

PLANNING OF PNEUMATIC TUBE SYSTEMS IN HOSPITALS

Hörtig Rohrpost GmbH

In healthcare facilities such as a hospital, many items, such as samples, medications, injections and blood bags, need to be transported every day. These travel hundreds of kilometers every day - which quickly becomes stressful for employees and almost impossible to move. Pneumatic tube systems in the medical sector make workflows more efficient and save staff from having to walk long distances. Transport is also safer and more hygienic, as special mechanisms can prevent cross-contamination. When planning and designing a pneumatic tube system, many specific needs of the customer have to be considered.

- + Efficient design
- + Clever stations
- + Thinking software



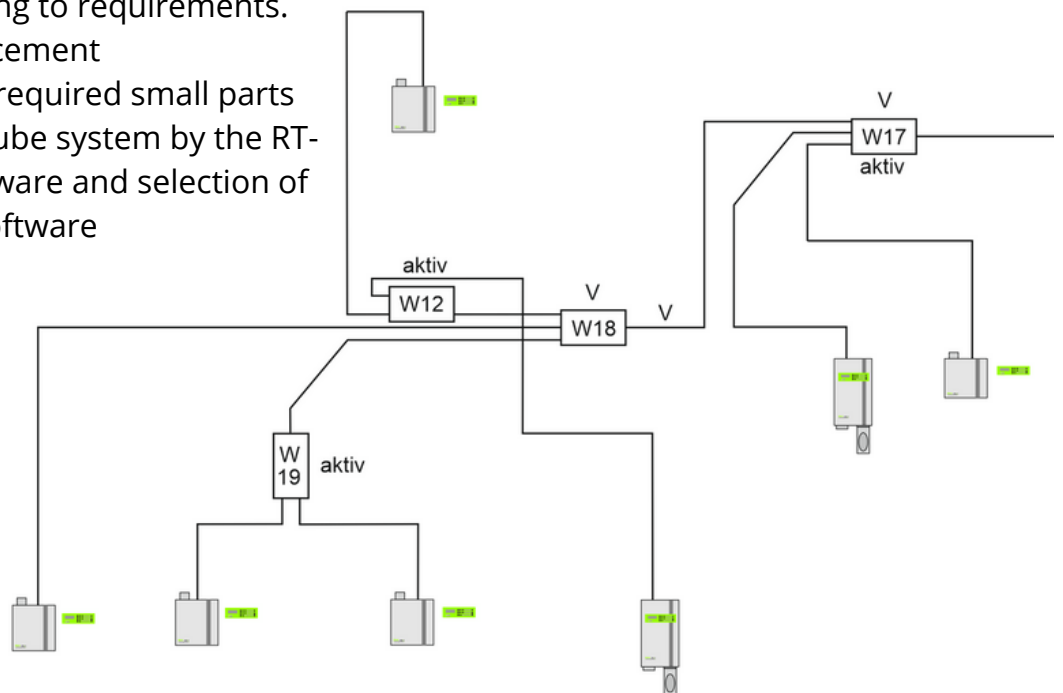
Design and planning of pneumatic tube systems

- The technical room of the pneumatic tube systems, i.e. where the blowers, turrets and other technical components find their place, should have high ceilings.
- Furthermore, the ceiling height in the entire building is relevant for planning.
- When planning, the location of the installation shafts of the building should be taken into account. It is also relevant where the pipes will be located.
- In medically sterile rooms, such as the operating room or the intensive care unit, pneumatic tube stations should be used where there is no exchange of air between the room air and the system air. Furthermore, the use of HEPA filters for effective cleaning of the system air should be considered.
- Furthermore, the definition of the transported goods is relevant for an efficient planning of a pneumatic tube system. Examples of transported goods: laboratory samples, pharmacy items, blood products, documentation.
- It can be helpful to analyze the workflow of the employees in the different areas and to estimate the transport volume. It should be noted how many shipments are particularly urgent and between which locations the goods are to be transported. In this way, a detailed categorization of the transports can be made. The goal of this categorization is to develop the best possible understanding of the transport pattern and quantities.
- In addition, the question should be clarified whether a speed restriction is necessary for the shipments for biochemical reasons.

Conclusions for the design of a pneumatic tube system:

Decision on multicarry zones and multisend stations, for faster dispatch of pneumatic tube shipments.

- Number of lines and zones
- Number of pneumatic tube stations and selection of types, especially according to requirements.
- Number of turrets and placement
- Selection of the tubes and required small parts
- Control of the pneumatic tube system by the RT-Win 4 pneumatic tube software and selection of the apps available in the software



Part of a scheme of pneumatic delivery system

Choice of pneumatic tube stations

- When choosing from different stations, on the one hand the individual requirements must be taken into account. On the other hand, there are various points with which an evaluation of different station forms succeeds.

Bottom Loading Stations:

Ergonomic loading of the station takes place from below

No risk of incorrect loading

Air exchange: air is taken from the room when the shipment leaves, air is blown into the room when the shipment arrives. You can avoid contamination from polluted air by using HEPA filters.

Front Loading Stations:

Ergonomic loading from the front

Low risk of incorrect loading

No air exchange during departure or arrival of a shipment

More information about different station designs can be found here.

- In addition, when planning a pneumatic tube system, it should be noted that **pass-through stations** save pipes.
- Furthermore, different rooms require different reception options.



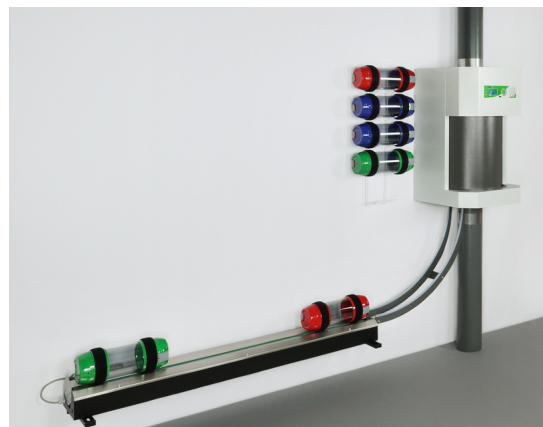
Bottom-Loading-Station



Front-Loading-& Pass-through stations



Basket as a reception option



Conveyor belt as receiving option



Ramp as a reception option

Lab Stations

Every laboratory environment is different - differently constructed - designed to meet different needs. In order to significantly improve workflows for laboratory personnel, pneumatic tube stations must be carefully selected to suit the particular laboratory situation.

Therefore, when planning a pneumatic tube system in a laboratory, a wide variety of issues must be considered.

- How many carriers are likely to be sent per hour? Depending on this, two pure sending and receiving stations can be installed or one combined sending and receiving station. With the separate variant, you double your transaction rate and make the system less susceptible to interference. For an even higher transmission frequency, several carriers can be transported and dispatched at the same time. To do this, you need to install a multicarry zone and a station with multiple send function.
- How should the carriers arrive in the laboratory? How much space do you have available in your laboratory? Via a conveyor, a ramp or an arch?
- Should both incoming and outgoing carriers be tracked for maximum visibility of pneumatic tube shipments? All of our stations can be upgraded with an RFID reader.
- What samples are sent to the lab by pneumatic tube? It may make sense to opt for the use of special laboratory carriers. These are leak-proof and pressure-tight. They are also temperature resistant. The fixed assignment of the laboratory carriers to the laboratory and fixed home stations can prevent cross-contamination. In addition, a variety of inlays are available for the laboratory carriers, as well as for the other carriers.



Insight into a laboratory with receiving stations with conveyor belt

Carriers and inlays - Protected transport

- A wide variety of goods are shipped using pneumatic tube systems. Paper that is rolled up and placed in the carriers does not need any special protection, whereas blood samples must be transported safely to the laboratory. For this purpose, foam inlays are available to protect tubes from shocks. Hörtig Rohrpost also offers special inlays for many other items. Specific needs should be considered when selecting carriers and inlays.
- Among the main wear parts of a pneumatic tube system are the pneumatic tube carriers. Using RT-Win 4 pneumatic tube software, automation can be set up so that the carriers travel to a washing station after a special cycle. There they can be cleaned and maintained. An industrial washing machine with special accessories can also be provided.



Various carriers and inlays

Long lasting support & maintenance

- At the heart of our business activity is, among other things, our outstanding performance in the area of customer service. Reliability and fairness towards our customers, suppliers and employees is a matter close to our heart. We implement individual, needs-based solutions in close cooperation with the customer, architects and our specialist staff.
- As a service plus, we offer our customers maintenance contracts to have the systems checked professionally and at fixed intervals. For malfunctions, we have set up a "24/7 hotline for remote maintenance" so that any faults that occur can be rectified immediately, quickly and cost-effectively.
- With the purchase of a pneumatic tube system from Hörtig Rohrpost, we establish a business partnership that will last for many years. We confirm the spare parts guarantee and outstanding support at all times.

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