



Arne Van Amerongen describes the construction work on a golf course he worked on in Germany.

Only top quality will survive

As we all know there are many ways of constructing a golf green some better than others! I have recent experience of construction in Germany will describe a project in Germany, so you can get a feel for how they went about it.

First the architect indicates the location of the green and its middle point, as well as the shape of the green and its contours, including height levels. The architect makes drawings of the surroundings, but these are only rough – the details of the surroundings are left up to the construction manager and machine operator. With these drawings and good personal communication with the architect, the construction manager and his team can start constructing the green.

The ideas conceived in the drawing room by the architect take shape when the caterpillar begins making the form and contours of the green. On the staff level this will give a finishing height of +20/-20 cm to the subgrade.

The machine operator checks the size and height levels of the green. He only works with four reference points taken from the centre of the green, i.e. 0°, 90°, 180°, and 270°.

When the final height levels and contours are reached, the machine operator starts rolling with the caterpillar and motorised vibrating six tonne roller to compact the subgrade.

The construction manager sets out eight points from the middle of the green. The points are on the edge of the green and are 45° apart. They are used to measure the length from the middle of the green to each point.

A good architect will visit the golf course at least twice a week for inspections, if necessary to make alterations and have a meeting with the staff and investors.

Then the machine operator can work towards the finishing height and contours of the green. Each operator has a drawing of the green size, contours and height levels. The soil is taken off, and goes into the surrounds. When the green has its final shape, the same machine will start working on the green drainage. By turning the bucket on an angle of 45°, it will make a trench for the drains with sloping sides.

A disadvantage of the sloping instead of steep sides is, that you need more back fill materials for



the drains. An advantage of the slope is, that the side of the trench is more stable, so it will not collapse and will find less disruption from water movement. The drains are four metres apart. The drain in the middle of the green is 100 mm. The lateral drains are 60 mm in diameter, and both are perforated. Only the drain that goes into the outlet is not perforated.

There is also a drain around the green. This drain is needed because of the slope on the left handside of the green, so the water movement will not disturb or damage the green's surface.

On top of the subgrade they build the intermediate layer, consisting of the same material they used for filling up the drain. The uncompacted height of this layer is 170mm, compacted it is 150mm. This material will be brought by lorries with 10 m³ each. This means that they need 10 lorries, giving ca. 100 m³ material on 600 m² green surface. The digger will spread the material on top of the subgrade. Two men make sure that the uncompacted depth of the intermediate layer is no more or less than 170 mm. when this is finished five men can start levelling the uneven pans. After this the surface is rolled three times and raked in three different directions

At this stage the irrigation company should have installed the irrigation pipes around the green with connection points for the sprinklers ready, or should be just in finishing stage. Unfortunately this is not always the case. In general, there are still surfaces being seeded and the irrigation system is still not working, which is a

nightmare in summer.

At this stage they have pure sand, so they are bringing organic material, which comes from the moor land and is dried in plastic bags of 25 kg, into the surface. They start rotavating the green.

The rotavator goes in two different directions, also taking a little bit of the surrounds, so they get a nice finishing touch. After this the green is rolled and raked in three different directions.

They do not use a pre-seeder. This is left up to the greenkeeper, and in my opinion there is no need for it, because I have seen grass species on sand greens, like brown top bent and fescues that still look healthy after six weeks and longer. There is no inefficiency of nutrients. After the second cut the greenkeeper will apply fertiliser on the green. I have seen bent and fescue grass species on sand based greens in winter time on a height of 15 mm with no feed at all. They looked excellent. It is a different matter if the green is under playing conditions and stress.

Then they start seeding the green with a motorised hand-seeder, called Semedner, in three different directions. Usually they use a traditional 80-20 grass seed mixture: 40% Festuca Rubra Litoralis (Barcrown) 20% Festuca Rubra Commutata (Center) 20% Festuca Rubra Commutata (Lifalla) 10% Agrostis Tenuis (Bardot) 10% Agrostis Tenuis (Egmont)

After the third seeding, the final light raking and rolling will be done

After 10-12 days the grass seed starts to germinate. In this case they had to irrigate the green

three to four times a day, for three to five minutes, just to moisturise the surface because of the hot weather conditions. Six to seven weeks later they do the first cut and collect the clippings.

The company is responsible for two cuts and then the greenkeeper will take over.

The greenkeeper starts maintaining the greens. The job of the construction company is done, construction wise. The cost of each green amounts to £2,000.

In my opinion, it is still important that investors hire qualified and experienced staff. Unfortunately we still see golf courses constructed and then there is almost no money left for machinery or staff to maintain the golf course. My advice is: Do not build a golf course if you cannot maintain it properly afterwards. People will ask why are you saying this. I believe that poor quality will only survive in the short term. Raising up the standards and quality will win in the long term.

My job in this project was to oversee the construction. I was hired as an independent consultant by this golf club. I was not able to use the specifications I wanted as the specification are provided by a government organisation. Personally I feel, these German set guidelines need to be changed more towards USGA specification. The sooner the better.

■ Arne van Amerongen is now based at Hotel Die Wutzschliefe where he is involved in the construction of a new 18 hole course. He would be happy to provide more detailed specifications the of the course described in the article if required.