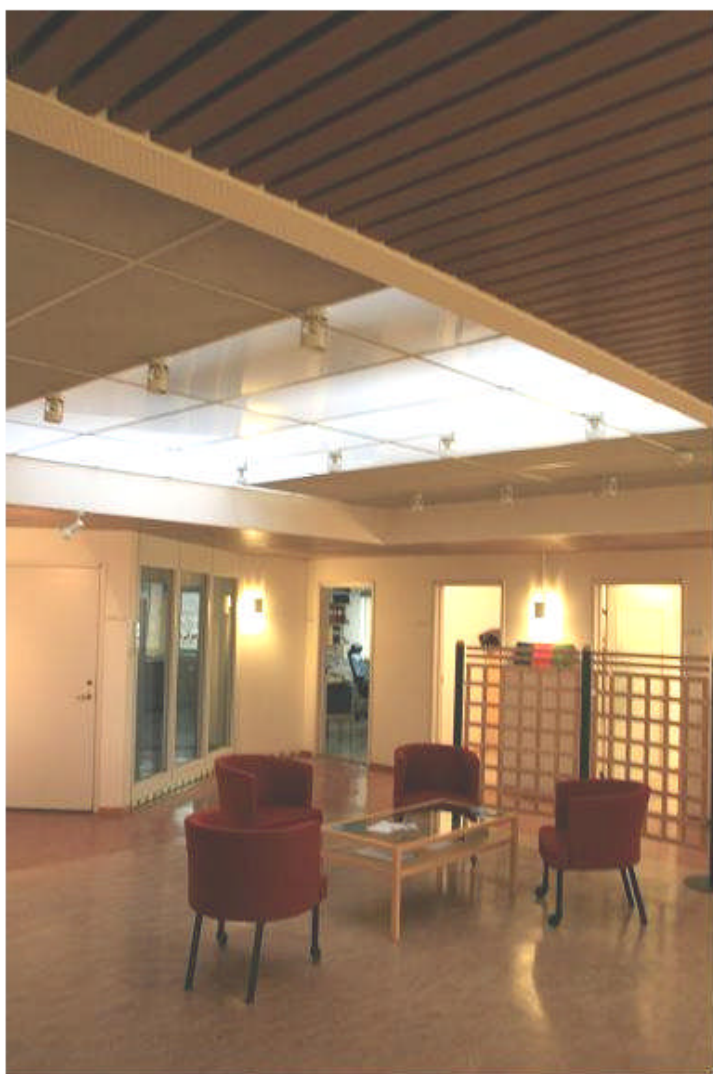


Project report: Enhanced daylight at Becker Acroma Kb



Address:
LDT AB
Box 200
SE-195 24 Märsta

Telephone:
+46 8 653 76 00
Web:
www.ldtab.com

Fax:
+46 8 645 30 00
E-mail:
ldtab@ldtab.com

Project report: Enhanced daylight at Becker Acroma Kb in Märsta, Sweden

Written By: Martin Behm, LDT AB

Interduction:

In April 2010 LDT AB received the task of enhancing daylight by the two domes in the roof of the office section. The reconstruction aim was to create a space where customers can view products in various colors, with quality lighting.

Becker Acroma

More than 100 years of developing and manufacturing innovative, high quality solutions and customized systems for the wood finishing industry. Becker Acroma is evolving; learning and sharing our skills and experience as we go, serving our customers on all European markets, as well as North America and the Far East. The world needs Becker Acroma to help our customers make their products beautiful, because all of our lives are enriched by the beauty that surrounds us: in nature, at home and at work.

More importantly, the world needs companies like Becker Acroma to invest in solutions that have a minimal impact on the environment. It also needs us to work with our customers to develop solutions at our laboratories and full-scale test painting facilities around the world and to shift our focus from solvents to UV technology and waterborne and combination systems. While helping our customers convert from solvent borne systems to environmentally compliant systems.

With this commitment comes a duty. Becker Acroma has a duty to succeed in business so that we exceed the expectations of customers, retailers and distributors, while encouraging and motivating our 1 000 employees around the world to perform to their full potential.

We are looking forward to the next 100 years of our evolution.



Starting point

The two daylight domes are placed with CC 2.5 m apart in 15-degree sloping concrete roof. One pit is hidden somewhat by a wall and therefore lose 0.2 m surface. The roof has a pit that rises above the roof and provides a shaft of about 0.65 m. From the concrete ceiling for the ceiling height is about 1,5 m and the ceiling light aperture is 4.3 m x 2.4 m. The domes are two layers of acrylic with inside dimensions of 1 m X 1 m. Next to the bright opening continues the roof and instead of opal acrylic sound-absorbing tiles. In this way created large areas where the light was lost. The height from floor to ceiling is 2.7 m.

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Box 200	Web:	E-mail:
SE-195 24 Märsta	www.ldtab.com	ldtab@ldtab.com

Before reconstruction we measured the light on three points, at the height and 2 m outside each side of the east-west direction. We measured at lunch with lux meters of hand model.

Date	Middle	East	West	Outside	Whether
26-04-2010	170 lux	60 lux	70 lux	60 000 lux	sun
29-04-2010	40 lux	30 lux	37 lux	8 800 lux	cloud

We calculate and use the value in the middle and outside, we get a sun factor 26/04 at 0.28% and a sun factor 29/04 at 0.45%.

Planning

LDT Projects all daylight installations with the intention to "carry the light so close to people and diffuse light there. All materials used are of the highest class, and reflect 95 to 99.5% of all light. Materials lifespan is between 15 - 25 years without reflection is affected.

Reconstruction

The shaft is mounted with plastic channel with SRF 1998 (Silver Reflective Film) and also the walls to the south and north. The film in the shaft is to carry down the light without reflecting the heat. The film on south and north sides reflect the light in the longitudinal direction of the atrium. SRF 98 also mounted in the ceiling between the two shafts.

The space between the roof and ceiling mount longitudinal channel plastic discs with WRF 95 (White Reflective Film). The white panels reflect light coming from shafts or short walls and "press" it into the atrium. The white walls reflect diffuse and therefore spreads the light.

The opal acrylic panels in the ceiling replaces for a light frosted acrylic with CLF (Circle Lens Film) mounted. Circular lenses, with dimensions 100 mm x 100 mm which is spreading out the light.

Results

The differences before and after was so clear that the measurements were not necessary. The staff stopped and expressed their liking. One wondered why we "reduced the light in other parts?" It was the increase in the contrast that created that impression. We measured the light in the same way as before and received following:

Datum	Middle	East	West	Outside	Whether
2010-04-30	960 lux	180 lux	170 lux	31 000 lux	Sun
2010-05-25	330 lux	136 lux	167 lux	12 500 lux	Cloud

We calculate and use the value in the middle and outside, we get a sun factor 30/04 at 3,09 % and a sun factor 25/05 at 2,64 %.

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The promised improvement was at +300% and we reached between 580-1100 %.

Other and environment

There are several reports that describe how much better we are as beings who feel and function in daylight. The Becker Acroma Kb has previously purchased Solar Film that is an environmentally friendly way to improve the working environment. All sun protection reduces not only solar radiation but also reduces the daylight. To enhancing the daylight from the ceiling makes electric lighting not needed to the same extent, but can also be reduced. An office building is due to the CO² impact of 42% (Source: 2006 DOE Building Energy Data Book) by lighting and solar heat through the windows to 32%.

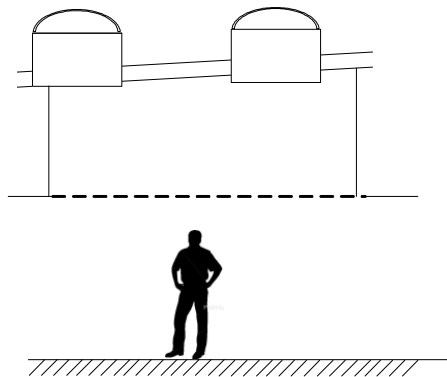
Becker Acroma Kb has chosen environmentally-friendly methods to improve the working environment.

Do you want more information please contact:

LDT AB

Martin Behm

Telephone: +46 70 5377600 e-mail: m.b@ldtab.com © LDT AB 2010



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LDT AB
Box 200
SE-195 24 Märsta

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