Health Care Logistic - Germany

Presented by

Jens Ewertowski

Air-Log International GmbH - Germany

Health Care Logistic - Germany

- Introduction about German Hospitals

- Facts & Figures

- Logistic ☐ External / Internal ☐ In-House Solution ☐ Spontaneous & scheduled transports

- Different Solutions for In-House Logistics

- Summary

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Facts & Figures

Hospital structure in Germany

- 1.948 Hospitals with 498.700 beds in Germany (based on 2017)

- 25 University Hospitals with 38.387 beds

- 33% of the Hospital are religious Hospitals

- 19% of the Hospitals are private Hospitals

- Number of Hospital is decreasing (since 2000 ☐ 2016 = -15%)

- In comparison the number beds is increasing (from 2000 ☐ 2016 = +10%)

- Average length of stay 7,3 days per patient

- Average bed occupancy rate = 78%

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Facts & Figures

Rang	University Hospital	City	No. Beds	Staff	Patients / p.a.
1	Charité-Universitätsmedizin Berlin	Berlin	3.095	13.200	740.000
2	Universitätsklinikum Schleswig Holstein	Lübeck & Kiel	2.400	12.500	340.000
3	Klinikum der Universität München	München	2.240	9.000	275.000
4	Universitätsklinikum Gießen – Marburg	Gießen & Marburg	2.213	9.700	395.000
5	Universitätsklinikum Heidelberg	Heidelberg	1.918	12.800	250.000
6	Universitätsmedizin der Johannes Gutenberg-Universität Mainz	Mainz	1.615	7.500	280.000
7	Universitätsklinikum Münster	Münster	1.563	7.000	46.000
8	Klinikum der Medizinischen Hochschule Hannover	Hannover	1.518	7.600	n.a.
9	Universitätsklinikum Freiburg	Freiburg	1.494	10.000	664.000
10	Universitätsmedizin Göttingen	Göttingen	1.460	7.000	175.000
11	Universitätsklinikum Würzburg	Würzburg	1.430	6.000	n.a.
12	Universitätsklinikum Köln	Köln	1.400	10.700	210.000
13	Universitätsklinikum Jena	Jena	1.382	4.900	250.000
14	Universitätsklinikum Tübingen	Tübingen	1.375	4.300	250.000
15	Universitätsklinikum Erlangen	Erlangen	1.368	7.400	540.000
16	Universitätsmedizin Mannheim	Mannheim	1.352	4.800	286.000
17	Universitätsklinikum Carl Gustav Carus	Desden	1.330	3.600	220.000
18	Universitätsklinikum Leipzig	Leipzig	1.314	3.200	377.000
19	Universitätsklinikum Bonn	Bonn	1.232	5.000	n.a.
20	Universitätsklinikum Ruhr-Universität Bochum	Bochum	1.187	n.a.	80.000
21	Klinikum der Johann Goethe Universität	Frankfurt am Main	1.171	4.000	267.000
22	Universitätsklinikum Magdeburg	Magdeburg	1.102	4.200	n.a.
23	Universitätsklinikum Ulm	Ulm	1.100	6.400	313.000
24	Universitätsklinikum Halle (Saale)	Halle	1100	3000	n.a.
25	Universitätsmedizin Rostock	Rostock	1.028	3.400	n.a.

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Hospitals in Germany

- Different Logistic solutions for Spontaneous / scheduled transports

- AGV (Automatic Guided Vehicles)
- PTS (Pneumatic Tube Systems)
- ETV (Electronic Truck Vehicles)
- AWLS (Automatic Waste and Laundry Systems)

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PTS - Pneumatic Tube Systems in German Hospitals

Pneumatic tube systems are basic inventory in German hospitals with more than 200 beds. Because they are the best solution when long distances need to be covered and when seconds count, for example during surgery, when a blood product or a sample result is needed urgently.

Main <u>transport goods</u> are:

- Blood / Blood plasma
- tissue sample (instantaneous section)
- specimen
- urine samples
- medication
- pharmaceutical

when speed is crucial, hospital tube system (PTS)
transport items fast, safe and shock-free.

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PTS - Pneumatic Tube Systems in German Hospitals

These <u>different departments</u> in a hospital can all <u>be connected</u> to a pneumatic tube system with modern design

- Patient registration

- Emergency room (ER)

- Laboratory

- Pharmacy

- Surgery (OT)

- Pathology

- Blood bank

- Care wards / Nurses' rooms

PTS: Facts & Figures

- PTS (Pneumatic Tube Systems)

- solutions for spontaneous transports

- 7 meter per second (standard transport speed)

- 3 meter per second (blood transport speed)

- Up to 5 Kg payload per transport

- No limitation in distance or in elevation

- Complete transport pipe network within 1 building or connection from building to building

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PTS: Software Control

The key of a successful system is the control software, to accommodate the specific transfer needs of hospitals

Advantages overview:

- Powerful functions for all your needs

- Highest safety standards

- Efficient and flexible scheduling

- Real time visualization

- Remote monitoring, control and maintenance possible

- Permanent analysis and evaluation for optimization

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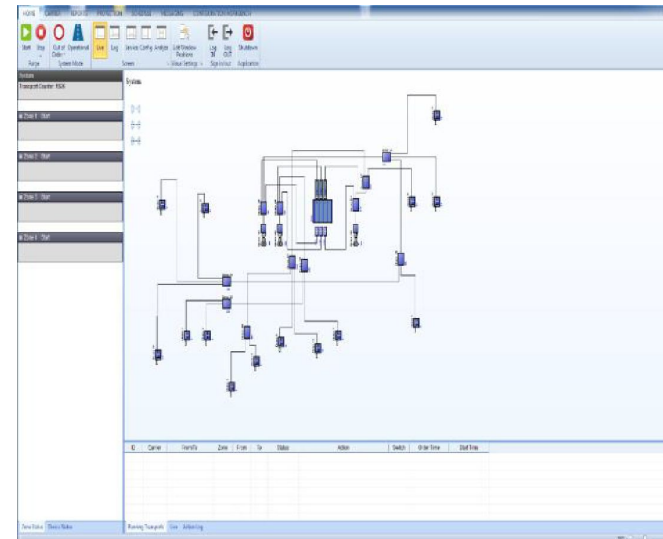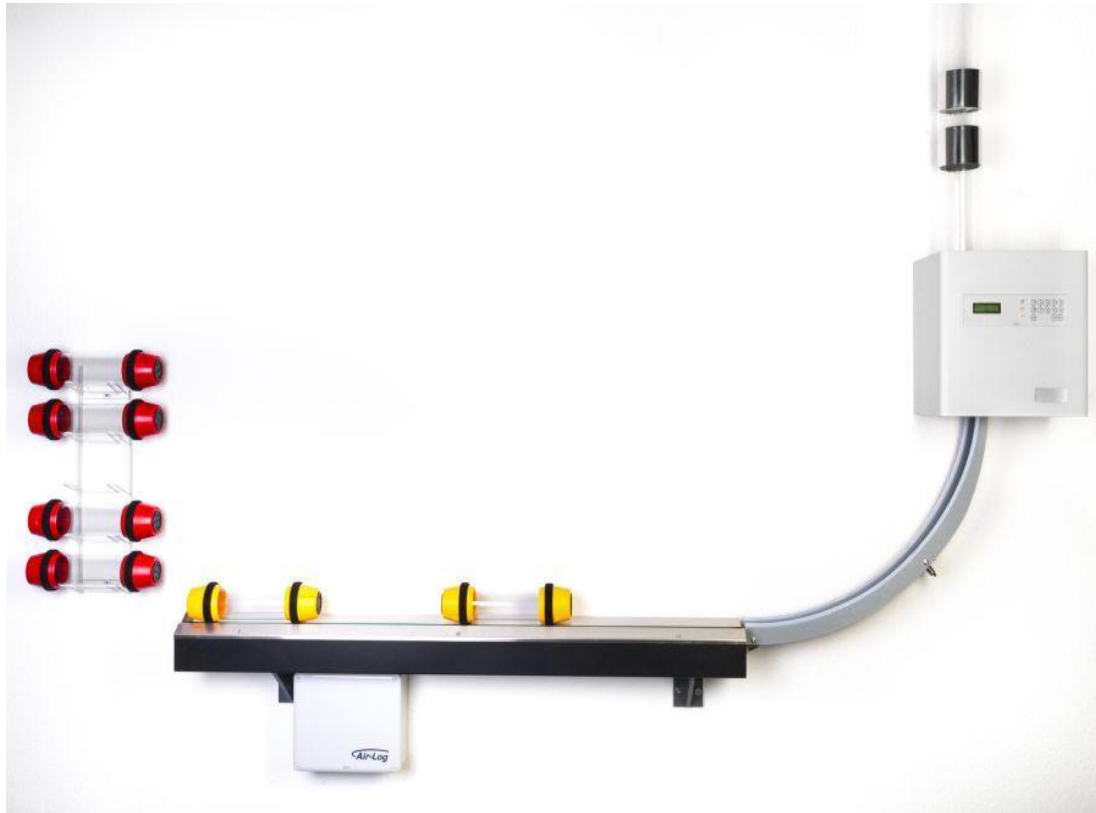
Compact Station
with 3" LC Display

Front Load Station
with 7" Touch Display

Station-Bottom-Entry
with 7" Touch Display

PTS: Laboratory Stations

Laboratory Receiving Station
for horizontal arrival of carriers

Multi-Send Station
with 3" LC Display

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PTS: Carriers

PTS: Carriers …safely from A to B

Carriers are the centerpiece of our pneumatic tube systems. They ensure safe and secure transport of valuable samples or other goods. The perfect carrier for each individual requirement:

Flip Cap Carrier
for optimal filling possibility in standing position**.**

Sliding Lid Carrier
quick handling in everyday work by the automatic lock.

Swing Top Carrier
easily opened and closed with the convenient finger recess at the lid.

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PTS: Carriers with RFID transponder

All carriers can also be equipped with transponders (either glass or wedge versions) as an option and this makes a huge difference. Because a carrier with transponders can transport a wide variety of information - for absolute complete and secure logging.

The hidden RFID transponders are recognized and read from all Sending and Arrival Stations. Every carrier has an individual transponder-ID and therefore we can generate a 100% accurate protocol and track and trace all transports.

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AWLS:
AUTOMATED WASTE & LAUNDRY SYSTEMS

AUTOMATED WASTE & LAUNDRY SYSTEMS

- Introduction / What is AWLS?

- Differentiation "FREEL FALL (FF) versus PNEUMATIC SYSTEMS (PS)

- Design (overview of all necessary items)

- Summary

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What is AWLS ?

- Automatic Waste and Laundry system is an automatic solution to manage the waste and laundry bags from different points to collection points e.g. waste container or laundry

- HYGIENIC: no storage of waste bags on corridors or common areas

- less transportation of dirty bags in elevators and therefore less usage of elevators

- Comfortable, easy and silent: easy, useful, fewer trolleys in corridors

- Efficient & fast: Improves the logistic of the building with a capacity of more than 2500kg /h.

- 100% automatic: 24/7/365

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Differentiation

- **The General System Types:**
  - FREE FALL (FF)
  - PNEUMATIC SYSTEMS (PS)

- **The most used diameters:**
  - NW400 (400mm)
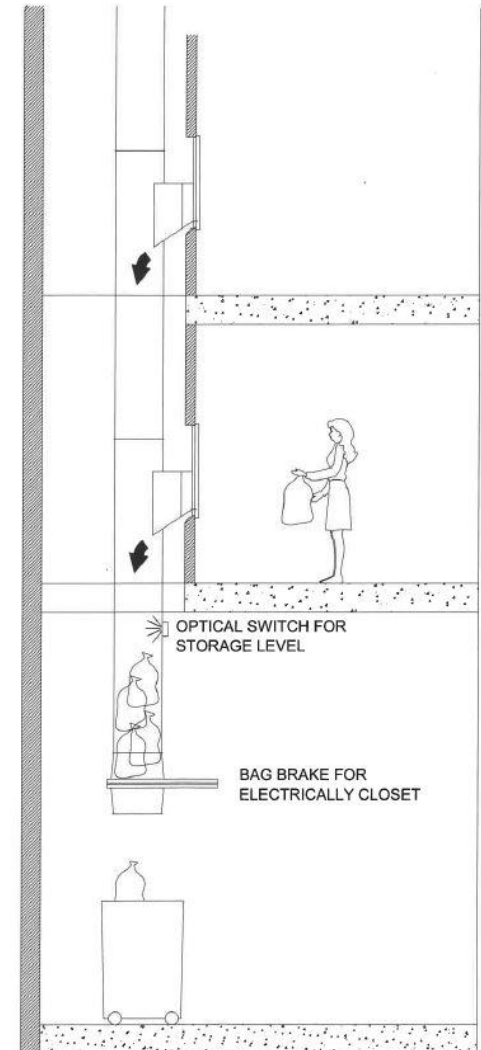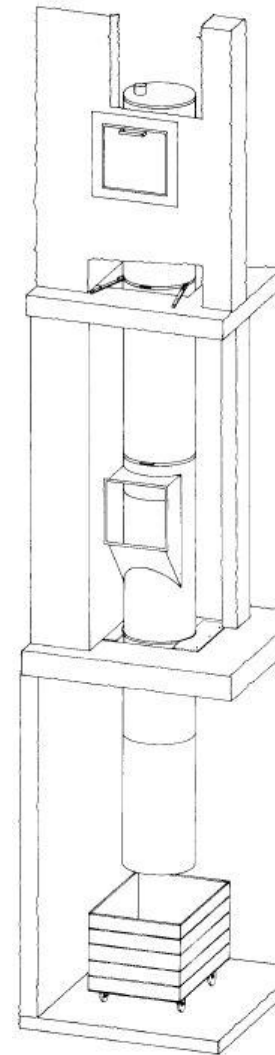 - NW500 (500mm)

  - Tube materials are available in
  - Galvanized steel
  - Stainless steel

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Differentiation: FREE FALL

- **FREE FALL (FF)**

  – Bag travelling by gravity
  – No vacuum set needed
  – Only downward vertical movements.

OPTICAL SWITCH FOR
STORAGE LEVEL

BAG BRAKE FOR
ELECTRICALLY CLOSET

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Differentiation: PNEUMATIC SYSTEMS (PS)

- **PNEUMATIC SYSTEM (PS)**

  - Vertical downward
  - horizontal pneumatic transport with vaccum
  - Vacuum set needed (one or more blower)
  - Centralized Control
  - Automated Operation
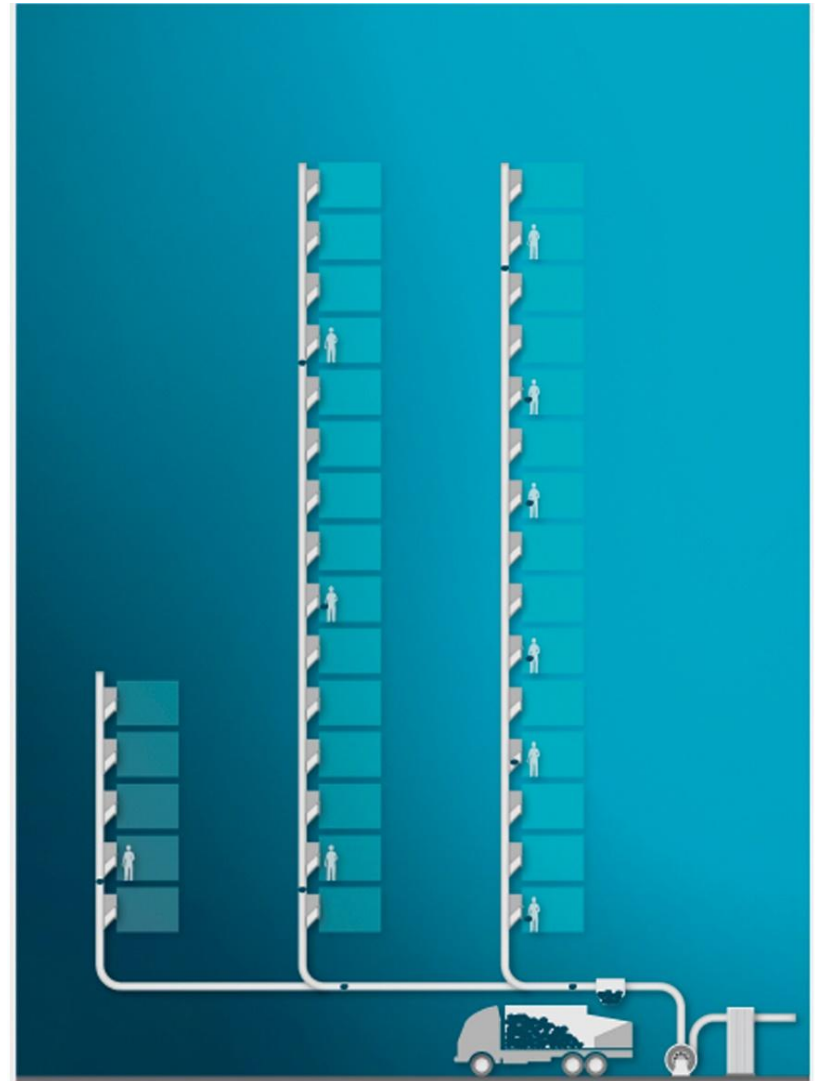
Differentiation: (FF) & (PS) – Main Features

- **FREE FALL (FF)**
  - Economic
  - Simple
  - Reliable
  - Clean
  - Safe

- **PNEUMATIC SYSTEMS (PS)**
  - Functional
  - High Capacity
  - Automatic Operation
  - Tailored configuration
  - Available Central control and remote - supervision.

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Design

Double inlet

Single inlet

Blower

Control unit

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Design

Stations or inlets

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Design

Discharging Hopper

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Design

Blower

High pressure and high flow blowers. (Typical power: 75-100 HP, Typical flow: 11.000 m3/h)

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Design

Diverter

Diverter to seperate

MEDICAL WASTE

and

GENERAL WASTE

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Summary

- Effective & Efficient

- Quick & Hygienic

- Safe & Secure

- Fully Automated & PLC Controlled

- Reduces Infection and Cross Contamination Risk

- Fully Automated Loading Stations with Double Door Mechanism

- Fully Automated Transports of the Bags to collection points

- System Capacity of up to 5-10 bags per transport and 10 - 25kgs   loading capacity

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