Campagne & Manoir engineered wood flooring

fitted over underfloor heating

Engineered 2 layers 15/4mm
Engineered 2 layers 20/6mm

Underfloor Heating System

The following are the basic steps when you are considering choosing UFH with a wooden floor . Wooden flooring is the best material and choice for UFH as it is natural, warm to the touch (not like stone) and environmentally friendly as it is a renewable source that helps the environment and reduces global warming. You should get a certificate from the company that fitted the UFH system to ensure that it is fully operational with controlled temperatures so that the surface temperature does not exceed 28 degrees centigrade. The only way to control the surface temperature of the screed is with flow control vales and not thermostats.

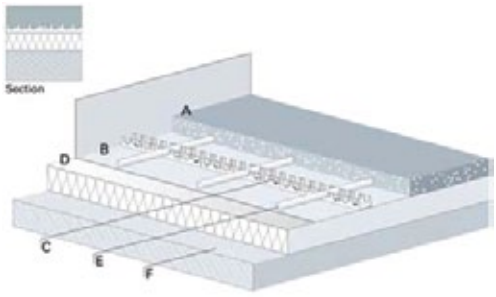
- If no certification is available from the installer. Before the floor is fitted the under floor heating system should be calibrated back to the boiler to ensure the surface temperatures of the sub floor is correct.
- If there is no certification it may well invalidate any guarantees that apply to the wooden flooring and you should look at UFH problems.

Choice of System

Your choice of a UFH system will depend on your current sub floors , height restrictions and what you want the system to do for you. Electric carbon film and mat systems are acceptable for background heat and many are now getting more effective but hot water system are gener-ally more efficient and when you glue a wooden floor directly to the heated screed you get the best floor with the warmest touch.

There are a large number of systems available but we always advise to choose carefully and ensure that whoever fits the system is qualified and follows the manufactures requirements and advice. A lot of hot water systems do not control the boiler temperature properly which can lead to hot spots and other issue affecting whatever you lay on the floor . A typical boiler will heat water to about 82 degrees which is much too hot for pipes in an underfloor heating system. The surface temperature of the screed for wood flooring must never exceed 27 degrees centigrade.

Water based System



A	Screed
B	Vapour Barrier
C	Pipe-Rail
D	Insulation
E	Uunder˝oor Hea ting Pipe
F	Oversite Slab

Choice of Wooden Floor

Engineered floors must be dried down to at least 9% moisture content.
Engineered Wooden Floors Manoir and Campagne are a perfect match with UFH. This construction is specially designed to permit an optimal work of UFH. The thickness of 15mm or 20 mm allow to reduce the thermetical resistance of the flooring and improve the perfor-mances of the UFH by reducing the latency and consumption of the system.

Construction of the engineered 2 layers 15mm

Hardwood Top Layer
4mm thick oak veneer which gives the flook and feel of a real sold wood floor

Sofwood Core
11mm thick core made of specially cut lattices of softwood so as to obtain an elongated position of the annual ring, whereby the additional stability of the parquet is obtained.

Campagne & Manoir engineered wood flooring

fitted over underfloor heating

Engineered 2 layers 15/4mm
Engineered 2 layers 20/6mm

Underfloor Heating System

Technical data of the engineered wood flooring

Engineered MEDIUM & XL

Engineered15mm	Description	Technical datas	
 140 - 180 - 220 15/4 mm	Thickness: 15mm (4 mm of oak / engineered birch 11mm) Delivered in 3 mixed widht: 140mm - 180mm - 220mm Lenght: 1800mm to 2700mm Rutstic A/B/C (opened filled out knots) Chêne certifié PEFC	Thickness Bulk density (kg/m3) Emission of formaldehyde Reaction to fire Heat resistance Puncture resistance Biological sustainability Humidity	15mm > 500 kg/m³ < E1 (très faibles émissions) Dfl-s1 (Euroclasse M3) < 0,11 m². K/W 3,32 N/mm² (dureté Brinell) Classe 1 9 % (+/-1)

Engineered 20mm	Description	Technical datas	
 140 - 180 - 220 - 260 _ 300 20/6 mm	Thickness: 20mm (6 mm of oak / engineered birch 14mm) Delivered in 3 mixed widht : MEDIUM : 140mm - 180mm - 220mm XL : 220mm - 260mm - 300mm Lenght: 2000mm to 3000mm Rustic A/B/C (opened filled out knots) Chêne certifié PEFC	Thickness Bulk density (kg/m3) Emission of formaldehyde Reaction to fire Heat resistance Puncture resistance Biological sustainability Humidity	20mm > 500 kg/m³ < E1 (très faibles émissions) Dfl-s1 (Euroclasse M3) < 0,14 m². K/W 3,32 N/mm² (dureté Brinell) Classe 1 9 % (+/-1)

Concrete and Anhydrite Screeds

There's been much discussion amongst floooring contractors in recent months about the thorny subject of anhydrite screeds. Many installa-tions are failing, seemingly because of the highly specifc requirements needed to ensure success. So much so, that the Contract Flooring Association has published a technical paper on the generic installation of ˜oor coverings onto these calcium sulfate-based screeds. Anhy-drite screeds are a mixture of screeding sand and binder and are more porous than concrete screeds; these should NOT therefore be sealed with a DPM (damp proof membrane based on epoxy resin) before installing wood flooring because as Anhydrite screeds are gypsum based any moisture kept in the screed will break down its structure. We always prefer clients to have a concrete screed which should be kept as thins as possible say 35mm to 40mm if you have to go to 70mm due to building regulations or site conditions then the drying time will be considerably longer. General cement and Anhydrite screeds dry out at the rate of 1mm per day. If you have any sand and cement type screed you should always seal the surface with a damp proof membrane (DPM) such as the Bona R580 or Bona R410 this membrane will allow you to glue the floor directly to the screed using the Bona R850. It protects the screed against moisture penetration from the surface, and prevents any potential long term problems.

Sub Floors and Joists

All sub floors must be prepared in accordance with normal sub floor preparation procedures and accepted tolerances within the flooring industry ideally SR1. Install BONA R580 trowel-on two part membrane, or paint on one coat of Bona R410 moisture barrier over the screed to ensure that no problems occur in the future and follow the instructions for application and drying times.

Before fitting the wood flooring, particular attention must be paid to ensure that:

- Moisture content of timber floors must not exceed 10%
- The moisture content of the concrete screed must not be higher than 1.8 %
- Evenness – maximum tolerance of 3mm per linear metre where the maximum deviation in flatness in any direction is 3mm under a 3 metre straight edge.
- Load capacity – The sub floor has t o be a closed and self–supporting surface
- Cleanliness – the sub floor needs t o be in a clean and vacuumed condition
- Any plywood or Chipboard sub floor must be high quality and also sealed.

Campagne & Manoir engineered wood flooring

fitted over underfloor heating

Engineered 2 layers 15/4mm
Engineered 2 layers 20/6mm

Underfloor Heating System

Installation of Underfloor Heating

This should be left to qualified installers recommended by the manufacturer of the UFH system and you must have "flow" control valves to ensure that the temperature never exceeds 28 degrees where the wood floor meets the screed or underlay. You cannot achieve this with thermostats.

There are so many UFH systems on the market today which means we cannot cover all aspects of UFH installation here. There are some relevant links and the main points to watch out for are:
- Hot water pipes must be at least 65mm below the top surface of the screed to ensure you get an even heat distribution and no "hot spots"
- There must be su˝cien t insulation below the UFH and also a good DPM to prevent heat loss and moisture being drawn up through the screed
- Ensure that you meet all building regulations and terms and condition of the UFH system manufacturer, do not take short cuts to save money as the longer term costs could be enormous.
- NEVER dry the screed out by using the under˜oor hea ting system you will destroy the integrity of the cement screed.

Commissioning an UFH system before installing a wooden floor . You must never install a wooden floor before commissioning the system as set out below.

- To gain the best performance from your heating system and the finished floor it is important to have all components working together.
- Hot water radiant underfloor heating system must be installed in conjunction with the manufacturer's guidelines and commissioned and run for 21 days to ensure that the system is fully operational.
- The screed must have a moisture content less than 1.8% before the underfloor heating system is started up. If the screed is 75mm then in normal weather conditions this will take at least 75 days to cure and dry out.
- Set the water temperature in the pipes to 20 degrees Celsius on the first day, and then gradually increase by a maximum of 5 degrees Celsius every 24 hours, up to a max. 45 degrees Celsius. This maximum temperature must then be maintained for approx. 8 days. This is controlled by flow valves and not thermostats.
- Then reduce the water temperature in the pipes in the reverse order over 8 days. The total procedure to take 21 days.
- During this procedure ensure that there is good ventilation in the room so that any moisture that is there will be released and can be correctly discharged.
- CRITICAL: The surface temperature must never exceed 28 degrees centigrade.
- Timescale: Run heating for 21 days

Flow Temperature Controls.

Unless a condensing boiler with a low temperature control is being installed then a mixing valve is used to reduce the temperature of a normal boiler which is 82 degrees down to about 50 degrees which will give a surface temperature on the screed of about 25 agrees depending on the pipe spacing. This is the safe way to control the system. In more advanced controllers, called weather compensators, use an external sensor and programmer to adjust flow and temperature to compensate for outside conditions. It is vital to have a device to control the boiler and pump to prevent flow temperatures exceeding safety limits.

Acclimatisation of wooden flooring

Before starting the installation, the 15mm or 20 mm Engineered floor boards need to be brought into the room where they will be installed after the 21 day initial running period, and exposed to the climatic conditions. The acclimatisation will comprise:-

- All wet trades must have finished and screeds dry with moisture levels below 8% and humidity below 55 %
- Storing the boards for at least 14 days
- The boards should be laid flat at least 300mm from the nearest wall
- There must be some battens under the bottom layer of package so that air can circulate.
- The room temperature must be at least 18 degrees C.
- The floor surface temperature must be a minimum of 15 degrees C.
- The air relative humidity must be between 40% and 65%.

CRITICAL: The surface temperature of the screed must never exceed 28 degrees C.

Campagne & Manoir engineered wood flooring

fitted over underfloor heating

Engineered 2 layers 15/4mm
Engineered 2 layers 20/6mm

Underfloor Heating System

Methods of installing a wooden floor with Installation of Underfloor Heating

- Concrete and Anhydrite Screeds: Glue down using BONA R850 adhesive and leave to dry for 48 hours after fitting before turning on the heating system.
- Secret Nailing or Secret Screwing to Joists: Ensure that there are no air gaps between the surface of the boards and heating system as air is an insulator and you will not get effective heat transference with potential hot spots.
- Commissioning the UFH system after the wood is installed

It is important not to shock the floor b y introducing the heat too quickly and after starting the heating system:

Ongoing maintenance and use of the floor and UFH system

Generally the temperatures should not vary drastically and in a perfect world the UFH should never be turned off just kept at a very low temperature. Always try to avoid taking the floor from one extreme of heat and humidity to another within a very short timescale. Ideally the room temperature should be 20 degrees Celsius and not lower than 18 degrees Celsius. The air relative humidity should be between 35% & 60%.

If you do turn off the system and the floor gets cold as it can in Summer then you must turn the system back on in a controlled fashion as you would when commissioning the system after installing the wood floor . If you turn it back on to full heat this will “shock” the wood flooring and could cause lifting or the top layer of engineered boards de-laminating.

The maximum temperature of the wooden floor should never exceed 27 degrees Celsius to avoid excessive drying-out problems, which can cause stresses in the wooden floor .

How to ensure you do not get problems

- Always use a professional UFH installer
- Ensure you have the right system to achieve what you want see some tips here
- Always use the best adhesives to glue the wooden flooring to the screed such as the Bona R850 which has been designed for wooden ˜oor with UFH
- If you want an electric system then you must follow the manufacturer’s installation requirements and make sure you do not get hot spots, some cheap systems will cause this
- Hot Spots occur where there is no effective reffector plates that spread the heat or where the screed is too thin
- Always leave the UFH system on and do not increase or decrease the temperature excessively

Campagne & Manoir engineered wood flooring

fitted over underfloor heating

Engineered 2 layers 15/4mm
Engineered 2 layers 20/6mm

Underfloor Heating System

EQUALIZING YOUR WOOD FLOORING

Wood Floors, both unfinished and prefinished, MUST be equalized properly before installation. Please follow these recommendations for equalizing:

Background to equalizing Wood Flooring

Wood is a natural porous material like wood, which continues to "breathe" even after installation and finishing. Wood has a cellular structure, and much like a sponge, expands as it picks up moisture and shrinks when it releases moisture. It is this movement which can cause cracks, separation, cupping, swelling and lifting in your floor . All wood will eventually acclimate itself to its surroundings. This is known as reaching the equilibrium point.
The exact equilibrium point to be reached by all wood elements on a job site and can be accurately predicted by taking relative humidity and temperature readings at the site and then use the chart below to find the expected equilibrium moisture content. The numbers in the middle of the chart are the equilibrium, moisture content point that all wood elements will reach.

	Relative Humidity (%)																			
Temp	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98
0°C	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
5°C	1.4	2.6	3.7	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.4	11.3	12.4	13.5	14.9	16.5	18.5	21.0	24.3	26.9
10°C	1.4	2.6	3.6	4.6	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.2	12.3	13.4	14.8	16.4	18.4	20.9	24.3	26.9
15°C	1.3	2.5	3.6	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.1	12.1	13.3	14.6	16.2	18.2	20.7	24.1	26.8
20°C	1.6	2.5	3.5	4.5	5.4	6.2	6.9	7.7	8.5	9.2	10.1	11.0	12.0	13.1	14.4	16.0	17.9	20.5	23.9	26.6
25°C	1.3	2.4	3.5	4.4	5.3	6.1	6.8	7.6	8.3	9.1	9.9	10.8	11.7	12.9	14.2	15.7	17.7	20.2	23.6	26.0
30°C	1.2	2.3	3.4	4.3	5.1	5.9	6.7	7.4	8.1	8.9	9.7	10.5	11.5	12.6	13.9	15.4	17.3	19.8	23.3	26.0
35°C	1.2	2.3	3.3	4.2	5.0	5.8	6.5	7.2	7.9	8.7	9.5	10.3	11.2	12.3	13.6	15.1	17.0	19.5	22.9	25.6

From US Dept of Agriculture "Wood Handbook as an Engineering Material"