

**at<sup>2</sup>**

**BLACKSTAR PLUGINS**  
& Dr.-Ing. Christoph Spiekermann

# PHOTOMETRIC IES-LDT-Shader

**IES- and EULUMDAT-Standard**

Compatible with:  **V. 10+**   **32** **64**

## General Information

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### Copyright and Disclaimer

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### Licence

A single licence for this product is limited to a unique Cinema 4D licence and a single computer. The Plugin must not be transferred beyond these restrictions.

### Installation

Installing BlackStar Photometric IES-LDT-Shader is similar to embedding any other Cinema 4D Plugin:

- Extract the Zip-File you received to your Cinema 4D "plugins"-folder
- On the first start-up of Cinema 4D you will be asked to enter your licence key for the IES-LDT-Shader

To purchase BlackStar Photometric visit <http://www.blackstar-solutions.de>

### Supported Platforms and Cinema 4D Versions

The Plugin is currently available for the operating systems Microsoft Windows® and Mac OS X both 32 Bit and 64 Bit. Supported Cinema 4D Versions are 10.0 and above.

### Support and Contact

For support and information beyond this manual please contact us via our support board: <http://www.at2-software.com/board/> (no registration needed).

For any sales issues please contact us at: [blackstar@blackstar-solutions.de](mailto:blackstar@blackstar-solutions.de)  
Special technical questions or suggestion can be sent to [info@c-a-s-a.de](mailto:info@c-a-s-a.de)

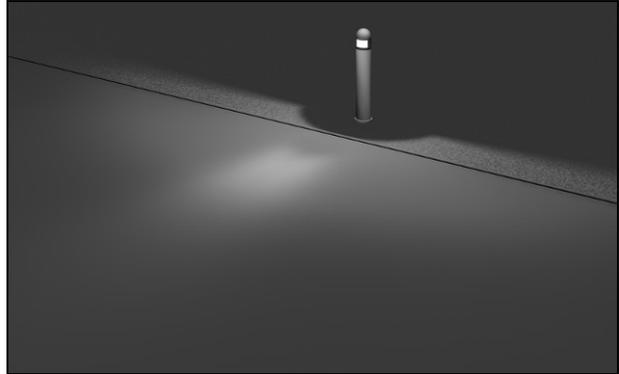
#### **Important:**

Concerning support requests please be sure always to add information about your operating system, your Cinema 4D version and your Photometric IES-LDT-Shader version if available. You can find your Plugin version in the supplied text file "version\_info.txt".

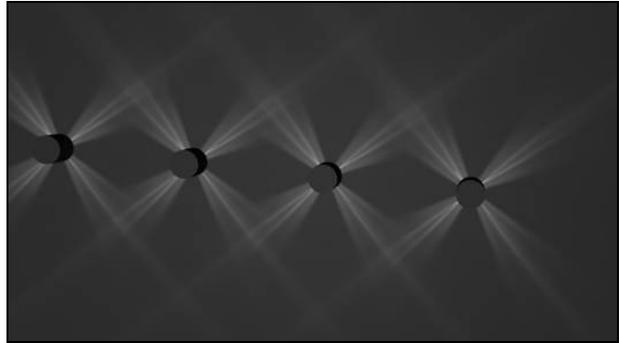
## Introduction and overview

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In reality every luminaire has a characteristic light distribution. The optical appearance of it depends on various influences, e. g. the lighting being used, the lampshade or reflector geometry or the use of lenses or diffusing panels. This spatial distribution character can be measured and expressed in photometric data files. Many luminaire manufacturers offer those photometric files for free to be downloaded for their lamps (see Appendix for a list of photometric data resources).



Using photometric data adds a great amount of realism to the lighting of a scene since it differs fundamentally from the built-in light sources which come as a smooth and symmetric gradient. The images on the right show some simple renderings using the Photometric IES-LDT-Shader processing photo-metric data.



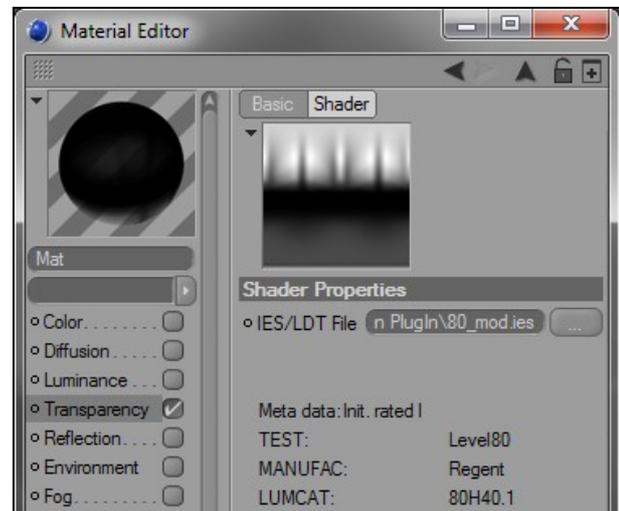
### The key features in a nutshell are:

- Include true photometric light data in your scene without any additional renderer software
- Supports American IES and European EULUMDAT photometric standards
- Supports any photometric symmetry pattern
- Can be combined with any other Cinema 4D light property
- Can be combined freely with other shaders to e.g. colorize the light
- Analyze the light distribution as 3D object

## Using the Photometric IES-LDT-Shader

This shader automates the previously noted method of using a grayscale gradient image as transparency mask for the light to alter the optical light distribution. Hereby the grayscale image is being calculated from a photometric data file given in IES or EULUMDAT standard.

To add photometric data to any point light in your scene create a material and just enable the **transparency channel**. Choose "IES-LDT-Shader" as texture and select the photometric data file. Supported file types are .ies for IES standard and .ldt for EULUMDAT standard. Now apply the material to the light using spherical mapping. The material now acts like a flag or GOBO determining the angle-dependent light distribution.

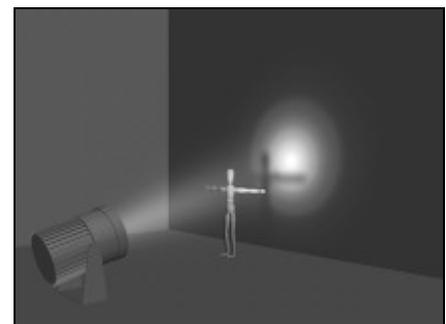


Any photometric symmetry found is applied automatically. Also the measured candela values are being normalized such as to fit in the range between 0.0 and 1.0. To change the absolute intensity of the light simply adjust the normal intensity property of the light source.

To make the exchange of projects using the IES-LDT-Shader a bit more easily, the plugin looks up the given absolute path to the photometric file and also the relative path of the scene as well as its "tex" folder. When the whole project is being saved the .ies or .ldt file gets exported to "tex" automatically.

### **Note:**

*All properties and options of Cinema 4D light sources can still be used: the light color, intensity, fall-off etc. can be adjusted freely. Same goes for the type of shadow, volumetric light (like being shown in the image on the right) or lens effects.*



## Limitations

Due to the general approach using a spherical transparency map the IES-LDT-Shader is restricted to point light sources. This includes also that only photometric data files from point lights are guaranteed to output accurate results. The shader will however try to display linear luminaires nevertheless.

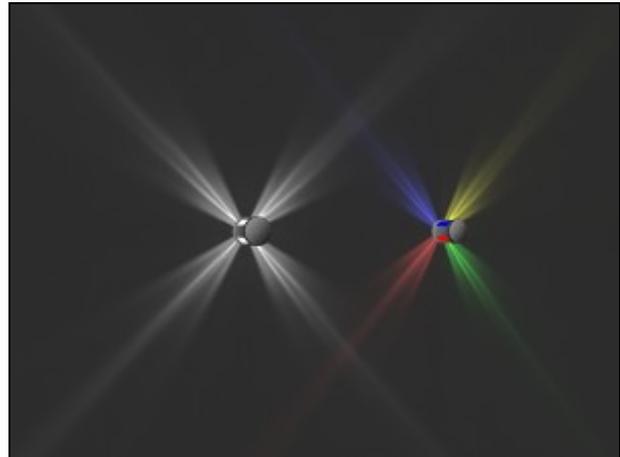
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## Further usage and combinations

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The Photometric IES-LDT-Shader is a normal shader and thus fully integrated into the Cinema 4D material system. As such it can be used in any other channel of the material, too, as well as in any combination of channels.

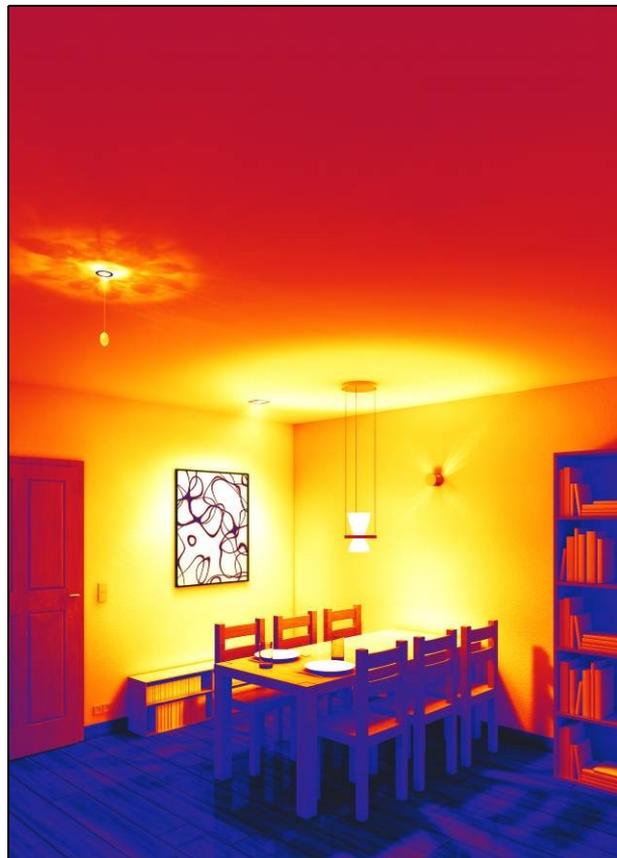
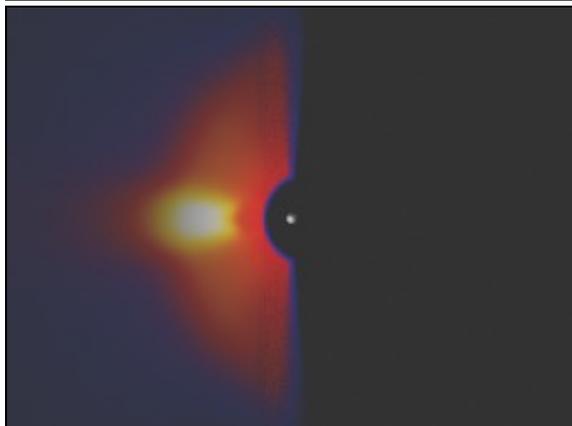
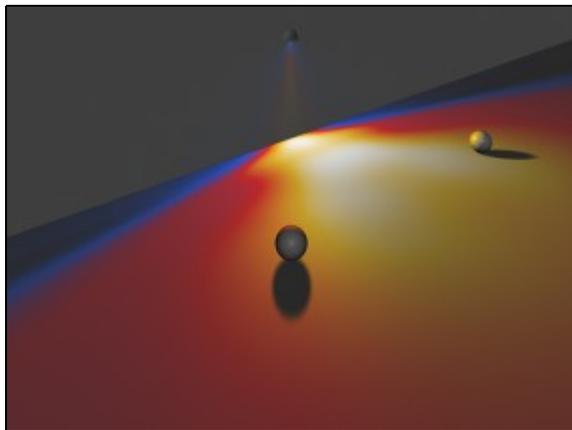
For example a lamp may offer colorized "inlays" to emit differently colored light dependent from the angle. Simply use the IES-LDT-Shader in combination with a color gradient shader to achieve this effect as seen on the image on the right.



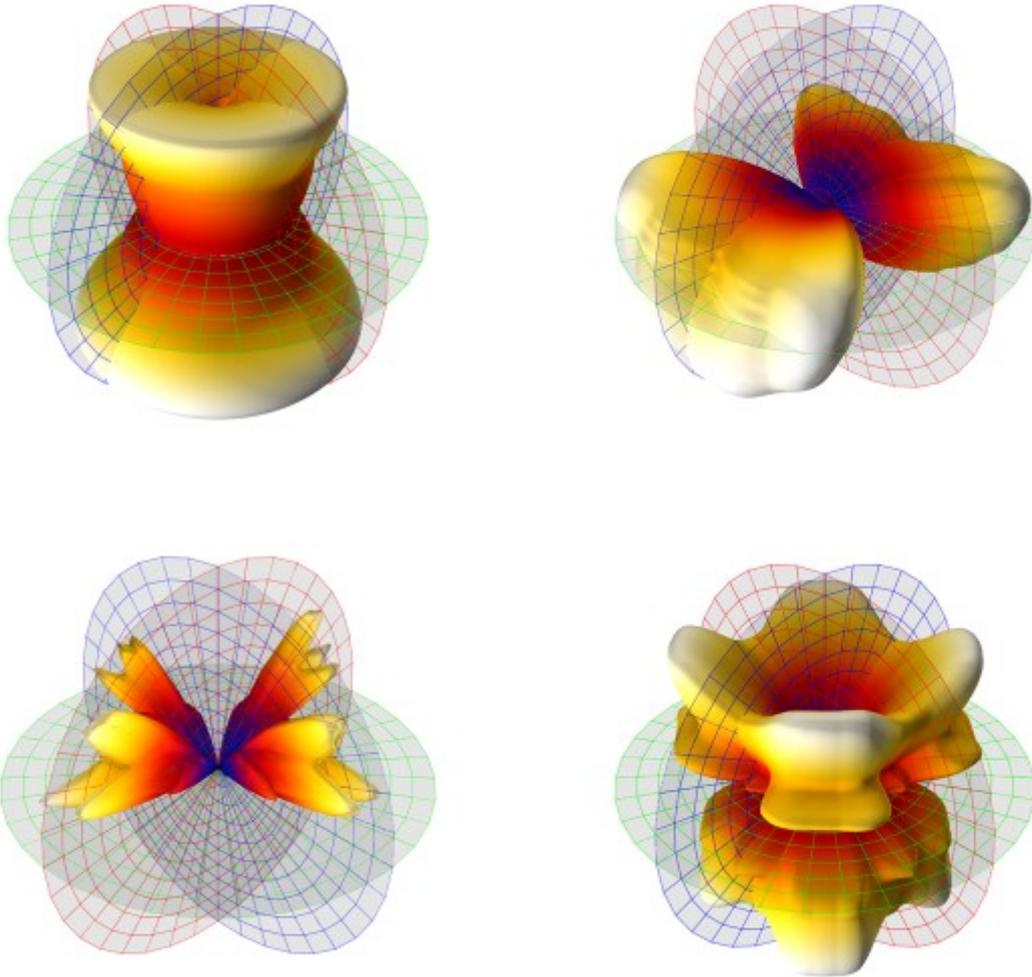
### Light distribution analysis

In an architectural context or for a professional lighting design it may be useful to measure how a specific lamp illuminates a room for instance. There are various ways how the IES-LDT-Shader comes into handy for that task.

If you combine it with a colorizer shader you can get an image to analyze the light distribution depending on the emitted brightness. Example applications are shown below.



Via applying the shader on a sphere using the displacement and colorizer channel one can directly observe the spatial light distribution and its variation of brightness / local fall-off in 3D. Below are given some examples including the x, y and z plane being indicated additionally using sketch rendering.



## Troubleshooting

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**Q: My shader is black although there is no error output.**

**A:** Assuming you don't want to do lighting analysis: be sure that you put the shader in the transparency channel of the material only – not the color channel. Then apply it to the light using spherical mapping.

**Q: My photometric file gets processed just fine but the shader output does not seem to be correct.**

**A:** Please check if the shader displays the message "Linear luminaire found..." – the Photometric IES-LDT-Shader can due to its general method display only point light sources correctly. This includes that photometric files of linear lamps are, too, not guaranteed to give a completely correct output. The shader though attempts to output in most cases a reasonable image. If the message is not shown please contact us via our support board (see link below) or by email including the corresponding photometric file.

**Q: There's an error output but my photometric file seems to be valid.**

**A:** Not every photometric data file out there is well-formatted according to the standard. We tried to develop the shader as to be not so strict about this so that it can get the data out of even unwell-formatted files; but if you found a reasonable photometric file causing an error message we're eager to update the shader to support it. Please post the error message and the .ies or .ldt file in our Photometric IES-LDT-Shader forum of our board at <http://www.at2-software.com/board/> (no registration needed).

**Q: The IES-LDT-Shader is applied to a point light correctly but there is no light.**

**A:** If you have a 3D light object, be sure to exclude the object itself from the lighting. You can do this in the "Scene" tab of the light's properties.

## Appendix – IES and LDT file resources online

Here you find an alphabetically sorted list of some links to luminaire manufacturers who offer photometric information in either IES or EULUMDAT standard.

3F Filippi	<a href="http://www.3f-filippi.it">www.3f-filippi.it</a>
Aletjé lyktan	<a href="http://www.atelje-lyktan.se">www.atelje-lyktan.se</a>
ALS Leuchten	<a href="http://www.als.de">www.als.de</a>
ARLUCE	<a href="http://www.arluce.it">www.arluce.it</a>
Artemide	<a href="http://www.artemide.com">www.artemide.com</a>
ASTZ	<a href="http://www.astz.ru">www.astz.ru</a>
B.Lux	<a href="http://www.grupoblux.com/">www.grupoblux.com/</a>
BEGA	<a href="http://www.bega.de">www.bega.de</a>
Belux	<a href="http://www.belux.com">www.belux.com</a>
Bright	<a href="http://www.bright.gr">www.bright.gr</a>
BRILUX	<a href="http://www.brilux.pl">www.brilux.pl</a>
Brumberg	<a href="http://www.brumberg.com">www.brumberg.com</a>
Castaldi	<a href="http://www.castaldilluminazione.com">www.castaldilluminazione.com</a>
Centrum voor Lichtarchitectuur	<a href="http://www.cla.nl">www.cla.nl</a>
Clearvision	<a href="http://www.virtualdaylight.com">www.virtualdaylight.com</a>
Concord	<a href="http://www.concord-lighting.com">www.concord-lighting.com</a>
Cooper Lighting	<a href="http://www.cooper-ls.com">www.cooper-ls.com</a>
DEFA Lighting	<a href="http://www.defa.com">www.defa.com</a>
Dextra	<a href="http://www.dextragroup.co.uk">www.dextragroup.co.uk</a>
DMB	<a href="http://www.damei-lighting.com">www.damei-lighting.com</a>
DZ Trilux	<a href="http://www.dz-licht.de">www.dz-licht.de</a>
EAE	<a href="http://www.eaeaydinlatma.com">www.eaeaydinlatma.com</a>
EEE	<a href="http://www.eee.pt">www.eee.pt</a>
ELBA	<a href="http://www.elba.ro">www.elba.ro</a>
Elektroskandia	<a href="http://www.elektroskandia.se">www.elektroskandia.se</a>
ELGO	<a href="http://www.elgo-li.pl">www.elgo-li.pl</a>
Endo	<a href="http://www.endo-lighting.com">www.endo-lighting.com</a>
ERCO	<a href="http://www.ercocom.com">www.ercocom.com</a>
ES-System	<a href="http://www.essystem.pl">www.essystem.pl</a>
ETAP	<a href="http://www.etaplighting.com">www.etaplighting.com</a>
Fagerhult	<a href="http://www.fagerhult.com/">www.fagerhult.com/</a>
Flash Light	<a href="http://www.flashlight.dk">www.flashlight.dk</a>
FLOS	<a href="http://www.flos.com">www.flos.com</a>
FLOS	<a href="http://www.flos.com">www.flos.com</a>
FontanaArte	<a href="http://www.fontanaarte.it">www.fontanaarte.it</a>
Formlite	<a href="http://www.formlite.nl">www.formlite.nl</a>
Glashütte Limburg	<a href="http://www.glashuette-limburg.de">www.glashuette-limburg.de</a>
Hess AG	<a href="http://www.hess.eu">www.hess.eu</a>
Hoffmeister	<a href="http://www.hoffmeister.de">www.hoffmeister.de</a>
INDAL	<a href="http://www.indal.es">www.indal.es</a>
INSTA	<a href="http://www.insta.de">www.insta.de</a>
Intra lighting	<a href="http://www.Intra-Lighting.com">www.Intra-Lighting.com</a>
KOOP	<a href="http://www.koop-sh.com">www.koop-sh.com</a>

KOTZOLD	<a href="http://www.Kotzolt.de">www.Kotzolt.de</a>
LAMP	<a href="http://www.lamp.es">www.lamp.es</a>
LEDNED	<a href="http://www.ledned.nl">www.ledned.nl</a>
LEDS C4	<a href="http://www.leds-c4.com">www.leds-c4.com</a>
Leipziger Leuchten	<a href="http://www.leipziger-leuchten.com">www.leipziger-leuchten.com</a>
Lighting Petridis	<a href="http://www.petridis-lighting.gr">www.petridis-lighting.gr</a>
Lightronics	<a href="http://www.lightronics.nl">www.lightronics.nl</a>
Ligman	<a href="http://www.ligmanlighting.com">www.ligmanlighting.com</a>
Lledo iluminación	<a href="http://www.lledos.es">www.lledos.es</a>
louis poulsen	<a href="http://www.louispoulsen.com">www.louispoulsen.com</a>
Lumiance	<a href="http://www.lumiance-lighting.com">www.lumiance-lighting.com</a>
Luxonic	<a href="http://www.luxonic.co.uk/">www.luxonic.co.uk/</a>
Malmbergs	<a href="http://www.malmbergs.com">www.malmbergs.com</a>
Martin	<a href="http://www.martin.com">www.martin.com</a>
Megalite	<a href="http://www.megalite.com">www.megalite.com</a>
mégaLUX	<a href="http://www.megaluxbg.com">www.megaluxbg.com</a>
microlights	<a href="http://www.microlightsgroup.com">www.microlightsgroup.com</a>
MODULAR	<a href="http://www.supermodular.com">www.supermodular.com</a>
Neo-Neon	<a href="http://www.neo-neon.com">www.neo-neon.com</a>
Neri	<a href="http://www.Neri.biz">www.Neri.biz</a>
NOORTEK	<a href="http://www.noortek.com">www.noortek.com</a>
NORKA	<a href="http://www.norka.de">www.norka.de</a>
nvc lighting	<a href="http://www.nvc-lighting.com.cn">www.nvc-lighting.com.cn</a>
Oktalite	<a href="http://www.oktalite.com">www.oktalite.com</a>
onok	<a href="http://www.on-ok.es">www.on-ok.es</a>
Opple	<a href="http://www.opple.com.cn">www.opple.com.cn</a>
ORNALUX	<a href="http://www.ornalux.com">www.ornalux.com</a>
Osram	<a href="http://www.osram.de">www.osram.de</a>
PLANLICHT Leuchten	<a href="http://www.planlicht.com">www.planlicht.com</a>
psmlighting	<a href="http://www.psm-lighting.com">www.psm-lighting.com</a>
RIDI	<a href="http://www.ridi.de">www.ridi.de</a>
Riegens	<a href="http://www.riegens.com">www.riegens.com</a>
RSL	<a href="http://www.rsl.de">www.rsl.de</a>
Schröder	<a href="http://www.schreder.com">www.schreder.com</a>
Siteco	<a href="http://www.siteco.de">www.siteco.de</a>
Solar	<a href="http://www.solar-elektro.de">www.solar-elektro.de</a>
Spittler	<a href="http://www.spittler.de">www.spittler.de</a>
Thorlux Lighting	<a href="http://www.thorlux.com/">http://www.thorlux.com/</a>
Thorn	<a href="http://www.thorn-lighting.com">www.thorn-lighting.com</a>
TOBIAS GRAU	<a href="http://www.tobias-grau.com">www.tobias-grau.com</a>
Trilux	<a href="http://www.trilux.de">www.trilux.de</a>
Vulkan	<a href="http://www.vulkan.eu">www.vulkan.eu</a>
Waldmann	<a href="http://www.waldmann.com">www.waldmann.com</a>
Whitecroft	<a href="http://www.whitecroftlighting.com">www.whitecroftlighting.com</a>
WILA	<a href="http://www.wila.com">www.wila.com</a>
Zumtobel	<a href="http://www.zumtobel.com">www.zumtobel.com</a>