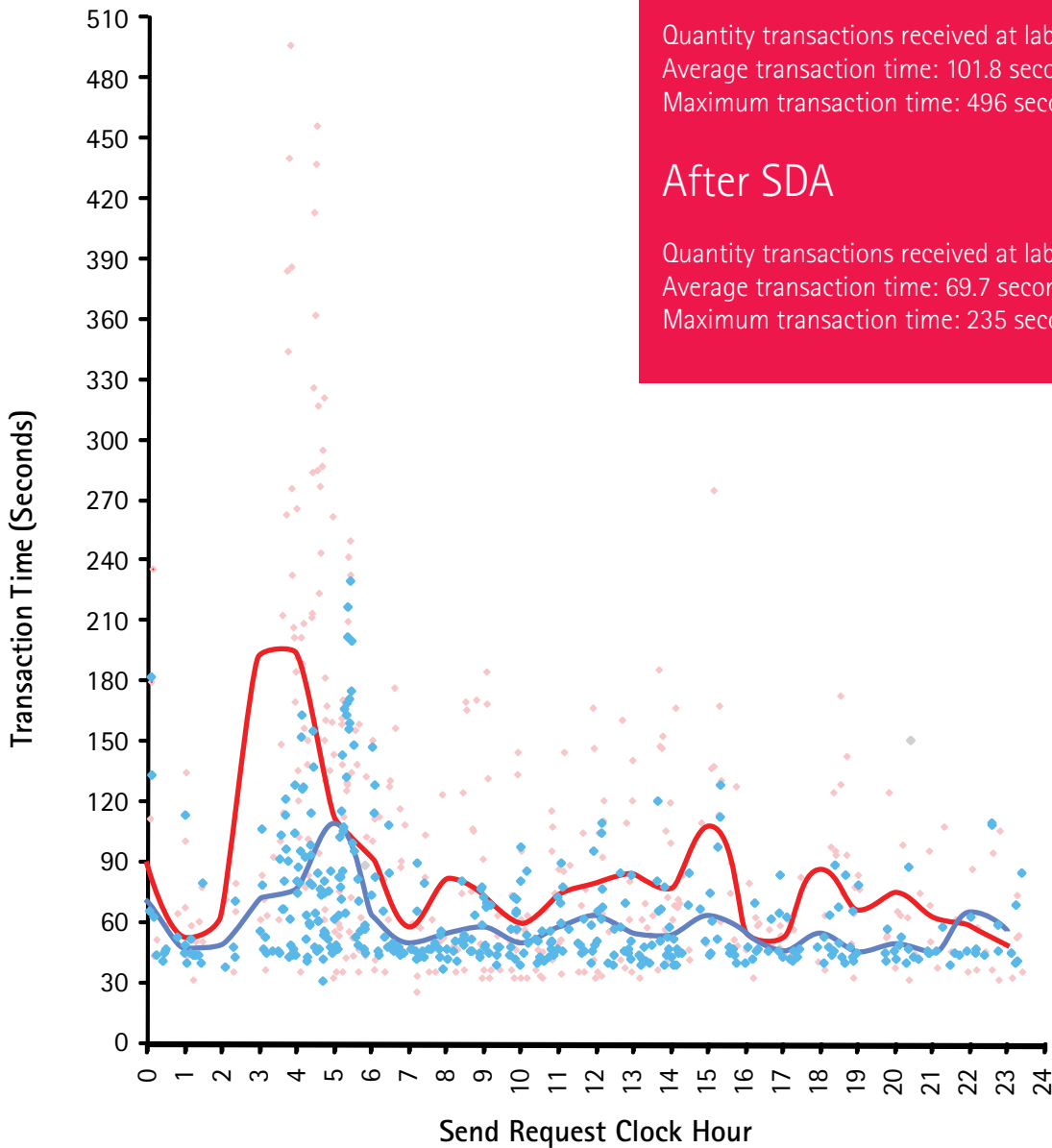


24-Hour Transaction Quantity

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.



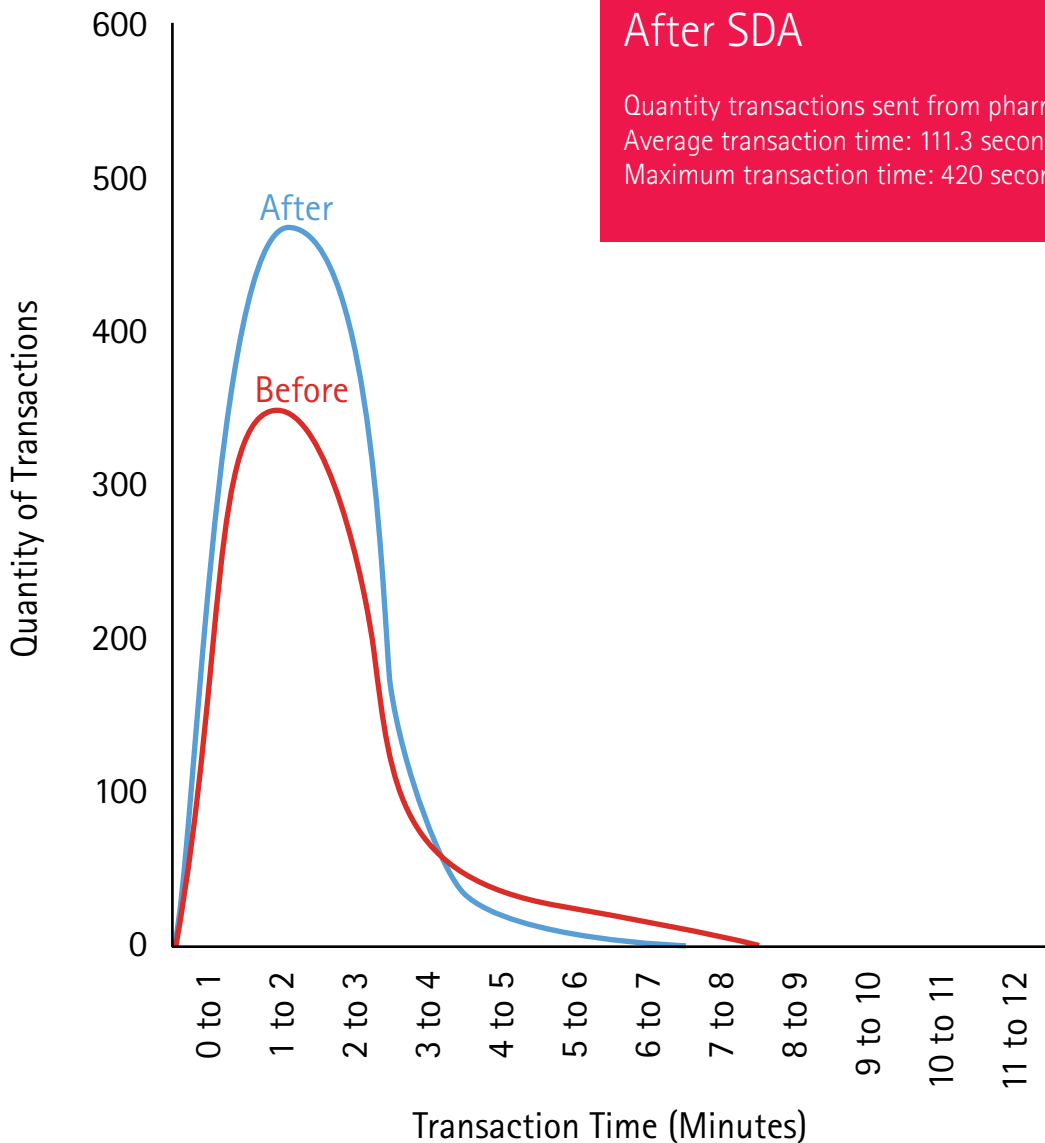
Before SDA
Quantity transactions received at laboratory: 381
Average transaction time: 101.8 seconds
Maximum transaction time: 496 seconds

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

- Transaction Time (Before)
- Transaction Time (After)
- Clock Hour Average (Before)
- Clock Hour Average (After)

Transaction Time Study Outbound from Pharmacy

688-Bed Hospital
Chapel Hill, NC



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

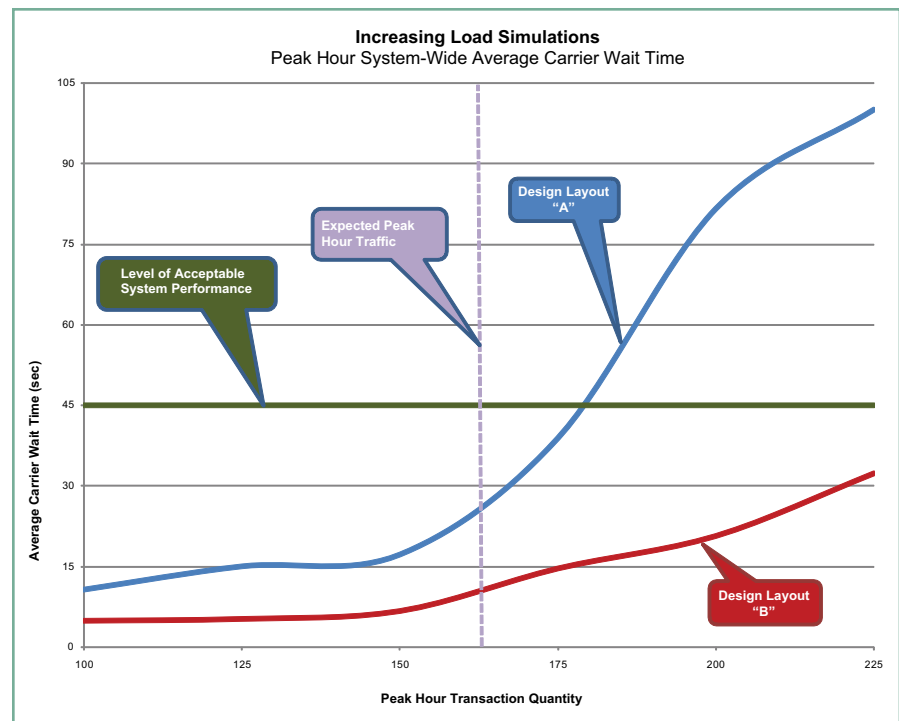
New System Consulting and Simulation



Swisslog's ability to analyze existing traffic from any pneumatic tube system is unparalleled. This knowledge also gives us the capability to uniquely design new systems for new hospitals and/or expansions. Swisslog works with facility departments and architects to determine the feasibility of installing a PTS in the new facility. Our SDA group assists in determining department station locations and utilizes our vast database and knowledge to predict the optimum system design.

The following chart is one way in which we assist facilities in determining the most cost effective system to meet the facilities needs.

Here we show the average carrier wait times for a peak hour using two different system designs at varying system capacity levels. This facility was predicted to process 162 carriers in a peak hour. The growth capacity of the system is far better with design "B" than with design "A."



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