LAS-1

ENGINEERING AND MANUFACTURING COMPANY

2016

GSE-SOLUTIONS

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TRUE PERFORMANCE ON THE APRON

More than 50 years of experience in the production of GSE and BHS

LAS-1 Company is an engineering and manufacturing company, located in Riga (Latvia).
The company is a developer, manufacturer and a supplier technological equipment for airports. Our activity includes the development of technology and technical equipment, design, manufacturing and technical maintenance of products. Our team is made up of have high-class professionals and excellent production facilities. In fact we were among the first companies in Europe that introduced electric powered passenger stairs with no emissions.
All equipment undergoes a thorough control of all parameters, using special test programmes and test equipment. Our products meet the recommendations of international EN, ISO, IATA standarts.

It has always been important for us to offer an attractive and comprehensive product range that is associated with optimal service.
We are always available to you, to answer any question, to advice you competently. We use our extensive knowledge, acquired over many years of experience in the production and supply of Ground Support Equipment and Baggage Handling Systems.
We would be delighted to be your partner in the future ensuring competence and continuity.

Best regards,

Anton Shalaginov
CEO

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Catering Highlift AL-10/14

Designed for transporting and loading inflight and catering equipment.

LAS-1 manufactures a wide range of lift trucks to serve all types of aircrafts from small regional up to a large wide-body aircrafts. The operating height ranges from 1350mm to 6000mm. Meets all necessary IATA specifications.

Highlifts can be supplied on almost every commercial chassis with options to meet your needs, including a rear hydraulic plattform, intercom system, parking system, rear view system, van body cooling system, etc.

	AL-10/14	AL-10/14 Regio
Operating height, mm	**1400÷6000** **2350÷6000**	**1300÷4700** **2350÷4700**
Payload, kg	3000 / 4500	2000
Platform payload, kg **- front / rear**	600 / 1000	600 / 1000
Van body insight dimensions, mm:* **- Length** **- Width** **- Height**	 7340 2340 2100	 4800 2300 2100
Transmission	Automatic, Manual	
Chassis: Mercedes, Iveco, MAN, Renault, ISUZU, FORD or other *exact dimensions depends on the type of the chassis and customer`s requirements		

Highlift for passengers with reduced mobility ALS-U

Ambulifts are designed with doorsill heights matching those of the Catering Highlifts. The van body is equipped with wheelchairs and stretchers. Ambulifts are built based on customer`s requirements. The van body has a bigger window area compared to other ambulifts available on market. Ambulifts can be equipped with all the necessary options.

	ALS-U
Payload, kg	1500
Aircraft docking height, mm	1350 ÷ 5800
Chassis:	Iveco, Mercedes, etc.
Transmission	Manual/Automatic
Inside van body length, mm*	5840
Inside van body width, mm*	2340
Inside van body height, mm*	2100

*exact dimensions depends on the type of the chassis **and customer`s requirements**

Self-propelled passenger stairs TTA-S

The self-propelled passenger stair with telescoping extension of the upper stair is intended for maintenance of comfortable embarking of passengers aboard the aircraft with the operating height range from 2200mm to 5800mm.
Due to the used of telescoping mechanism stairs have encreased range of working heights.
It allows using it for servicing practically all types of aircrafts.
The cabin has a big window area and a transparent hatch on the roof, providing good visibility from driver`s position. The windshield is equipped with a window wiper.
The cabin and all necessary controls are ergonomically designed and situated.

		TTA-S
Features: - **Automatic leveling system** - **Illumination of the stairway** - **Sill height pre-selection** - **Enclosed operator`s cab** - **Spotlights** - **Safety interlocks** - **Swivel platform** - **Etc.**	**Working heights, mm**	2200 ÷ 5800
	Total passengers capacity	100 persons
	Passengers capacity per step	3 persons
	Passengers capacity on front platform	19 persons
	Front platform width, mm	2400 (up to 3200)
	Step width, mm	1550
	Height of first step from ground, mm	185
	Diesel engine	DEUTZ TCD 3.6
	Transmission	Hydrodynamic
	Brakes	Disk brake
	Stabilizers	4 hydraulic jacks
	Maximum running speed	30 km/h
Technical data can differ due to the permanent development of our products.	**Creep speed range**	0-5 km/h

Self-propelled passenger stairs TA-S

Passenger stairs with optimized electromechanical drive.

Self-propelled passenger stairs TA-S are available in two different versions: Electric powered or diesel engine powered.

DIESEL

OR

ELECTRIC POWERED

OUR GREEN ARROW STAIRS – ELECTRIC DRIVE

This development takes LAS-1 onto a new path to meeting the economic and ecological requirements of modern, future-oriented airports.

The self-propelled passenger stairs for airfield are intended for ensuring comfortable embarking of passengers aboard the plane. The design of self-propelled stairs consists of an elevating ladder with the top platform, established on the self-propelled chassis with the electric drive or diesel engine.

	TA-S
Minimum docking height, mm	2400
Maximum docking height, mm	4100
Front platform width, mm	1750 (up to 2400)
Step width, mm	1550
Height of first step from ground, mm	185
Power	Electric powered or Deutz diesel TCD 2.9 W4
Transmission (with diesel engine)	Hydrodynamic
Stabilizers	4 hydraulic jacks
Maximum running speed	20 km/h
Creep speed range	0-5 km/h

Technical data can differ due to the permanent development of our products.

Self-propelled passenger stairs TA-S with ambulift

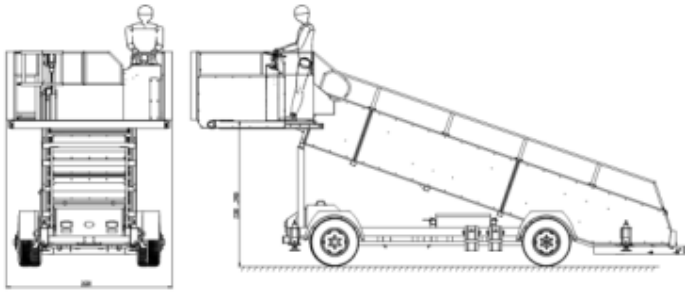
The self propelled passenger stairs is available with **an optimized system for lifting passengers with reduced mobility (PRM):**

- **Safe approach to the Aircraft**
- **Less personnel required, no supervisor necessary during approaching to the aircraft**
- **Less GSE on apron (no tow tractors)**
- **Reduced time for servicing**
- **In Compliance with EU-Norm**
- **Low operational costs**
- **Diesel or electric drive**
- **Environmental friendly (less GSE, less emissions)**

Features:

- **Reduced procurement costs**
- **No need for a conventional ambulift**
- **Faster service of airplanes**
- **Low running costs**
- **Flexible in use**
- **Ideal for small and midsize airports**

LAYOUT:



Towed passenger stairs TS

The design of the stair meets the requirements of AHM 910, AHM 913, AHM 914, AHM 915, AHM 920A and is in compliance with EU directives and norms.
Operating heights are from 2580mm up to 3200mm.

	TS
Minimum docking height, mm	2580
Maximum docking height, mm	3200
Allowed loads, kg **Step/ Platform**	190 / 665
Towing speed, km/h	32
Weight, kg	985

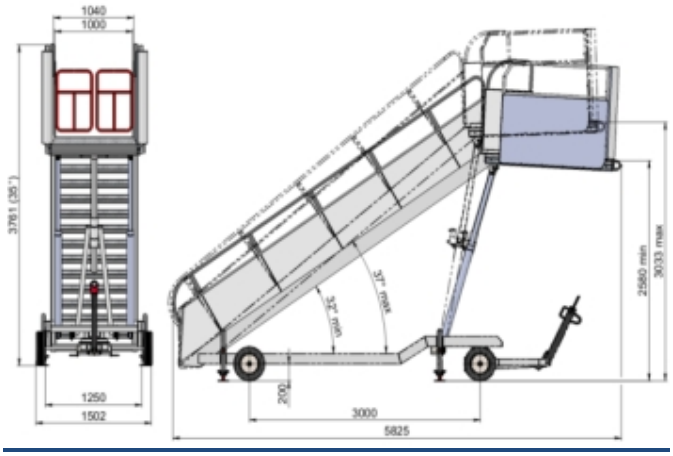
SERVICEABLE AIRCRAFTS:

B737-family

EMB170/175, EMB190/195

MD-80,

CS100/300



Operating heights can be customized to exact meet necessarry requirements, for example to serve A-320 aircrafts and others.

Available features:

- **Pedestrian control system**
- **Canopy**
- **Electric or diesel power unit**
- **Etc.**

Container loader/transporter APK-KM (truck based)

The APK-KM is a reliable solution for transporting heavy and sensitive air cargo items on aprons.
As a connecting link between the aircraft and Cargo terminal, APK-KM notably increases the working capacity.
The loader is completely independent from other loaders or dolly trains. It can transport containers and pallets covering long distances in a very fast time.
A powered roller assembly on the platform ensures a faster service time at the aircraft or cargo terminal.
The containerized freight can be moved longitudinally or laterally at any height.
Platform itself can be displaced either in the longitudinal or lateral direction at any height.

Container types: LD1, LD2, LD3; LD3-46; LD7; LD8; LD11

Pallets: 60,4"x125"; 88"x125"; 96"x125"

Aircrafts types: B-747; B-767; B-777; DC-9; DC-10; A-300; A-310; A-320; A-321; A-330; A-340; IL-86; IL-96; Tu-204; Tu-214 and others.

	APK-KM
Payload, kg	7000
Working heights, mm	1740÷5700
Platform adjustment:	
- transverse correction, mm	±125
- angle correction, degree	±3
- longitudinal correction, mm	0÷500
Cargo platform dimensions, mm:	
- length	7730
- width (with additional side cargo platform)	2800/3560/3780
Chassis:	Mercedes or others

Main deck container loader/transporter APK-KB (truck based)

The APK-KB is intended for transportation, loading/unloading containers to and from the main deck area of an aircraft. The loader is completely independent from other loaders or dolly trains. It can transport containers and pallets covering long distances in a very fast time. A powered roller assembly on the platform. The containerized freight can be moved longitudinally and transversally. The platform itself can be displaced either longitudinally or laterally at any height.

Features:

- **Two row placement and fixation of containers on platform: increases effectiveness**
- **Minimum number of personnel necessary**
- **Reduces number of GSE on apron, thus more safety**

Container types: LD1, LD2, LD3, LD3-46 and pallets 60,4”x61,5”, 60,4”x125”, 96”x125”

Aircraft types: A310, A319, A320, A321, A330, A340 B 767, B 777, DC-10, MD-11, TU-204, TU-214, TU-334, IL-96

	APK-KB
Payload, kg	4500
Working heights, mm	1660÷3700
Platform longitudinal displacement, mm	500
Width between container guides, mm	1580
Width between pallets guides at rear part of platform, mm	3220
Main Platform dimensions, mm **Length / Width**	5300 / 3400
Engine	Diesel
Transmission	Manual / automatic

Loading scheme:

			
4 x LD3-46	**4 x LD3**	**6 x LD2**	**2 x pallet 96``x125``**

Truck based container transporter ATK-14

Due to its significant flexibility and manoeuvrability, this ATK-14 can be used as a container and pallet transporter. The transporter is built on a commercial chassis like Mercedes. Thus, it ensures fast transportation of the cargo covering long distances without being reloaded onto other equipment.

Intended for the following types of containers and pallets:

Can be used around the airport, on the apron and public highways.

The rational solution for fast and safe cargo transportation. ATK-14 is characterized by its low cost of ownership.
A powered roller assembly on the platform for moving pallets and containers.

IATA	
Container	
AKC	LD-1
DPE	LD-2
AKE	LD-3
AKH	LD-3-45 (46);
ALP	LD-4
ALF	LD-6
PAD P1P, XAW P1P	LD-7
DQF	LD-8
AAP	LD-9
ALP	LD-11
AAF	LD-26
AAU, RAU	LD-29
AMU	LD-39
Pallets	
PNA	61,5"x96"
PLA	60,4"x125"
P1P	88"x125
P6P	96"x125"
PRA 16- ft	96"x196"
PGA 20-ft	96"x238"

	ATK-14
Payload, kg	14000
Platform height, mm	1520
Container displacement, m/sec,	0,2 ÷ 0,3
Platform dimensions, mm: **- Length / Width / Height**	13230 / 2600 / 3160
Chassis	**Mercedes; MAZ**

The vehicle can be customized to individual specifications – thus you always get the best configuration for your field of application.

Truck based bulk cargo loader APK-10

APK-10 - is a special airfield machine based on a commercial chassis like Mercedes Atego with a lifting platform, designed for transportation and loading of bulk cargo into airplane compartments.

APK-10 is suitable for folowing types of aircrafts:

B 737; B 747; B 757; B 767; B 777; B-787; A 300; A 310; A 319; A 320; A 321; A330; A 340, and other with a suitable sill height of the cargo compartment.

Features:

- **Low costs and complexity**
- **No needs for additional equipment: replaces baggage carts, tractor, belt loaders**
- **Less equipment on apron, more safety**
- **Can be used for maintenance works**

	APK-10
Minimum loading height, mm	1480
Maximum loading height, mm	4700
Length of the loaded area, mm	3800
Width of the platform, mm	2400
Payload, kg	5500
Transmission	Automatic or manual
Stabilizers	2 hydraulic jacks
Maximum speed, km/h	45

Self-propelled conveyor belt loader KLS-6

The self-propelled conveyor belt loader KLS is intended for loading and unloading of luggage, cargoes or mails in and out of baggage compartments of an aircraft with the cargo door sill heights from 1,15 to 4,3m;

Belt loaders are produced in two versions:

Conventional belt loader KLS-6		Belt loader with its own cargo platform KLS-6 P
		
8650	**Belt length, mm**	**9000**
1150÷4300	**Working heights, mm**	1000÷4100
Deutz TCD 2.9	**Engine**	Deutz TCD 2.9
8650/2200/2150	**Overall, dimensions, mm**	9250/2420/2150
	Platform dimensions, mm	5170x1420

The conveyor belt loader with cargo platform is a perfect solution for handling all types of aircrafts. The cargo platform has dimension, which enables loading the whole cargo compartment of a B-737 onto platform. So it is ideal for small or mid range airports.

Towed conveyor belt loader KLP

Designed for loading/unloading baggage, cargo or mail to/from aircraft lower lobe bulk holds.

- Retractable side handrails
- Protective bumper interfacing with the aircraft
- Self-adjusting belt alignment
- The belt friction prevents the load from slipping or rolling back at maximum angle, even when starting
- Non-slip belt surface

	KLP 2,8	KLP 3,6	KLP 4,7
Working heights: Front boom end, mm - raised height / retracted height Rear boom end, mm - raised height / retracted height	2800 / 1000	3600 / 1180 2000 / 650	4700 / 1120 1745 / 750
Maximum load per linear meter, kg	140	140	140
Maximum load on boom, kg	940	800	1100
Maximum single load, kg	400	400	400
Belt width, mm	600	600	600
Maximum overall size of load, mm - with handrails / without hand rails	800 / 1300	800 / 1300	800 / 1300
Boom length, mm	4700	6100	9000
Belt speed, m/sec: - lowest / highest	0,2 / 0,5	0,2 / 0,5	0,2 / 0,5
Weight, kg	1100	1150	1300
Maximum towed speed, km/h:	20 / 10	20/ 10	20 / 10

Baggage cart TB

The cart has a platform for accomodating loads up to a total weight of 1500kg, designed to carry bulk baggage items. The cart can withstand rough handling. The towbar is fitted at the front end and its length prevent carts in a train from comming into contact with each other when turning. When in vertical position the towbar acts like a parking brake. The flooring of the cart has a V-form, which enables automatic centering of the cargo.

	Baggage cart
Platform dimensions, mm Length / Width	2600 / 1350
Carrying capacity, kg	1500
Tyres	4.00-8 „Super-elastic”
Weight, kg	400

Baggage cart TB-1.5, TB-3

	Baggage cart	
	TB-1	TB-3
Carrying capacity, kg	1500	3000
Length (with towbar in the vertical pos.), mm	3700	
Width, mm	1450	2040
Tyres: 4.00-8 „Super-elastic” or pneumatic		

Container Dolly TK-7C

The towed container dolly can move unit load devices (ULDs) of standard base dimensions.

The dolly has a roller platform. The geometry of the dolly steering system ensures that, when the dollies are towed in train, they follow a true track. A towbar is fitted at the front and its lenght prevents tow adjacent carts in a train from comming into contact with each other when turning.

The platfrom is equipped with guide rails and retractable stops. The stops are designed to safely accommodate a fully loaded container towed at the maximum permissible speed. The container dolly TK-1.5 is equipped with a turntable cargo platform.

Container dolly 7000kg

	Container Dolly TK-7C	Container Dolly TK-1.5
Overall dimensions, mm Length / Width	4290 / 3450	2820 / 1760
Carrying capacity, kg	7000	1500
Platform height, mm	508	508
Tyres	380 x 115 „Super-elastic”	

Container dolly with 1500 kg

ADDITIONAL INFORMATION: Terminal Equipment

You benefit from our profound knowledge in the field of Baggage Handling Systems (BHS).

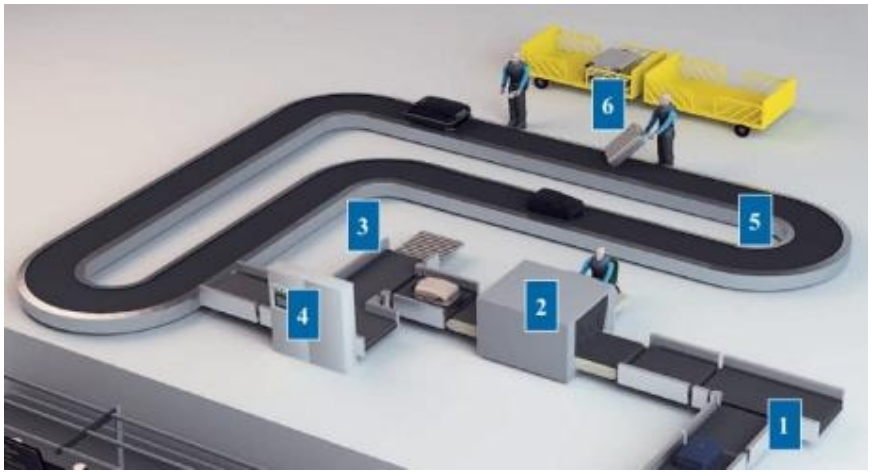
Starting from scratch up to the installation of the finished system at your airport: we accompany you!

Overview of performance: Terminal Equipment

- **Passenger and baggage registration**

1. Check-in agent work place: consists of a Check-in counter with a fully integrated scale and control system, a scale belt conveyor, induction belt conveyor
2. Bag-drop kiosk
3. Flight information display system – FIDS
4. Self check-in registration kiosk

- **Baggage handling system**



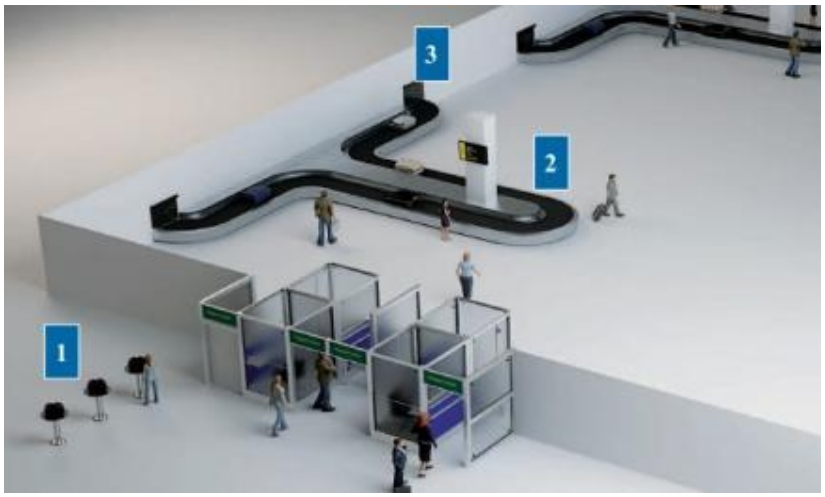
1. Belt conveyor
2. X-ray scanner integration
3. Reverse conveyor for additional control of the baggage
4. Control system
5. Carousel
6. Baggage reconciliation system

- **Border and Special control zone area**

1. a roller assembly conveyor to return trays for passengers clothes and hand luggage
2. A desk for passenger`s baggage inspection
3. Passport control cabins with an integrated turnstile system

- **Baggage claim terminal**

1. A special rack for filling in declarations for overseas or non-Schengen visitors
2. A baggage claim carousel
3. A shutter closing system between the public area and the baggage handling system



Need a 3-D picture of how your system will looks like? No problem, we will prepare it for you along with a simulation.

HISTORICAL FACTS AND PICTURES

- **1941 - Year of foundation**
- **1960 – renamed into “Civil Aviation Factory No.85”**
- **1993 – Re-named into “LAS-1” Company Ltd.**


Passenger stair TTA-S/A, Surgut Airport 2007

Catering truck AL-10, Domodedovo Airport 1968


Bulk cargo loader APK-10, Omsk Airport 1985


Apron trailer bus, 1969

Catering truck AL-10, Budapest 1977


Belt loader KLS, Vnukovo Airport 1969

KEY FIGURES AND ADVANTAGES

- Number of staff – 70 people
- Own design department – 10 engineers
- Average annual turnover – approx. 5 – 6 Mio. EURO
- Production area – 8000 m2
- More than 50 turnkey projects in airports (Terminal)
- Up to date software – AutoCAD, SolidWorks
- Consultancy and planning with customer
- Only well-known suppliers, like SEW-Eurodrive, Siemens, Graziano, KNOTT, BOSCH, INTERROLL, HABASIT, DEUTZ, etc.
- More than 50 years of experience in the area of developing and manufacturing of airport technological equipment
- Developer, Manufacturer and Supplier in one
- ISO 9001 and CE certified
- Strong design department
- Service to reduce down times at customer
- Safe and Reliable products
- Working temperature range of GSE from -40° C till +50°C

LET`S SUCEED TOGETHER!