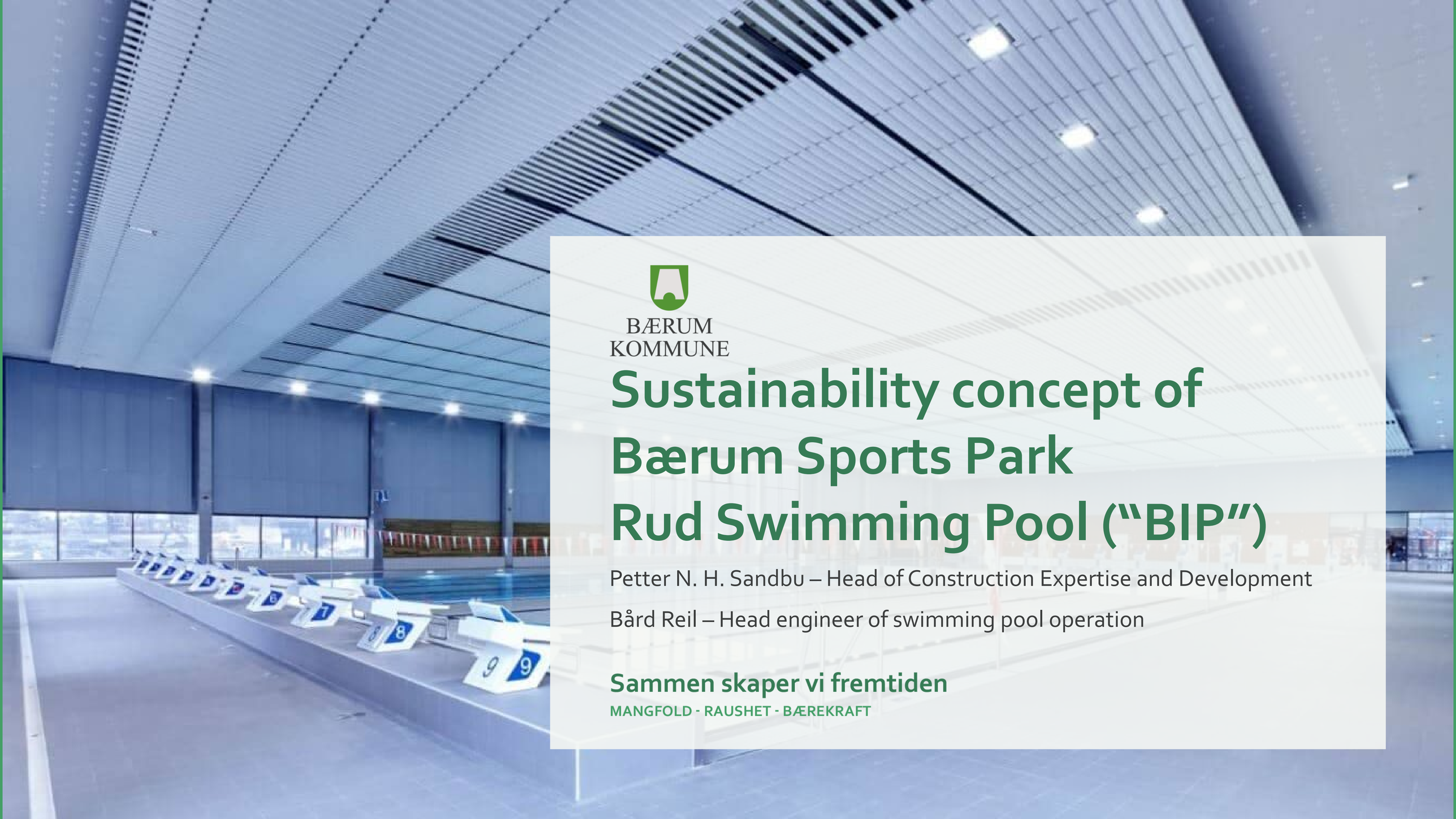


BÆRUM
KOMMUNE

Sustainability concept of Bærum Sports Park Rud Swimming Pool ("BIP")

Petter N. H. Sandbu – Head of Construction Expertise and Development

Bård Reil – Head engineer of swimming pool operation

Sammen skaper vi fremtiden

MANGFOLD - RAUSHET - BÆREKRAFT

Petter N. Haug Sandbu

- Educated in electro engineering, strategy and management
- Working in Bærum municipality, property division (Bærum kommune Eiendom) as department director of Construction Expertise and Development
- Been working in Bærum municipality for 4 ½ years
- Former experience from international companies, national contractors and organizations
- Working in national and international research projects and standardization work

Bærum municipality Sustainability strategy

- **2027** – Fornebu area is established as a zero emission neighbourhood
- **2030** – Direct greenhouse gas emissions is reduced by 65 % with base 2009
- **2030** – Bærum has reduced indirect greenhouse gas emissions and contributed to long-term carbon storage in natural areas
- **2030** – Bærum is established as a pioneering municipality within circular economy
- **2050** – Bærum is a low-emission society

Property development

- Political interest in property
- Clear link between our sustainability strategy and our property business
- Working in different research and development projects
- Cooperation with the Norwegian University of Science and Technology (NTNU)
- Research at Rud swimming pool

Rud swimming pool

- **Located in Bærum sports park on Rud**
- **Area of 6114 m²**
- **Training pool of 50 x 25 m**
  - 27-28 °C
  - Partial raised/lowered bottom
  - Obstacle course possibilities in training pool: Wibit
- **Wellness pool of 12,5 x 9,5 m**
  - 32-34 °C
  - Raise/lower bottom in the therapy/training pool
- **Eight changing rooms, two of which have a sauna**
- **Swim shop and café**
- **Norway's first BREEAM-certified swimming facility**

  (documented environmental performance)

BÆRUM KOMMUNE

Sustainability goals and requirements for Rud Swimming pool

Goals:

- 35 % lower greenhouse gas emission compared to a reference building
- Energy efficient building and technical systems
- Certified Breeam Very Good
- High quality cleaning facilities for air and water for a healthy user environment and robust system

Bård Reil

30 + years in the pool business

- Worked inn Bærum since 2016 – operator of public pools/facilities
  - Mission in Bærum has been to contribute to renovate/modernize/maintenance our 13 pools` cleaning facilities
- Experience as:
  - Entrepreneur attempting to introduce a chlorine-free alternative using Hydrogen Peroxide and Chlorine Dioxide, but also performing service, renovating, calculating/designing/building public and private cleaning facilities in Scandinavia
  - Service Manger in one of Norway's largest pool companies

Role at BIP (Bærum Sportspark swimming pool)

- Responsible for deciding specifications and the technical designing elements of the water cleansing
- Builder’s representative during construction and the trial run
- Contact point towards the scientific environment we’ve been cooperating with since 2016

High quality cleaning facilities for air and water for a healthy user environment and robust system

- No «green washing»
- A life expectancy of the cleaning facilities` frameworks of up to 50 years
- Build facilities in such a way that the water quality will meet new demands that may come from Brussel (EU) in its` life span.
  - This should be reached with as low energy, chemicals and fresh water consumption when in operation, as possible
- New regulations are coming; focus on the disinfectant byproducts such as Trihalomethane and Chloramines
- At the moment, we are operating according to German official standards
- Continue to cooperate with the scientific community for common benefits

The project started out with involvement of operations staff in the planning

- Highly competent operations organisation
- Technical adviser willing to listen and learn from operation technicians
- Willingness from the politicians to spend money on long lasting technic with high operation quality and healthy environment for the swimmers, not only visible solutions

Technical solutions

- Low pressure sand filters
- Pressure-less backwash
- Load Control
- Filter media – Glass vs. Sand
- Additional cleansing

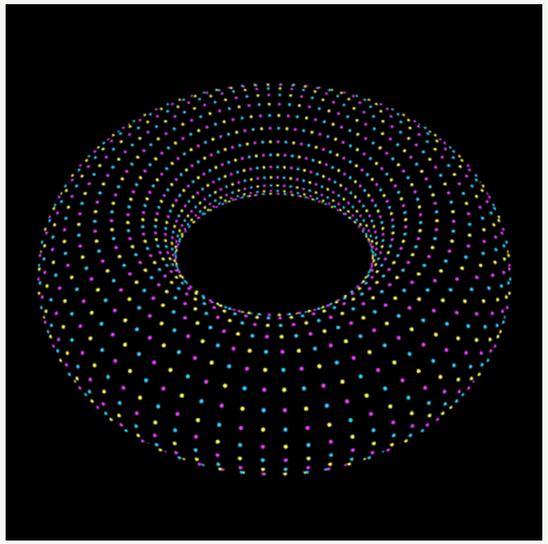
Low pressure sand filters

- Excess capacity
  - Big pool - 600 m^3/h
  - Small pool - 250 m^3/h

- Very low filter velocity; maximum 20 m/h
  - When load controlled: 13-15 m/h

Pressureless backwash

- Avoiding inward rotating Torus of dirt along the edge of the outgoing funnel above the filter bed



Load Control

- Low frequency, permanent magnet pumps controlled by frequency converters, thereby able to load control the energy of the pumps, the content of free chlorine and the UV aggregates according to the oxidation potential

Filter media – Glass vs. sand

- AFM filter media – electrically charged surface of recycled glass; never change/discard, just refill a few kilos every year.
- Less flocculant due to the electrical surface charge of the glass grains, which is opposite to the charge of the contaminations in the pool water.

Additional cleansing

- Medium pressure UVs – 254 nm wavelength
- Actuated carbon filters with «CarboTech DGK»

- When using the correct carbon medium in accordance with the right amount of a good flocculant for the sand(glass-)filters, we hope to reduce the frequency of changing the carbon medium from every year to every 5. year.