

- New solutions for noise absorption offshore

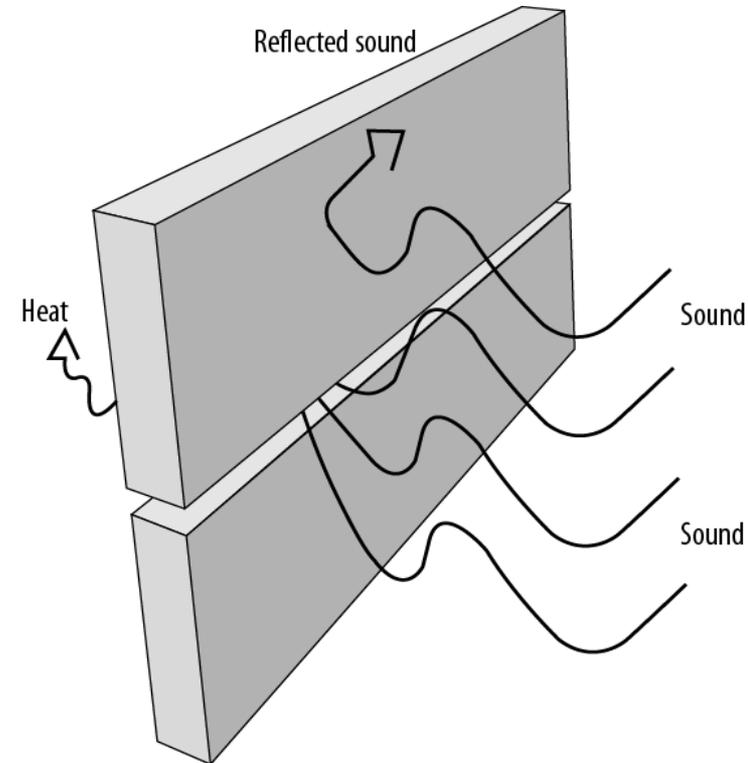


SEMINAR: NY TEKNOLOGI FOR Å BEDRE ARBEIDSMILJØET  
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## Business idea

- Deamp provide sound absorbing panels in 100% pure, hard materials (metal or plastic)
  - For architectural use
    - Transparent sound absorbers for atriums, glass facade walls, open office environments
    - Smooth, flat, seamless surfaces for clean design
    - Digitally printed , back-lit or combinations there of
  - Industrial use
    - Laboratories , clean rooms and food production facilities requiring non-particle emitting sound absorption
    - Offshore and industry for washable, durable sound absorbers with potential weight saving



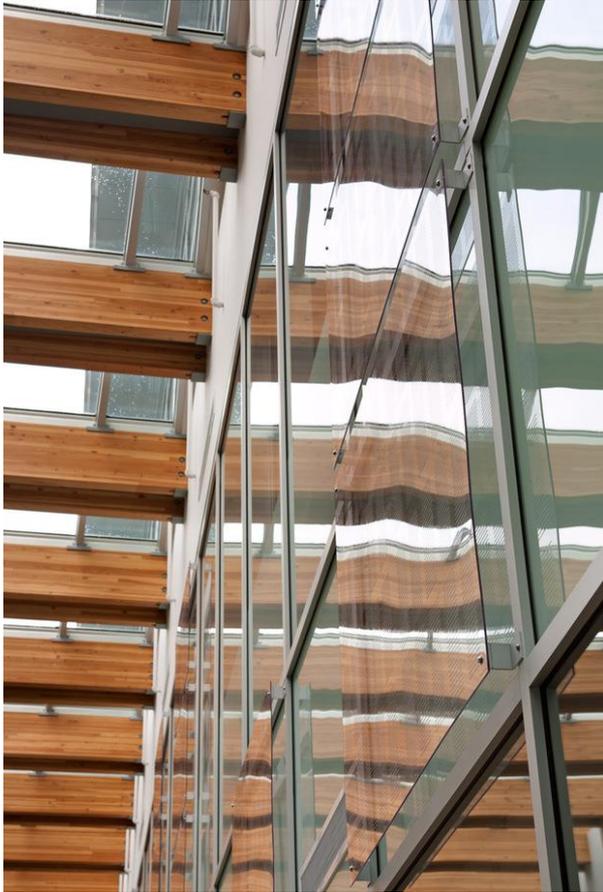
## ■ Example: plastic wall panels in meeting room



## ■ Regular architectural metal ceiling tiles



## ■ Transparent architectural panels



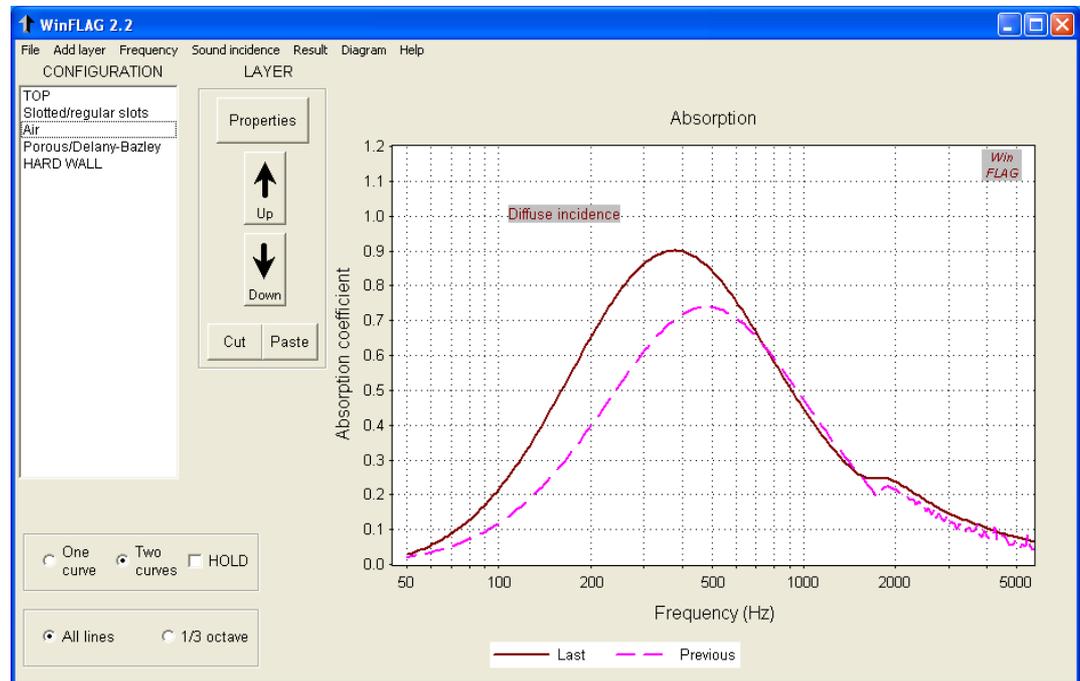
## ■ Deamp Technology

- Deamp panel utilise internationally patented micro slit perforations that absorb sound by letting small masses of air vibrate in the micro perforation openings. The air vibrates/resonates between the front and the back of the panel and the sound (moving air) loses energy due to friction and viscous losses in the turbulent air resonating in the slit.



# Technology – Software simulations

- Simulation of panel absorption coefficients depending on material type, slit patterns and air volume behind panels are matched to the project acoustician's noise report

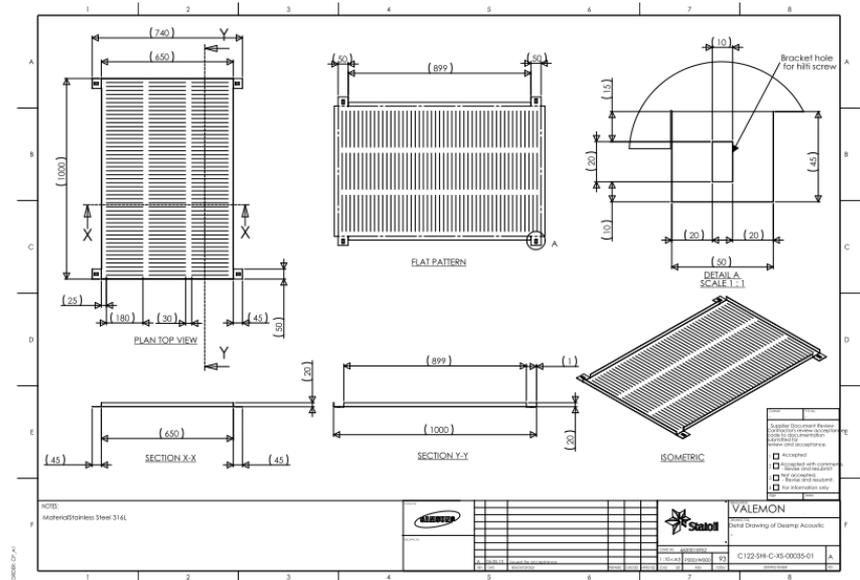
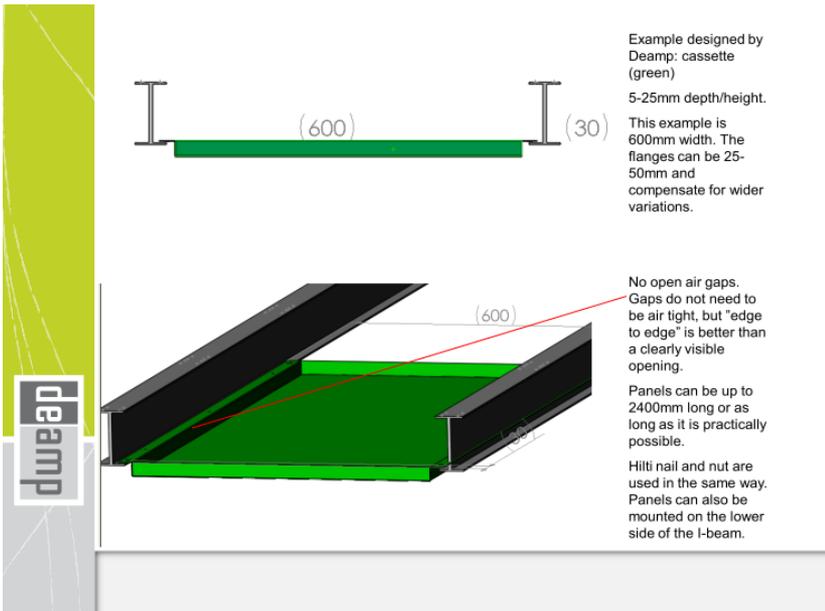


## ■ Panel specs Offshore

- Material: Stainless steel 316L or "Sjøvannsbestandig aluminium" AL 5082
- Weight excluding suspension system: Steel: 8-10kg/ m<sup>2</sup>, Alu; 3-5kg/m<sup>2</sup>, typical for 1mm sheet material
- Surface finish: Raw, brushed or coated
- Certifications: Achilles and Norsok
- Panel Dimensions: Customisable from 300x300mm to 600x2400mm, no "standard dimensions" as sheets are cut from larger raw panels.
- Suspension systems provided in pre drilled profiles, use of existing profiles on ceilings or walls or use of existing systems like UNO from Øglend system.
- Panels delivered separately or sub-assembled on frames for time saving installation.

# Documentation and delivery

- Deamp provides brainstorming and ideas for projects based on the acoustician's noise report and floor plans for free areas to install sound absorbers.
- Products and documentation to Norsok and Achilles standards



## Completed projects

### REFERENCE LIST PER AUG 16<sup>TH</sup> 2015 FOR DEAMP AS ACOUSTIC METAL PANELS FOR OFFSHORE NORSOK STANDARD DELIVERIES

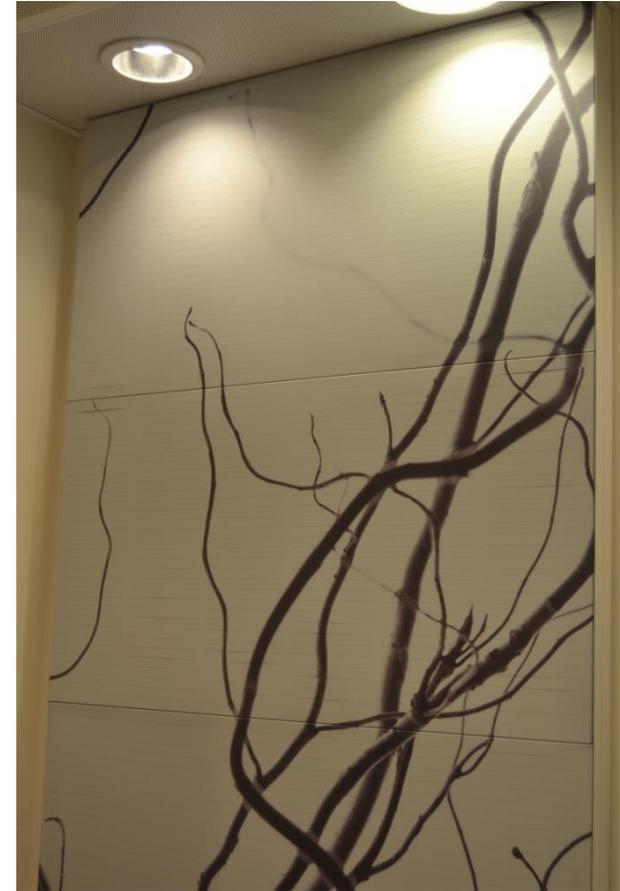
PLATFORM	QUANTIY	NAME OF COMPANY	COUNTRY	YEAR
GJØA LQ	42	APPLY LEIRVIK	NORWAY	2009
SLEIPNER A	308	FABRICOM	NORWAY	2013
VALEMON	156	SAMSUNG HEAVY IND.	SOUTH KOREA	2013
E. GRIEG	70	KVÆRNER STORD	NORWAY	2014
GULLFAKS	1 134	BEERENBERG	NORWAY	2015
N/A	85	ASTRUP TOOLS	NORWAY	2015

Living Quarters (acoustic + decorative): GjØa & E. Grieg

Process areas: Sleipner , Valemon & Gullfaks

## Decorative noise absorbing panels - offshore

- Typically coated and/or digitally printed after interior architect's plans



## ■ Deamp panels in process areas in & outdoor

- Typically untreated



## ■ Feedback from Lifetec – noise & vibration

- Project: Valemon –
  - Acoustic consultant – Mike Newman of Lifetec
- AS reports:
- The panels provided adequate acoustic absorption
  - Corrosion challenges with fixing points forced client to remove some panels in the wellhead (brønnhodet) as a safety precaution
  - Panels were delivered in Stainless Steel 316L + vibration damping and corrosion preventing teflon tapes in fixing points. Hilti screws seem to have corroded too fast.
  - Choosing Deamp saved significant weight

## ■ Deamp's experience so far

- High paced projects, short deadlines, but very good team work to get products and documentation delivered on time
- Often complex installation areas in tight space. This leads to design of small panels to make sure they can be installed between/behind piping and cable trays.
- Acousticians have often left the project operationally (fully or temporarily) at the point we are included in the project.
- We work to modularise and re-use designs for fast deliveries and short project lead times. Delivery times in production are down to 2 weeks at design freeze.

## Customer benefit

- Washable sound absorbers
- No moisture restrictions
- Expecting significantly longer product life than plastic covered mineral wool containing products
- Significant weight saving
- Modular and flexible in design



## Questions and feedback

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