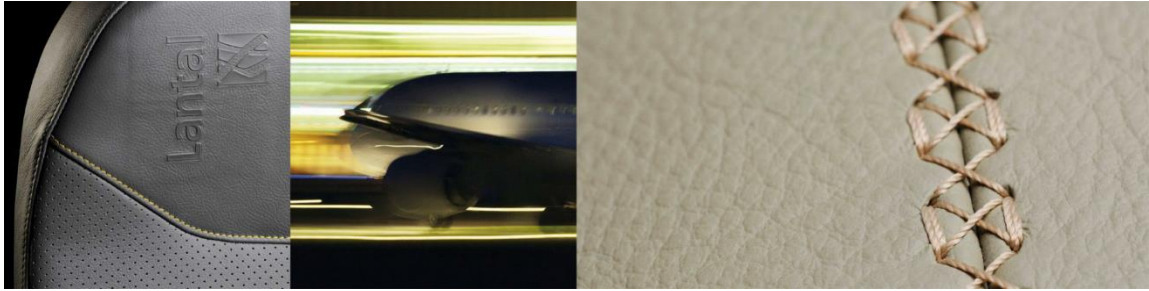


Ready-to-install products and services



Introduction

This document provides a condensed overview of Lantal's ready-to-install product categories and its portfolio of interior design, laboratory, and logistics services.

The Design Organization (DOA) and Production Organization Certificates from the European Aviation Safety Agency (EASA) has had a positive impact on the scope of products and services available to Lantal customers.

The status as Design Organization (DOA) of Lantal's subsidiaries ASI and ACC in combination with Lantal's status as Production Organization (POA) officially authorizes Lantal to independently design, test, and certify modifications of aircraft cabin components. This status gives us the leverage to better serve our customers as an attractive and highly competitive provider of cost-effective all-in-one solutions.

Key advantages

Your benefits of going with Lantal in the context of aircraft interior projects are convincing:

- **A single point of contact for the customer**
- **Vastly reduced paperwork**
- **Lower costs**
- **Less complexity in process management**
- **Minimized uncertainties and operational risk**

Competence

The Design Organization Approval of Lantal's subsidiaries extends across the entire spectrum of our ready-to-install products – including pre-cut carpets, fit-and-fly seat and headrest covers, and pleated curtains. It also applies to minor modifications of the cabin interior associated with such products.

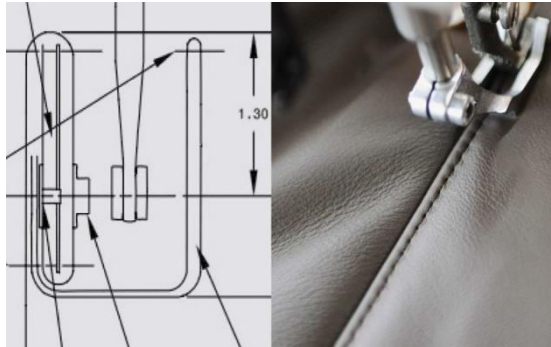
The Design Organization Approval gives the authority to approve minor cabin infrastructure changes and can leverage its 3D design resources in the development of complex low-pressure pneumatic comfort systems, seat covers, curtain systems, and textile floorcovering configurations.

In partnerships with airframe makers, airlines, and completion centers, the DO status gives Lantal many additional opportunities to contribute its expertise.

We look forward to simplifying, expediting, and streamlining your cabin projects. Stay on the safe and convenient side by delegating such projects to Lantal.

Contact

If you have any questions or requests, please do not hesitate to contact the Lantal team at any time.



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Services Lab services

Key advantages

Lantal's laboratory services concept offers the following compelling advantages:

- **Single-source convenience – from fabrics and carpets to testing – you save time and money**
- **Lantal's labs are equipped to perform all relevant airworthiness tests for interior components – also for third parties**
- **Every product manufactured by Lantal is tested and delivered with a flammability test certificate**

Certification of the lab services

In connection with the Production Organization Approval (POA), Lantal's lab in Langenthal was audited by the Swiss Federal Office of Civil Aviation (FOCA).

As an essential part of the production process, Lantal is able to provide customers with EASA-recognized test certificates.

Besides the flammability tests according to FAR / CS 25.853 for aircraft interior materials, we have the equipment for many other tests as well.

Our certification according to EASA 21 Subpart G and J enables Lantal to supply ready-made seat covers, headrest covers, curtains, cut carpets, and pneumatic components with the release certificate (EASA Form 1).

Lantal's laboratory in Langenthal is accredited as a center for fire tests pursuant to ISO/IEC 17025.

This approval allows the lab to conduct fire tests listed in the scope of accreditation on materials and components used in aircraft interiors.

Lantal's independent laboratory in Abu Dhabi is in the process of accreditation. The accreditation will be completed by the end of 2018.

The test laboratories are also accessible to third parties.

Tests

- Flammability test vertical 12 or 60 sec. – as per specification FAR/CS 25.853, App. F, Part I, (a)(1)(i) and (ii) or Airbus AITM 2-0002A/B or BSS 7230
- Flammability test horizontal – as per specification FAR/CS 25.853, App. F, Part I (a)(1)(iv) and (v) or AITM 2-0003
- 45 degree Bunsen Burner test for cargo compartments – as per specification FAR/CS 25.853, App. F Part I (a)(2)(ii) and (iii) or Airbus AITM 2-0004
- Smoke test – as per specification FAR/CS 25.853, App. F Part V or Airbus AITM 2-0007/2-0008 or Boeing Specification Support (BSS 7238)
- Toxicity test – as per specification ABD 0031/ AITM 3-0005 or BSS 7239
- Oil Burner Tests for Seat Cushions – as per specification FAR/CS 25.853, App. F, Part II or AITM 2-0009
- Heat release rate (OSU test) – as per specification FAR/CS 25.853, App. F, Part IV or AITM 2-0006

In connection with the Design Organisation Approval our CVE Cabin Safety is able to witness your tests.

Services Interior designs



Key advantages

Lantal's interior design concept has the following compelling advantages:

- **Single source-convenience – from the design of the interior and the materials to production, assembly, warehousing, and materials testing – you save time and money**
- **Creating of interior designs matched to your branding**
- **Consulting of branding/CD issues**
- **Design services and visualization options overview**
- **Experience and capabilities of Lantal design team since more than 50 years**

Design capabilities

Cabin comfort is without a doubt the best way to win an airline passenger's heart. When passengers board an aircraft, they expect to be embraced by the atmosphere of their destination.

Lantal's design team is specialized in planning and designing complete interiors for aircraft, with sound suggestions for materials. Attractive seat cover fabrics, smooth headrests, subtle wall coverings and carpets, fine leather, and pleated curtains are among the products that Lantal supplies with single-source convenience.

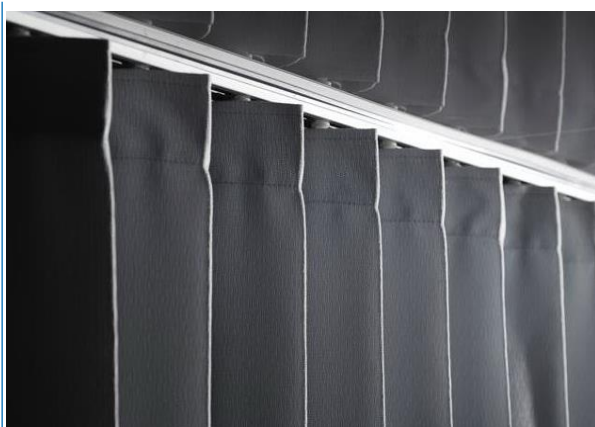
The results are individually tailor-made or total concepts as well as system solutions. The interior design concepts can be visualized in presentation boards, material samples, mood boards and 3-D visualizations that give you a very realistic impression of the chosen products in the aircraft cabin. Lantal is able to provide the first visualization of a new concept within 24 hours.

For detailed information, please ask for the design services and visualization options overview.

Consulting capabilities

Beyond the design of interiors, Lantal provides consulting services to its customers with regard to livery-compatible designs and general branding issues. Passengers see the interior of the aircraft for the entire duration of the flight; thus, it delivers messages. For this reason, it is important that the design and colors of the interior support the airline's image and contribute to the passenger's well-being.

Ready-to-install products Pleated curtains



Key advantages

Lantal ready-made, steam pleated curtains have the following compelling advantages:

- **A long lifetime and a long lasting perfect look due to excellent craftsmanship and permanent pleats**
- **Pleats always remain in the same good shape even after several cleaning cycles**
- **They need less space when tied back**
- **Delivered ready-to-fit, easy to install**
- **Cost-effective all-in-one solution and single-source convenience - you save time and money**
- **Compliance with all airworthiness requirements**

Material

Lantal pleated curtains are made of 100% flame-resistant polyester as per Lantal portfolio. On request, Lantal will also produce ready-made pleated curtains with provided goods.

Ready-made and design options

Trim & finish

Lantal will produce the pleated curtains according to your specifications. You can send us approved data, drawings or samples of current items and Lantal will supply a professionally sewn product ready for installation.

Design options

- Various pleat and pitch sizes possible
- Double-sided printed and laser perforated options available to further highlight your brand identity

Functional options

Special make-up options for light and sound-absorption available.

Additionally, Lantal also offers ready-made stitch pleated and plain curtains.

Cleaning

Lantal flame-resistant polyester curtains can be washed or dry cleaned. The curtain has to be folded in its pleats and placed into a net bag for cleaning. Please ask for the pleated curtain manual for more information on maintenance and installation.

Specifications

Flammability, smoke/toxicity

Lantal fabrics are permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity if cleaned according to Lantal cleaning recommendations.

Production Organization Approval (POA)

Lantal is certified as Production Organization (EASA Part 21 G). Thanks to this approval Lantal is authorized to provide parts, manufactured in accordance with approved design data, with an EASA Form 1.

Design Organization Approval (DOA)

The status as Design Organization (EASA Part 21 J) allows Lantal's subsidiaries ASI and ACC to develop, test, and certify modifications to aircraft interior parts. The scope of the approval as stipulated by EASA encompasses all soft interior parts such as:

- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Advantages of steam pleated curtains versus

... conventional curtains

- They are more attractive
- They occupy less space when tied back
- They have a long service life

...sewn pleated curtains

- Permanent pleats assure a perfect look across the curtain's lifetime
- Pleats always retain their same good shape even after numerous cleaning cycles
- No pleat distortion due to yarn contraction, the pleats remain straight and uniform, even when tied back
- Easy to maintain, no additional ironing needed after cleaning

Conclusion:

Lantal recommends steam pleated curtains for all

Both curtains after washing 10 times at 40°C in a net bag and 3 times dry cleaning in a net bag:



Sewn pleated curtain



Steam pleated curtain

of the mentioned reasons.

Ready-to-install products Pre-cut carpets



Key advantages

Lantal ready-made carpets have the following compelling advantages:

- **Cost-effective all-in-one solution and single-source convenience - you save time and money**
- **A long lifetime due to excellent craftsmanship**
- **Delivered ready-to-fit, easy to install**
- **Compliance with all airworthiness requirements**

Material

Lantal ready-made carpets are made of carpet qualities as per Lantal's portfolio. On request, Lantal will also produce pre-cut carpets with provided goods.

Ready-made and design options

Carpet cutting

Lantal will trim and finish your carpets according to your need:

- Cut to width
- Rectangular tiles cut to size
- Shapes pre-cut exactly to size

Send us approved data, your drawings, files with cut dimensions or submit a layout plan with the applicable measurements and Lantal will supply a professionally processed carpet ready for installation.

Serging

Several serging options are available:

- Tone-on-tone serging
- Contrast serging
- Speedbinding

Customized colors matching your carpet design are available. Depending on the carpet design however, due to the non-fraying edges serging is not required.

Self-adhesive carpet backing installation

To simplify maintenance and reduce costs, a self-adhesive backing can be applied during the production process. The carpet can easily be installed without double-sided adhesive tape. There are no adhesive residues on the panel when the carpet is removed.

Cleaning

Please ask for Lantal's carpet cleaning recommendations for detailed information.

Specifications

Flammability, smoke/toxicity

Lantal carpets are permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity even after having been cleaned for several times according to Lantal's cleaning recommendations.

Production Organization Approval (POA)

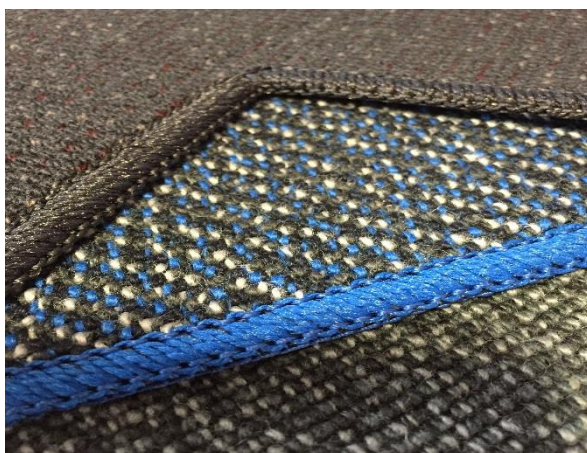
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- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Ready-to-install products Foot well carpet kits



Key advantages

Lantal carpet kits for the application in foot wells and other non-visible areas of the seat offer many compelling advantages:

- **Neutral carpet designs and colours to match all possible cabin floors**
 - **Carpets available on stock which leads to a short lead-time and low minimum order quantities**
 - **A long lifetime due to excellent craftsmanship**
- Compliance with all airworthiness requirements**

Material and availability

Choose a carpet from Lantals pre-defined Essentials Stock collection. This collection is available off-the-shelf which results in a short lead-time and a low minimum order quantity.

Following carpets are amongst others possible and available off-the-shelf (as rolled goods):

Melair 3232 LS D1535/700
Melair 3232 LS D1565/300
Melair 3232 LS D1519/701

Availability of the finished carpet kits upon request.

Composition

The carpets used are made of Lantal's Essentials Stock qualities, like 100% wool. This well-known quality is characterized by a very long service lifetime, good hygienic features and a high underfoot comfort.

Ready-made and design options

Carpet cutting

Lantal will trim and finish the carpet kits according to your specifications.

Serging

To further enhance the appearance of the ready-made carpets, Lantal will serge the carpets with a matching color.

Self-adhesive carpet backing installation

To simplify maintenance and reduce cost, a self-adhesive backing can be applied. The carpet can easily be installed without double-sided adhesive tape. There are no adhesive residues when the carpet is removed.

Specifications

Flammability, smoke/toxicity

Lantal carpets are permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity even after having been cleaned for several times according to Lantal's cleaning recommendations.

Production Organization Approval (POA)

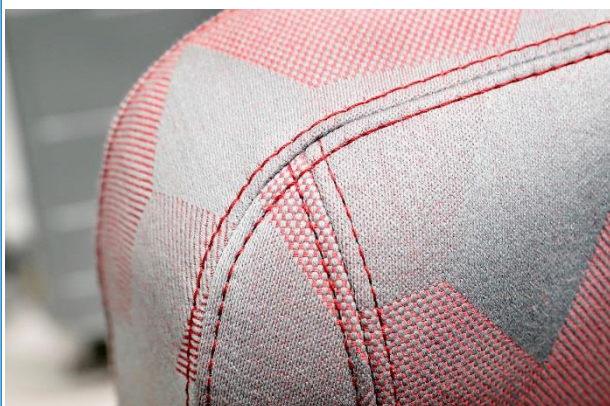
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- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Ready-to-install products Seat covers



Key advantages

Lantal ready-made seat covers have the following compelling advantages:

- **Unique look thanks to various design options**
- **A long lifetime due to excellence in craftsmanship**
- **Easy to install, delivered ready-to-fit**
- **Cost-effective all-in-one solution and single-source convenience - you save time and money**
- **Compliance with all airworthiness requirements**

Material

Lantal ready-made seat covers for all seats, crew rests as well as Lantal's Pneumatic Comfort System are made of fabric, genuine leather or artificial leather as per Lantal's portfolio. On request, Lantal will also produce ready-made seat covers with provided goods.

Ready-made and design options

Trim & finish

Lantal will cut and sew the seat cover according to your specifications. You can send us approved data, drawings or samples of current items and Lantal will supply a professionally sewn product ready for installation.

Design options

For a unique look, matching the airline's brand, many design options are possible:

- Various seams, decorative stitching
- Perforated or dimpled leather
- Embossing (leather); debossing (leather, artificial leather)
- Embroidery

Functional options

For a longer lasting superior look and better seating comfort, Lantal offers various laminations to choose from:

- Graphite foam (fabric, leather)
- Graphite foam extra (fabric, leather)
- Lightweight foam (leather, backrest only)
- Activated carbon (perforated leather)

For fabrics, the application of an additional fireblocker is possible.

Cleaning

Cleaning depends on the material of the seat cover. Please ask for Lantal's cleaning recommendation.

Specifications

Flammability, smoke/toxicity

Lantal fabrics and leathers are permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity even after having been cleaned a several times according to Lantal cleaning recommendations.

Production Organization Approval (POA)

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Design Organization Approval (DOA)

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- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Ready-to-install products Antimacassars



Key advantages

Lantal ready-made antimacassars have the following compelling advantages:

- **Various design options to strengthen your brand**
- **Delivered ready-to-fit, easy to install**
- **Cost-effective all-in-one solution and single-source convenience - you save time and money**
- **Compliance with all airworthiness requirements**

Material

Lantal antimacassars are made of fabric, genuine leather or artificial leather as per Lantal's portfolio. On request, Lantal will also produce antimacassars with provided goods.

Ready-made and design options

Trim & finish

Lantal will cut and sew the antimacassars according to your specifications. You can send us approved data, drawings or samples of current items and Lantal will

supply a professionally sewn product ready for installation.

Design options

For a unique look, matching the airline's brand, many design options are possible:

- Various seams, decorative stitching
- With your logo to support your brand identity:
 - Printed
 - Embroidered
 - Embossed (leather)
 - Debossed (leather, artificial leather)

Cleaning

Cleaning depends on the material of the antimacassar. Please ask for Lantal's cleaning recommendation.

Specifications

Flammability, smoke/toxicity

Lantal fabrics and leathers are permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity even after having been cleaned a several times according to Lantal cleaning recommendations.

Production Organization Approval (POA)

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Design Organization Approval (DOA)

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Ready-to-install products Literature pockets



Key advantages

Lantal ready-to-install literature pockets have the following compelling advantages:

- **Developed to match the seat construction**
- **Interior element that can be attractively designed to match the airline's brand**
- **Easy to install, delivered ready-to-fit**
- **Cost effective all-in-one solution and single source convenience – you save time and money**
- **Compliance with all airworthiness requirements**

Material

Lantal's literature pockets are made of fabric, genuine leather, artificial leather, net as per Lantal's portfolio. Various combinations for center and frame covering material are possible.

Ready-made and design options

Trim & finish

Lantal will develop and produce the literature pockets according to your specifications.

The finished literature pockets are shipped to the seat manufacturer in a ready-to-install state.

Design options

For a unique look, many design options are possible:

- The color and structure of the net can be individually selected
- Various seams
- Embossing (leather); debossing (leather, artificial leather) or embroidering your logo

Specifications

Flammability, smoke/toxicity

Lantal's literature pockets are made of materials permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity where applicable.

Production Organization Approval (POA)

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Design Organization Approval (DOA)

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- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Ready-to-install products Footrest nets



Key advantages

Lantal ready-to-install footrest nets have the following compelling advantages:

- **Weight savings: the net replaces the classic footrest hardware**
- **Unique comfort: more relaxed seating posture and less leg strain thanks to elastic fabric**
- **Colors and geometry to individual customer specifications**
- **Cost effective all-in-one solution and single source convenience – you save time and money**
- **Compliance with all airworthiness requirements**

Material

Composition

The flexible fabric for the footrest nets is made of 100% polyester.

Ready-made and design options

Trim & finish

Lantal will produce the footrest nets according to customer specifications and ship to the seat manufacturer in a ready-to-install state.

Designs and colors

The color, mesh aperture, and material thickness of the nets can be individually selected.

Specifications

Flammability, smoke/toxicity

Lantal's footrest nets are made of materials permanently flame-resistant in accordance with FAR/CS 25.853, 12 sec. vertical, and meet the Airbus and Boeing specifications for smoke and toxicity where applicable.

Production Organization Approval (POA)

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Design Organization Approval (DOA)

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- Seat covers
- Seat accessories made of soft materials
- Curtains
- Carpets
- Soft decor material parts

Services Logistics



Key advantages

Lantal's warehousing concept has the following compelling advantages:

- **Single-source convenience – from the material and assembly to warehousing – you save time and money**
- **Several warehouses located in Europe, USA and Asia**
- **Predefined minimum-maximum range of stock levels – for just-in-time deliveries**

Warehousing concept

Lantal keeps stock for its customers within predefined minimum-maximum range of stock levels. This applies to all materials: seat cover fabric yardage, carpets, leathers, curtain fabrics or ready-made seat covers, cut-to-size carpets, or pleated curtains.

Location of the warehouses

Europe: Langenthal/Switzerland

USA: Rural Hall, NC

Asia: Singapore

Contact

Contact Lantal and discuss your needs with us. Rest assured that we can address your requirements.

EASA certificate Production Organization (POA)

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Sämo Confederaziun
Federal Office of Civil Aviation (FOCA)

**Production Organisation
Approval Certificate**

Reference: CH.21G.0012

Pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council and to Commission Regulation (EC) No 748/2012 for the time being in force and subject to the condition specified below, FOCA hereby certifies:

LANTAL TEXTILES AG

Dorfstrasse 5, CH-4900 Langenthal

as a production organisation in compliance with the Annex (Part 21), Section A, Subpart G of Regulation (EC) No 748/2012, approved to produce products, parts and appliances listed in the attached approval schedule and issue related certificates using the above references.

Conditions:
1. The approval is limited to that specified by the enclosed Terms of Approval, and
2. The approval requires compliance with the provisions specified in the approved production organisation exposition, and
3. The approval is valid until the approved production organisation complies with the Annex (Part 21) of Regulation (EC) No 748/2012.
4. Subject to compliance with the following conditions, this approval shall remain valid for an unlimited duration unless the approval has previously been surrendered, suspended, or revoked.

Date of original issue: 01.10.2008
Date of this revision: 17.10.2016

Revision No.: 0

Christian Hugger
Vice Director Safety Division - Aircraft

Gianmario Giacomelli
Head of Section Design and Production

FOCA Form 001 Rev. 0

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Sämo Confederaziun
Federal Office of Civil Aviation (FOCA)

Terms of Approval TA: CH.21G.0012

This document is part of Production Organisation Approval Number CH.21G.0012
Issued to: Lantal Textiles AG

Section 1 **Scope of Work**
Production of
C2 Parts

Products / Categories
Parts for pneumatic comfort system
Parts of textile material for aircraft interiors

For details and limitations refer to the Production Organisation Exposition, Section 2.4.4.2

Section 2 **Locations**
Dorfstrasse 5, CH-4900 Langenthal
Bergstrasse 1, CH-4917 Melchnau

Section 3 **Privileges**
The production organisation is entitled to exercise, within its Terms of Approval and in accordance with the procedures of its Production Organisation Exposition, the privileges set forth in 21.A.160. Subject to the following:
Prior to approval of the design of the product on SACA Form 1 may be issued only for conformity purposes.

Date of original issue: 01.10.2008
Date of this revision: 17.10.2016

Revision No.: 0

Gianmario Giacomelli
Head of Section Design and Production

Thomas Hauser
Inspector Section Design and Production

FOCA Form 001 Rev. 0

Accreditation document fire test lab



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Federal Department of Economic Affairs DEA
Swiss Accreditation Service SAS

Based on the Accreditation and Designation Ordinance dated 17 June 1996 and on the advice of the Federal Accreditation Commission, the Swiss Accreditation Service (SAS) grants to

Lantal Textiles AG
Dorfstrasse 5
CH-4901 Langenthal

the accreditation as

Testing laboratory for fire tests in the field of railway and aviation typical testing

in accordance with the Standard ISO/IEC 17025. The scope of accreditation is defined in the Official Directory of the Accredited Testing Laboratories.

Accreditation mark and number:  STS 583
Date of accreditation: 13 November 2012
The accreditation is valid until: 12 November 2017

CH-3003 Berne-Wabern, 13 November 2012
Swiss Accreditation Service


The Head
Konrad Flück

SAS is a signatory of the multilateral agreements of the European co-operation for Accreditation (EA) for calibration, testing, inspection and certification of products, personnel, quality and environmental management systems, of the International Accreditation Forum (IAF) for certification of products, quality and environmental management systems and of the International Laboratory Accreditation Cooperation (ILAC) for calibration and testing.