

= Gjøvik Olympic Cavern Hall =

Gjøvik Olympic Cavern Hall (Norwegian : Gjøvik Olympiske Fjellhall or Fjellhallen) is an ice hockey rink located within a mountain hall in Gjøvik , Norway . With a capacity for 5 @, @ 500 spectators , the hall also features a 25 @- @ meter swimming pool and telecommunications installations . Opened in 1993 and costing 134 @. @ 6 million Norwegian krone (NOK) , it was built for the 1994 Winter Olympics , where it hosted 16 ice hockey matches . It is the home of Gjøvik Hockey , has hosted the 1995 World Short Track Speed Skating Championships and is also used as an event venue . The structure is the world 's largest cavern hall for public use .

= = Construction = =

Because half the country 's surface consists of exposed rock , Norway has a tradition of building mountain cavern halls for many purposes , from tunnels via power plants to sport centers . These often double up as bomb shelters . Gjøvik Municipality opened Norway 's first underground swimming pool in 1974 . The idea to build an underground ice rink came from Consulting Engineer Jan A. Rygh while having dinner with Municipal Engineer Helge Simenstad in 1988 , after the latter said that Gjøvik had been awarded an ice rink for the Olympics . The first drafts were made on a napkin in the restaurant . An alternative proposal for a conventional rink was also made . Among the advantage of a cavern hall was that it would not take up valuable downtown property space or interfere with the town 's cityscape , yet it would be centrally located which would reduce travel costs , and there would be a stable year @- @ round natural temperature which would reduce cooling costs .

A budget was prepared by the Lillehammer Olympic Organizing Committee (LOOC) in December 1989 , and in April 1990 , the Parliament of Norway passed a grant . In October , LOOC and Gjøvik Municipality made an agreement to share the ownership of the venue . The municipal council took the decision to build underground on 24 January 1991 and the main planning was contracted to Fortifikasjon . Main architects were Moe ? Levorsen . A research group was created , which had four main tasks : ventilation , energy , fire and safety ; the environment ; rock mechanism and geology ; and laws and regulations . The group also made marketing information to promote Norwegian underground technology internationally . In preparation for construction , drilling samples were taken and sent to SINTEF and the Norwegian Geotechnical Institute for testing . The rock is 800 to 1 @, @ 100 million year @- @ old gneiss which is well suited for creating caverns . Computer models were created , and estimates were based on the Q @- @ method .

Construction started on 1 April 1991 . Several points of attack were created to get the most rational work @- @ load . The first tunnel was created 10 meters (33 ft) below the level of the roof of the cavern . First the roof was blasted , then work started downwards . The first eight months were used for excavation , and 140 @, @ 000 cubic meters (4 @, @ 900 @, @ 000 cu ft) of rock in 29 @, @ 000 truckloads were removed . 170 tonnes (170 long tons ; 190 short tons) of dynamite were used during blasting . The mass was used to build a new marina , a lake @- @ side promenade and a parking facility . Throughout construction , surveillance was made continually of the rock , and the crown of the roof was measured to have settled 8 to 10 millimeters (0 @. @ 31 to 0 @. @ 39 in) , which was as expected . Safety planning was done in cooperation with the National Office of Building Technology and Administration , and included the use of unflammable materials , creation of sufficient fire exits .

The hall cost NOK 134 @. @ 6 million , of which NOK 88 @. @ 5 million was grants from the government . The hall opened on 6 May 1993 , with a show televised on national television and with 5 @, @ 000 guests . It was the 29th indoor ice hockey rink in Norway , and the world 's largest cavern hall for public use . At the time of opening , the venue was estimated to incur an operating cost of NOK 3 to 4 four million , and an operating deficit of NOK 1 @. @ 7 million . To finance this , the state established a fund similar to other Olympic venues , but the fund only received NOK 1 million , and the rest of the operating costs would have to be taken by the municipality . The venue is owned through Gjøvik Olympiske Anlegg , originally owned 70 % by Gjøvik Municipality and 30 %

by Lillehammer Olympiapark , but later taken entirely over by the municipality .

= = Facilities = =

The facility is located just west of the town center of Gjøvik , with the main hall 120 meters (390 ft) into the mountain . It is covered by 25 to 55 meters (82 to 180 ft) of bedrock . In addition to a main hall , there is a swimming pool , a cafeteria and a telecommunications facility operated by Telenor . The main hall is designed as a multi @-@ use venue , and can feature indoor football , handball , basketball , volleyball , rifling and tennis , as well as concerts , dining and events .

The gross area of the complex is 14 @,@ 910 square meters (160 @,@ 500 sq ft) , while the net area is 10 @,@ 010 square meters (107 @,@ 700 sq ft) . The stadium covers 1 @,@ 965 square meters (21 @,@ 150 sq ft) , the public areas cover 2 @,@ 224 square meters (23 @,@ 940 sq ft) , the media center covers 2 @,@ 110 square meters (22 @,@ 700 sq ft) , the participant facilities cover 263 square meters (2 @,@ 830 sq ft) , the administrative and VIP facilities cover 577 square meters (6 @,@ 210 sq ft) , and the operations , management , technical , electrical and storage facilities cover 2 @,@ 253 square meters (24 @,@ 250 sq ft) . The main hall cavern has is 61 meters (200 ft) wide , 91 meters (299 ft) long and 25 meters (82 ft) high . Seating capacity for the ice rink is 5 @,@ 800 , although it was 5 @,@ 300 during the Olympics . The grandstands have a safety area under them ; in case of a fire , spectators can be evacuated to these areas where they would remain until evacuation is safe . The hall duplicates as a civil defense facility , and is designed to withstand nuclear , conventional and gas attacks .

The Olympic venues were designed to reflect Norwegian culture and character . The hall was designed to play on Scandinavian folklore , such as the Hall of the Mountain King in Henrik Ibsen 's Peer Gynt and the caves of fairy @-@ tale trolls . This has for instance been emulated through the use of shotcrete on the walls to give a dark and mysterious impression . Lighting is used to create high contrast , such as from the entrance which is dark with pools of light , to the main hall which is brightly lit , to emphasize its size . The dark entrance is also used to adjust the spectators ' eyes so the main hall seems brighter . A contrast has also been used between the grandstands ' slender lines and the coarse finish of the cavern rock . Red was chosen as the hall 's main color because of natural occurrence of red in the rock . Glass tiles are used as they give associations to ice . Ventilation , energy and other installations use shine metal , representing silver embedded in the rock . The main hall is designed as an amphitheater with close contact between spectators and athletes .

= = Events = =

Since the opening , the venue has hosted Gjøvik Hockey , which started in 1993 in the Fourth Division . During the 1994 Winter Olympics , Gjøvik Olympic Cavern Hall hosted 16 ice hockey matches between 12 and 26 February , including two quarter @-@ finals and one semi @-@ final . The remaining matches were played at the larger Håkons Hall in Lillehammer . In March 1995 , the operator announced that the ice would remain throughout the year . Because of the natural cooling of the mountain , the operator saved 1 @,@ 000 kilowatts in heating costs by reusing the cooling system to heat the rest of the cavern hall . On 4 April 1995 , the venue was used to host an international match between Norway and Sweden .

Originally the 1995 World Short Track Speed Skating Championships was planned to take place at Hamar Olympic Amphitheatre in Hamar , the same venue which hosted short track speed skating at the 1994 Winter Olympics . However , because Storhamar was at scheduled time playing play @-@ offs in the Norwegian Ice Hockey Championship , it was in December 1994 decided to move the tournament to Gjøvik . The championship opened on Friday 17 March with the 1500 meter races , and was followed by the 500 meter races the following day . The remaining events were held on 19 March . It is the only time the world championship has been held in Norway . There were set six world records during the championship . Chae Ji @-@ Hoon 's time 4 : 56 @.@ 29 in the men 's 3000 meter and Chun Lee @-@ Kyung at 5 : 02 @.@ 18 in the women 's 3000 meter . Kim Yun

@-@ Mi set the record on the women 's 500 meter at 45 @.@ 33 in an introductory race , while Frederic Blackburn set a world record at 2 : 19 @.@ 71 in the semi @-@ final of the 1500 meter . Both the relay teams also set world records : Canada with the men 's record at 7 : 09 @.@ 76 and the China with the women 's at 4 : 26 @.@ 68 . The hall was one of seven venues used during the group state of the 1999 World Women 's Handball Championship . Lillehammer is scheduled to host the 2016 Winter Youth Olympics and Gjøvik is set to host short track speed skating .