Glass beads as filter material in the swimming pool

„Nothing better could have happened to us“ Franz Altmeyer, Heidebad Schmelz

The Heidebad in Schmelz is one of the largest open-air swimming pools in the region. In addition to a 50-metre competition size pool (category C), there is a non-swimmer's pool with a 90-metre slide and a small slide, a diving pool with 1 m and 3 m jumping boards and 3 m and 5 m diving towers. A large paddling pool with a small playground rounds off the facilities. The place is very popular and what it has got to offer is well received. On busy days, the facility attracts up to 2,500 visitors. The non-swimmers' pool with its two slides is the ultimate crowd puller.

Technology

Opened in 1970, the Heidebad in the municipality of Schmelz is going to celebrate a milestone anniversary next year. 50 years have been a very long time and the maintenance and renewal of equipment and facilities are essential line items on Franz Altmeyer's work agenda. In particular, the treatment of the swimming and bathing pool water is an important part of warranting for visitors' unspoiled bathing pleasure. In addition to the temperature control carried out in an environmentally friendly and efficient manner by means of a 700 m² area of solar collectors, the so-called absorbers, the filter systems of the individual water circuits conduct heavy-duty jobs. A total of 6 filter tanks ensure clear water by filtering out solid and suspended matter.

Filter Revision

The water circulation of the non-swimmer pool amounts to 2,100,000 litres of water (2,100 m³). This corresponds to 17,100 bathtubs, each filled with 120 litres. In spring 2018, the two filters of the non-swimmer pool were due for refurbishment. Each of the two filter tanks has a diameter of 2,400 mm, a filter surface area of 4.52 m² and is and is filled with around 8,000 kg of filter material. A frequency-controlled circulation pump with a hydraulic capacity of 450 m³/h transports the water via a 220 m long pipeline from the basin to the two filters and the cleaned water back to the basin. The circulating pump is also used for backwashing, i.e. the circulation pump provides the required water available for cleaning the filter material after a certain filter running time.

Technical Room with Filter Systems

The Filter Material

Sand and gravel are usually used as filter material, as well as a layer of granular activated carbon or lignite coke (filter carbon H), if required. The latter two materials are also called adsorbers. Upon a proposition by Franz Altmeyer, the municipality of Schmelz decided to use a comparatively new filter material for the filter refurbishment. As an alternative to conventional sand and gravel materials, glass beads have advantageous material properties.

Glass Beads as Filter Material

The Advantages

Due to the circumstances, the two filters of the non-swimmer pool can only be backwashed at a rate of ca. 140 m³/h. This corresponds to a flushing speed of 30 m/h. At high load, i.e. on a hot summer day with many bathers, the filters had to be „backwashed“ twice a day before the refurbishment. The duration of the backwashing cycle with water was 15 minutes. Since the revision of the filters in April 2018 and the use of glass beads as filter material, the extent of backwashing could be reduced by 65 %. Consequently, more than 13,000 m³ of fresh and waste water can be saved per season.

After the centennial hot summer in 2018 and a hot spell with temperatures of over 40 °C in the past 2019 season, the glass beads at Heidebad Schmelz have successfully passed their crucial test.

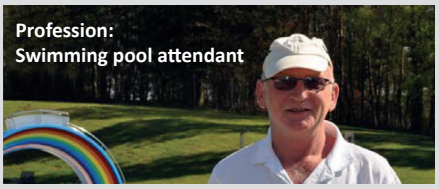
In addition to the savings in water use, savings are also achieved in terms of energy and disinfectants. The staff effort required to carry out and monitor backwashing has been noticeably reduced. This has also convinced the veteran expert Franz Altmeyer. After initial scepticism in the planning phase; „hopefully it will work out the way we imagined“; and after the successfully completed second „glass bead“ season, Mr. Altmeyer concludes the on-site meeting with a positive résumé; „I am of the opinion that nothing better could have happened to us.“

Backwash (BW) /	sand / gravel	glass beads
Number of BWs / Day	2	1
Number of BWs / Week	14	7
Number of BWs / Year	280	140
Duration per BW in min.	15	10
BW duration/year in min.	4.200	1.400
BW duration/year in h	70	23

Comparison of Backwash Sand/Gravel to Glass Beads

	Sable / Gravier	Billes de verre
Duration of BW times with 2 filters per year in comparison in h	140	46
Decrease/reduction of BW times per season in h	94	
Water requirement BW m³	140	
Savings fresh water, waste water per season in m³	13.160	

Water Saving per Season



Franz Altmeyer is a veteran expert of the swimming pool industry. He started his apprenticeship with the city of Dillingen on July 1, 1974 and completed it in January 1977 as an assistant swimming pool supervisor.

During his thirteen years with the city of Saarlouis, he not only trained as an instructor but also attended the master school to become a certified swimming pool supervisor. He successfully completed his training and was certified in March 1982.

In 1993 he moved to the Heidebad in the municipality of Schmelz. Since the retirement of his predecessor in 1998, Mr Altmeyer has been in charge of the facility operation.

For more information on glass bead filter materials, please contact:

Picture centre (right): non-swimmers' pool, slide landing pool