LÚHR
Modell- und Formenbau GmbH

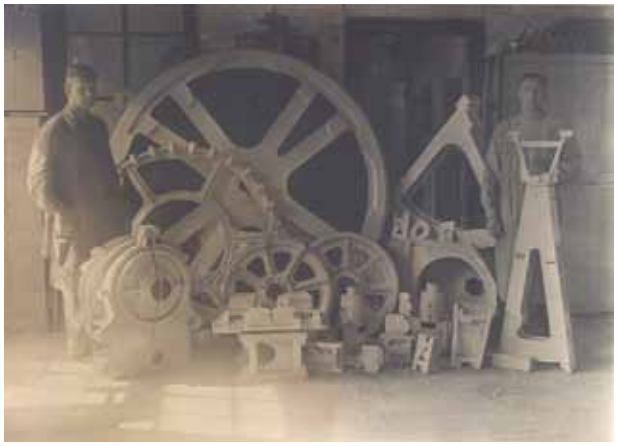
English

Lúhr Modell- und Formenbau GmbH

History

Founded in 2008 as a successor to Hermann Luehr GmbH (est. 1919), Lúhr Modell- und Formenbau GmbH are specialists in the area of model, mold and tool manufacturing. In addition to this core competence, our service offer includes design model construction and rapid prototyping.

Qualified advances and the extensive know-how of our long-standing employees make our company a reliable partner of the aviation, aeronautics and automobile industries.
With our 26 910 sq.ft. of production area and modern equipment we offer our clients a wide range of services from development and construction, assembly and measuring.



- Ill.: Founder Hermann Luehr in front of the first company headquarters in Altona, Hamburg
- Ill.: Employees of the model factory with foundry patterns

Services

Overview

Construction – CAD/CAM
- 3D-CAD construction – Catia V5
- Reverse engineering
- NC programming – Tebis 3.4
- Remote data transmission

Model Construction
- Master patterns
- Cubing models
- Data control models
- Prototyp construction
- Pattern equipment
- GRP/CFRP processing

Mold construction
- Press molds
- Foaming molds
- Vacuum-deep-drawing molds
- Laminating molds
- Stretch-drawing molds

Tool Manufacture
- Drawing dies
- Stamping tools
- Embossing tools
- Cutting tools
- Calibrating tools
- Clamping devices
- Gluing devices

Gauge Construction
- Testing gauges
- Measuring equipment
- Welding equipment
- Assembly jigs

Measuring Technology – CAQ
- Digitalization
- Measurement of free-form surfaces
- First sample test report

Design Model Construction
- Rapid Prototyping
- Trade Fair construction
- 2D/3D engravings
- 3D scanning

Plastic Joining Technology
- Sonotrodes
- Welding guns
- Hand lever presses
- Entry of articles measurement report
- Customer service
- Spare parts service
- Reconstructions/ expansion
- Laboratory/ tests for pilot and small batch production

Construction & Programming

Construction & Programming

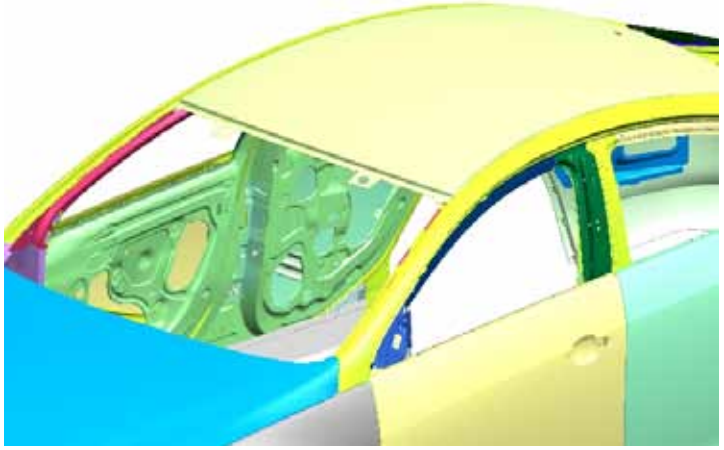
CAD/CAM-Systems

At our modern CAD/CAM workstations components are designed and prepared three-dimensionally for manufacture. Our construction department is linked to clients worldwide in order to access data online, process and further develop it and make it available again to our clients. CATIA V5 is the main system in our company.

- 3D-CAD construction
- Reverse engineering
- NC programming
- Remote data transmission

Software

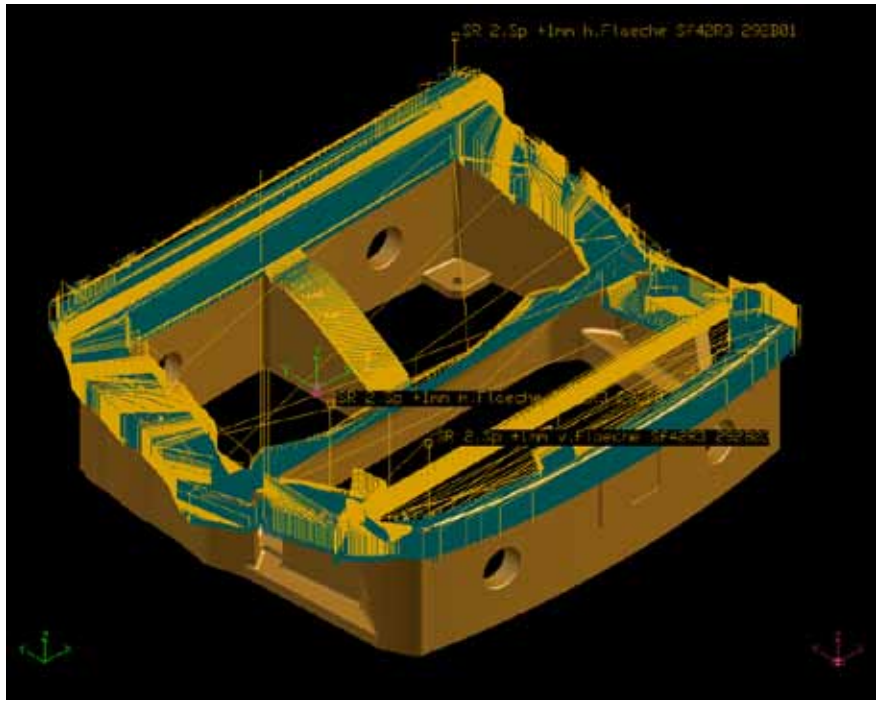
- Catia V5
- Tebis V3.4 3D/2,5D



- Ill.: Catia V5 construction of a cubing model

Construction & Programming

CAD/CAM-Systems



› Ill.: NC –cutting programming with Tebis 3.3

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Model Construction

Model Construction

Overview

We manufacture all types of models and prototypes in various scales or full-scale for the aviation and automobile industries. We process metal, wood, cast resin, GRP, CFRP, as well as thermoplastics and thermosetting plastics.

- Cubing models
- Prototype construction
- Master patterns
- Functional models
- Illustrative models
- Pattern equipment
- GRP/CFRP processing

Ill.: Interior/ exterior model

Ill.: Data control model

Ill.: Headlight

Ill.: Illustrative model of aircraft interior

Model Construction

Overview

› Ill.: Rear section – cubing model

› Ill.: EPS natural model for the aviation industry

› Ill.: Data control model in 5-axis cutting process

› Ill.: Front section - tram

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Mold Construction, Tool Manufacturing & Gauge Construction

Mold, Tool and Gauge Construction

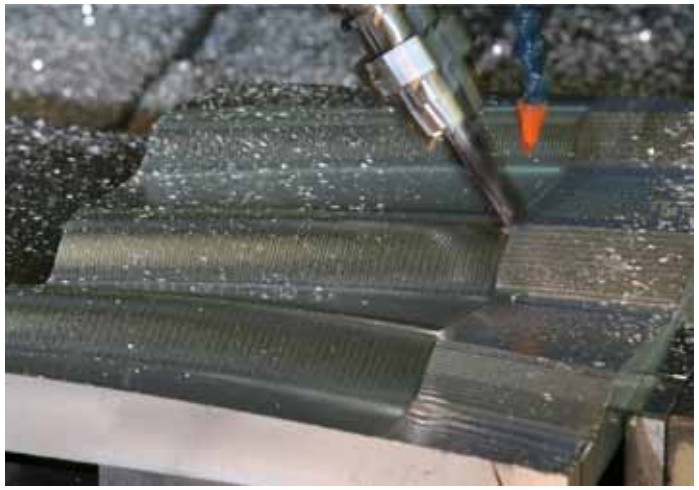
Cutting Technology

In the area of tool manufacturing, Lúhr works on complex molds, devices and components for the automobile and aviation industry. Each component is precision-made with state-of-the-art manufacturing equipment. With up to 6-axis programmable CNC processing machines, dimensions of

X=3.500
Y=1.000
Z=0.750

and up to 10 tons can be processed.

The use of high-speed cutting (HSC) reduces the processing time and increases quality. Reduced cutting force places less strain on material leaving their specific characteristics intact, thus attaining improved surface quality. In addition, large components can be cut from just one piece.



• Ill.: Aluminum mold for Airbus A380

Mold, Tool and Gauge Construction

Mold Construction

Mold Construction

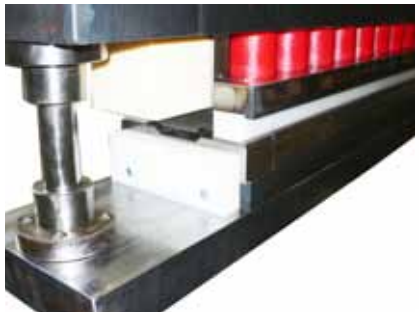
- Press molds
- Foaming molds
- Vacuum-deep-drawing molds
- Laminating molds

Tool Manufacturing

- Drawing dies
- Stamping tools
- Embossing tools
- Cutting tools
- Calibration tools
- Clamping devices
- Gluing devices

Gauge Construction

- Control gauges
- Measuring equipment
- Welding equipment
- Assembly jigs

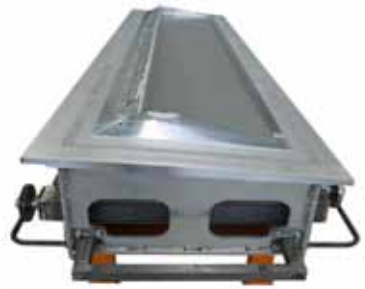


Ill.: Forming Tool

Ill.: Stretch-drawing mold for an aircraft body

Ill.: Control Gauge I - panel

Ill.: Stretch-drawing mold



Ill.: Gluing device for an aircraft wing flap

Ill.: Control Gauge I – panel with various simulation modules

Machinery

Model and Mold Construction

Make/ Model	Drive	Processing Range (mm)		
		X max	Y max	Z max
Hedelius BC 100 HSC	Heidenhain iTNC 530	3.500	1.000	700
Hedelius CF 100 HSC	Heidenhain TNC 430	3.500	1.000	750
Hedelius CB 70 HSC	Heidenhain TNC 430	1.200	720	600
Hedelius CB 70/40	Heidenhain TNC 430	2.100	700	600
MTcut U102 / 5-axes	Heidenhain iTNC 530	1.100	600	800
Depomill 5 axes HSC	Heidenhain TNC 430 M	2.200	1.200	800
Seiger SLZ 500 E (lathe)	Heidenhain Manual +4110	1.000		490
Conventional milling		1.200	600	500
Conventional milling		900	400	300
Paso P20T (engraver)		600	600	200

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Measuring Technology &
Quality Assurance

Measuring Technology & Quality Assurance

DIN EN ISO 9001:2008

Lúhr Modell- und Formenbau is working according to DIN EN ISO 9001:2008 certification and fulfils therewith the most stringent requirements and quality standards in production and technique.

Published by the International Organization for Standardization the DIN EN ISO 9001:2008 specifies requirements for a quality management system where an organization

- demonstrates its ability to consistently provide product that meets customer and applicable statutory and regulatory requirements
- enhances customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable statutory and regulatory requirements.

The certification is executed by accredited laboratories and is subjected to special regulations.

DNV

DET NORSKE VERITAS

MANAGEMENTSYSTEM ZERTIFIKAT

Zertifikat-Nr.: 98225-2011-AQ-GER-TGA

Hiermit wird bescheinigt, dass das Unternehmen

Lühr Modell- und Formenbau GmbH

Schützenwall 37-41
Haus D
22844 Norderstedt

ein Managementsystem in Übereinstimmung mit dem Standard

ISO 9001:2008

eingeführt hat.

Dieses Zertifikat ist gültig für die folgenden Produkt- oder Dienstleistungsbereiche:

Vertrieb, Konstruktion und Produktion
von Werkzeugen, Modellen, Lehren und Sondermaschinen
sowie 3-D Messtechnik für Großbauteile

Datum der Erstzertifizierung: 01.09.2009
Das Zertifikat ist gültig bis: 30.08.2012
Das Audit wurde durchgeführt unter der Leitung von: Jan Holm, *Leitender Auditor*

Deutscher Akkreditierungs Rat
DAR
TGA-ZM-04-92-00

Ort und Datum: Essen, 23.09.2011
Akkreditiertes Zertifizierungsunternehmen: DNV Zertifizierung von Lehren und Lehrern GmbH

Nikolaus Kim, *Geschäftsführer*

Dieses Zertifikat ersetzt das Zertifikat 98007-2008-AQ-GER-TGA mit der Ausgabe vom 31.08.2008.

Bei Verstoß gegen die im Zertifizierungsvertrag genannten Bedingungen verliert das Zertifikat umgehend seine Gültigkeit.
DNV Zertifizierung und Umweltgutachten GmbH, Schweringstraße 14, 45329 Essen, Tel. +49 201 7296 500 Fax: +49 201 7296 555 · www.dnv-de-zertifizierung

Measuring Technology & Quality Assurance

Measuring Room

- Digitalization
- Measurement of free-form surfaces
- First sample test reports

- Air-conditioned
- High safety standard
- Video surveillance
- Just-in-time measurements

Ill.: Stiefelmayer measuring system

Machinery

Quality Assurance

Make/ Model	Measuring Range (mm)		
	X max	Y max	Z max
Stiefelmayer Duplex	6.000	3.000	1.950
Stiefelmayer	3.500	1.000	950
Faro portable measuring arm	Radius 1.100		

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Design Model Construction & Rapid Prototyping

Design Model Construction

Overview

› Ill.: Design model of a quadrocopter

› Ill.: Model of a tile presentation system

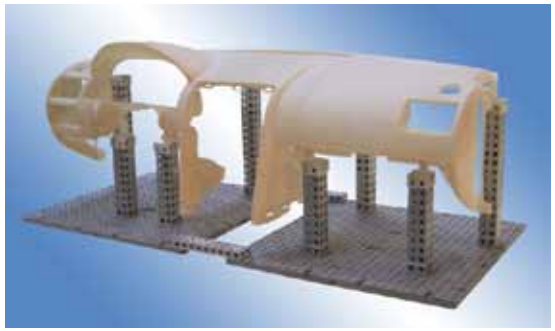
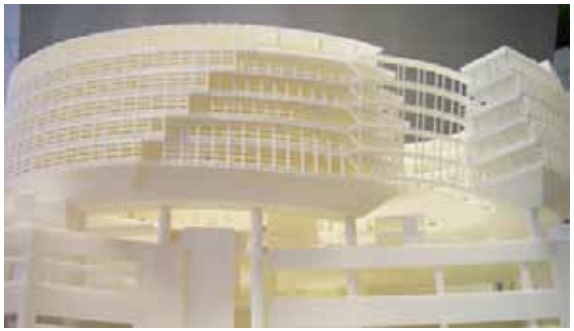
› Ill.: Design model of a food testing device

Selective Laser Sintering

Application

- Design / concept models
- master patterns for sand and precision casting & vacuum casting
- Mold manufacture thermoforming
- Models for fit and function tests
- Small batch production
- End products
- Orthoses

+ Best material properties
+ Wide material spectrum
+ Good dimensional stability
+ Series production/ end products

III.: Application examples for selective laser sintering

Design Model Construction

Additional Services

- 2D/3D engraving
- 3D scanning
- Individual promotional items in 3D
- Advertising displays and signs

Ill.: Design Model Still cubeXX

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Plastics Joining Technology/
Ultrasonic Welding

Digital Ultrasonic Generators

DSG Series

Digital Innovation

Ever greater demands are placed on the quality of welded, riveted or cut plastic. In order to satisfy these demands, we have developed a new generation of ultrasonic generators. Digitally controlling all the parameters affords the greatest precision and stability. Negative influences, such as temperature, component tolerances and aging are a thing of the past.
An innovative control circuit reliably protects the semiconductor even in the event of a short circuit, thus preventing breakdowns.
The removable LCD graphic display enables the separate installation of a control and power element.

Ill.: DSG 1520 in single housing
DSG 440/1520/1522 in multiple housing

Digital Ultrasonic Generators

DSG Series

- Transistor amplifier
- Digital frequency control
- Intelligent cooling system
- Removable operating control element
- High no-load safety
- Softstart
- Large LCD graphic display
- Modular assembly
- Interface RS 232 / 485
- Gateways for various industrial bus systems

DSG Series	440/ 840	1520/ 1522	2220/ 2222	4020/ 4022	1530
Supply voltage (volt) (AC 50/60 Hz)	230/ 110	230	230	230	230
Current consumption (A) (max., effective)	6,0/ 12,0	10,0	12,0	20,0	10,0
Operating frequency (kHz)	40	20/22	20/22	20/22	30
Power output (watt) (max.)	400/ 800	1.500	2.400	4.000	1500
Amplitude consistency (%)	100	100	100	100	100
HF output voltage (Volt)	1.300	900	1.100	1.450	1.000
Dimensions (per module)	H: 173 mm B: 71 mm T: 420 mm	H: 173 mm B: 71 mm T: 420 mm	H: 173 mm B: 71 mm T: 420 mm	H: 173 mm B: 71 mm T: 420 mm	H: 173 mm B: 71 mm T: 420 mm
Weight (kg)	3,0	3,2	3,3	4,5	3,2

Subject to modification of technical changes

Ultrasonic-Converter

USK

Lúhr ultrasonic converters transform the high frequency electrical energy produced by the generator into mechanical oscillation.
All converters are equipped with carefully selected piezo-ceramic discs. This technology permits conversion with virtually no energy loss. The sturdy construction of the ultrasonic heads guarantees a high durability. The working frequencies are in the ultrsonic range above the audibility threshold.

› Ill.: USK 840, 1022, 1530, 1020, 440

Ultrasonic-Converter

USK

- Sandwich type piezo-ceramic transducer
- Central mounting
- Fully encapsulated
- High strength
- Titanium end masses
- Brass casing
- Short design length
- Zero tolerance force transducer between head and press owing to mechanical zero point location
- Plug-in coaxial lead to generator
- Longer coaxial leads from generator to ultrasonic converter are possible
- 100 % duty cycle with air cooling

Converter type USK	**440**	**840**	**1530**	**1020**
Working frequency (kHz)	40	40	30	20
Input power (Watt)	400	800	1.500	4.000
Dimensions (Ø x L)	Ø: 47,8 mm L: 69 mm	Ø: 47,8 mm L: 88 mm	Ø: 56 mm L: 122 mm	Ø: 89 mm L: 133 mm
Weight (kg)	0,66	0,54	1,0	2,5
Suitable generators	DSG 440 ULC 440 B ULC 440 P	DSG 440 DSG 840	DSG 1530	DSG 1520 DSG 2220 DSG 4020

- Subject to modification of technical changes

Ultrasonic – Welding Gun

USH 40

The ergonomically perfected Lúhr welding gun enables the fast joining of plastic injection molding or deep-drawn components with its ultrasonic welding process.
The small design enables welding, even in hard-to-reach places.
Flexible use, even for extremely diverse welding planes can be realized at low cost.
The robust design has proven itself, even under extreme production conditions.

Ill.: USH 40 with USK 840 and sonotrode

Ultrasonic – Welding Gun

USH 40

- Sturdy aluminum housing
- Ergonomic handle
- Modern design
- Small and handy design
- Quick sonotrode exchange
- Easy positioning,
  even with asymmetrical sonotrodes
- Flexible system cable
- Light-weight

Pistol Series	USH 40
Available generator power output (watt, max.)	400/800
Operating frequency (kHz)	40
Joining time (Time switch option in the generator)	keying by hand
Length of connecting cable (m)*	3,0/5,0
Dimensions (ø x L x H in mm)	55 x 98 x 200
Weight (kg)	0,45

- Subject to modification of technical changes
- * longer cable upon request (max. 8.0m)

Ultrasonic – Welding Stick

USH 40i

The round design of the Lúhr USH 40i welding gun enables the fast joining of plastics, as well as cutting material by means of ultrasonic.
The ergonomic design affords gentle and flexible use.

Ill.: USH 40i with sonotrode

Ultrasonic – Welding Stick

USH 40i

- Sturdy aluminum housing
- Small and handy design
- Integrated transducer
- For welding and cutting
- Easy positioning due to the round design
- Flexible system cable
- Light-weight

Pistol Series	USH 40i
Available generator power output (watt, max.)	800
Operating frequency (kHz)	40
Joining time (Time switch option in the generator)	keying by hand
Length of connecting cable (m)*	3,0/5,0
Dimensions (ø x L x H in mm)	45 x 150
Weight (kg)	0,45

- Subject to modification of technical changes
- * longer cable upon request (max. 8.0m)

Sonotrodes

One method of plastics joining technology is ultrasonic welding. For this purpose, we manufacture titanium, steel or aluminum sonotrodes for all frequency ranges using precise CNC processing.
Each sonotrode is made to suit its individual welding task and optimized through rigorous testing in our laboratory.

Ill.: Sonotrode in various sizes and contours

Additional Services

Ultrasonic Welding

- Entry of articles/ measurement report
- Hand lever presses
- Customer service/service
- Spare parts service for all US components within 48 hours
- Reconstructions/ expansion of existing systems
- Laboratory/ tests for pilot and small batch production

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References

- Airbus
- AKsys
- Audi
- A. Kayser Automotive
- Autoliv
- Becker Marine Systems
- Bentley
- Bertrandt
- Birkby´s Plastic Limited
- Borgers
- BMW
- Collins & Aikman
- Comtas
- Daimler AG
- Decoma International
- Draeger
- Dynamit Nobel
- EADS
- Factor Design
- Faurecia
- Flamm Aerotec
- Ford
- Frimo Technology
- Grammer
- Hella
- Hydro
- IAC GmbH
- Intier Automotive
- Jaguar
- Johnson Controls
- Johnson & Johnson
- Junker & Partner
- Kleta Architekten
- Lear Corporation
- Leister
- Lufthansa Technik
- Magna
- MöllerTech
- M-Racing
- Opel
- Peguform
- PFW Aerotec AG
- Plastal
- Premium Aerotec
- Porsche
- Rehau
- Rieter
- Rover
- Saab
- Seat
- Seeber (Röchling Automotive)
- Skoda
- Stankiewicz
- Steinway & Sons
- Visteon
- Volvo
- VW
- Webasto

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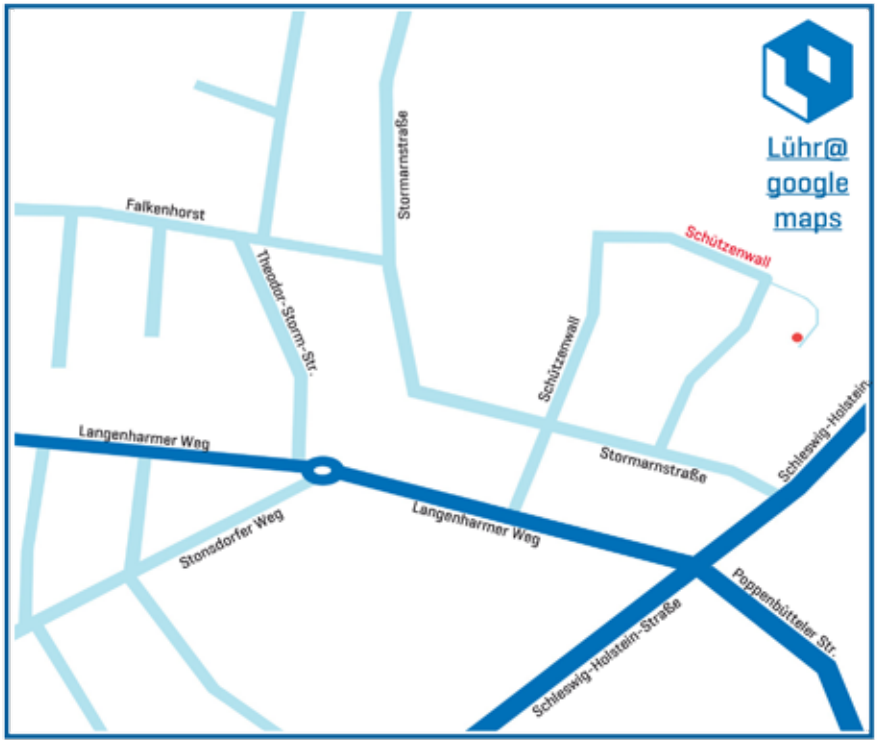
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