GYPSOL

DESIGNED FOR USE WITH UNDERFLOOR HEATING AND COOLING SYSTEMS

SOLIDA DATASHEET

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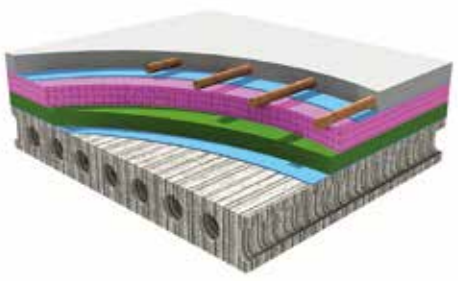
A HOLISTIC WHOLE HOUSE SOLUTION

The **Solida** system from Francis Flower (Northern) Ltd is designed to offer the mass housing market a highly cost effective, efficient and environmentally friendly floor solution combining, easily accessible, existing technologies combined in innovative ways. The first process in changing to the **Solida** system involves the introduction of underfloor heating technologies into ground and separating floors in combination with **GYPSOL** based flowing anhydrite floor screeds. For surprisingly little increase in build cost the **Solida** system delivers significant improvement in desirability and asset value, increased levels of useable space, reductions in heating operating costs and improvements in energy efficiency.

Currently the mass housing market in general uses solid concrete or suspended type ground floors with timber joisted separating floors. In general the heating systems used are radiator central heating systems. The **Solida** system seeks to change this, such that the heating systems are underfloor heating on all floors coupled with energy efficient heat sources such as condensing gas boiler systems or renewable heat technologies such as air or ground source heat pumps which may be more appropriate to higher code and carbon neutral developments.



GETTING WARMED UP

The first principal of the **Solida** system is therefore the introduction of energy efficient underfloor heating systems along with **GYPSOL** screeds. There are a number of potential positive side effects of this. When a change is made from radiators to underfloor heating the occupier gains more useable space in each room by virtue of the fact that they no longer need to avoid placing furniture against radiators. The generally accepted figure for this is 8% to 10% more useable space. This offers a number of practical and commercial opportunities to the house builder

- Added value due to increased useable floor space
- Improved desirability and "kerb appeal"
- Reduced energy use and subsequent cost savings to occupiers/owners
- Improved environmental profile
- Future proof design for higher code values

We have seen based on evaluations by, and discussions with, major house builders that the use of underfloor heating, given the above points offers greater desirability to purchasers. In some markets this has enabled the builder to offer higher asset value to buyers.

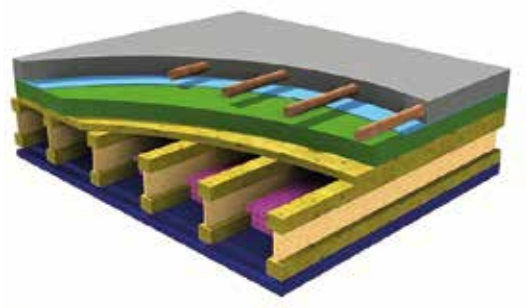
The use of **GYPSOL** based screeds over the underfloor heating systems reduces the operating costs of the heating system. Tests using efficient and correctly designed underfloor heating systems have shown that using anhydrite screeds can improve the co-efficient of performance of an underfloor heating system by up to 25%. Additionally flow temperatures can be reduced by some 40°to 50°C compared to the temperatures required for radiator systems or some 10° to 15°C compared to underfloor heating systems in traditional sand cement screeds. This all adds to the desirability and helps justify a higher selling price. This also helps the builder to achieve higher code levels where required and to gain extra code credits in coded sustainable developments.

FROM THE GROUND UP

The next element of the system involves changing from a power floated concrete or self compacting concrete ground floor system to an insulated screeded floor system. For example a typical house will have a ground floor which incorporates insulation over compacted hardcore, with or without a DPM at this level; concrete, typically 75 to 150mm deep which is either power floated or self compacting. This forms the working platform for the build process and the house is built around it. This can result in construction damage to the floor requiring subsequent remedial actions to make it suitable for occupation.

The **Solida** System removes this expensive and vulnerable concrete working platform and replaces it with a relatively cheap concrete subfloor, e.g. Gen 2 concrete, which is tamped or similar, rather than power floated and this is used as the working platform for the build process. If this becomes damaged by the build process it is less relevant as it will be subsequently screeded.

Towards the end of the build process when the roof and external windows are in place the floor is then insulated to meet the required U-Value and screeded with an energy efficient underfloor heating system incorporated within it. Where a beam and block or similar suspended floor system is used no subsequent concrete topping is required and the beam and block can be used as the working platform.



SEPARATING FLOORS

The final element is at the separating floor level where currently there is most likely a timber I-joist subfloor using minimum 220mm I-joists and 22mm sheet timber deck such as chipboard or OSB. There are several issues with this floor make-up from an occupiers point of view.

- Creaky floors
- Rapid fire and smoke breakthrough
- Poor acoustic performance (code level 4 requires improved acoustic performance)
- Bounce and deflection which limits choice of floor coverings
- Inefficient thermal insulation

The **Solida** system overcomes these issues by introducing a greater mass to the floor. This adds rigidity to the floor reducing the level of deflection and bounce and eliminating creaky floors. It gives a solid concrete feel to a timber floor. **GYPSOL** screed is class A1fl non combustible resulting in enhanced fire safety and reduced risk of smoke penetration. Adding mass to the floor improves its acoustic performance and the introduction of optional thermal insulation between the joists to enhance the performance of the added underfloor heating system makes the system more thermally efficient.

Our generic structural tests have been carried out using 220mm I-joists at maximum 600mm centres overlaid with a minimum 22mm OSB. This was overlaid with a 500g polythene membrane and a heated 50mm deep screed added. Test results are available on request. **Obviously a structural engineer will need to evaluate and approve any designs to ensure they are suitable for the specific application.**

To put all this into a commercial context we have looked at different developments and discussed with numerous house builders the costs associated with current designs and compared it to the costs associated with the **Solida** system. Our findings suggest that the probability of added benefit and desirability for little if any increased build cost leads to improved profitability for the builder and increased value for the occupier.

YOUR NEXT STEP

Each project will inevitably be judged on its own merits but in general all developments can benefit to some extent in terms of reduced environmental impact and improved profitability. It is acknowledged that the addition of a screed and underfloor heating system adds cost to the floor makeup, but these small changes to build cost are far outweighed by the potential enhancements in selling price and can yield improvements to the profitability of a given site.

It is not possible to go through site specific costs in a datasheet as each builder will have a different cost and price base to work from.

Please feel free to contact us on **01928 574574** to arrange an appointment for one of our dedicated team of technical and specifications managers who will be happy to work with you to ensure that you get the best out of the **Solida** system.

t: 01928 574574
e: ff@francisflower.co.uk
w: www.gypsol.co.uk

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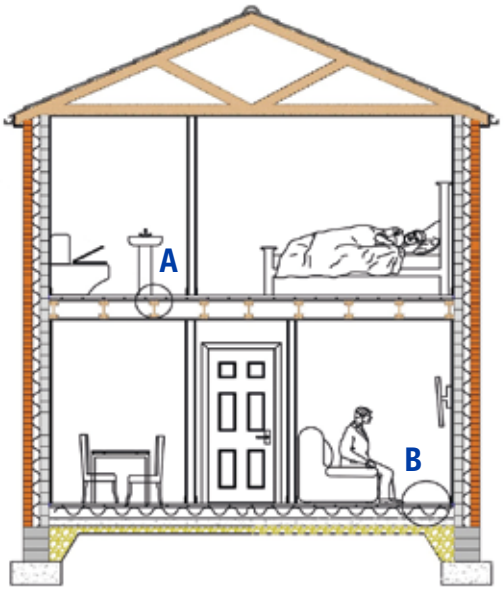
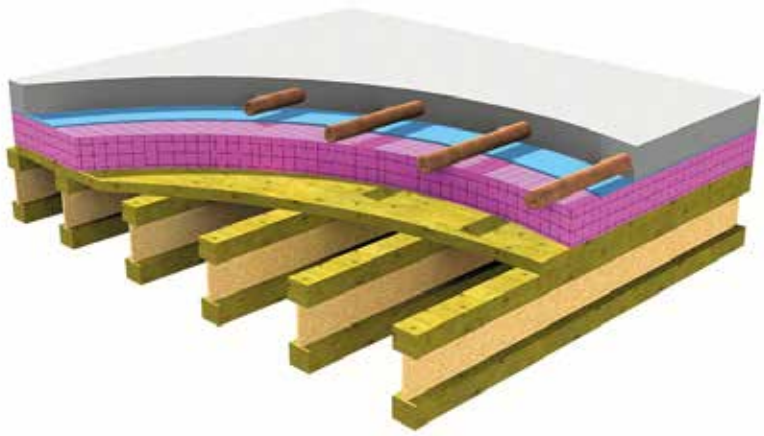
GYPSOL

FLOOR MAKE-UPS



A) TYPICAL SOLIDA FLOOR MAKE-UP - SEPARATING FLOOR



40mm (allow minimum 25mm cover to pipes) of **GYPSOL** TimBRE Screed with embedded underfloor heating

Optional thermal or acoustic insulation

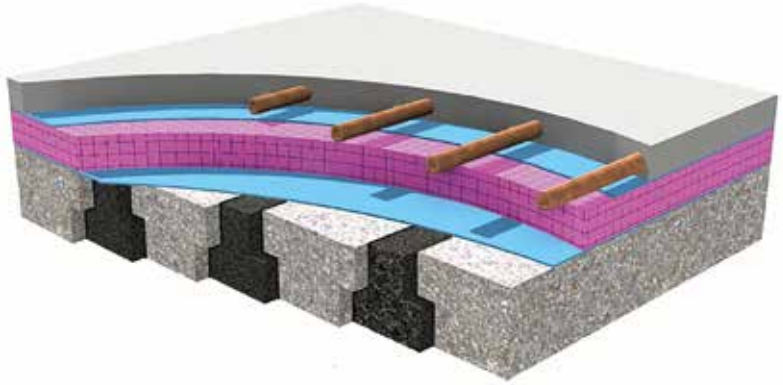
500g polythene slip membrane

22mm OSB deck

220mm engineered timber I-Joists at maximum 600mm centres

No Ceiling construction is shown

B) TYPICAL SOLIDA FLOOR MAKE-UP - GROUND FLOOR



40mm (allow minimum 25mm cover to pipes) of **GYPSOL** HTC screed with embedded underfloor heating

Minimum 500g slip membrane

Minimum EPS100 polystyrene insulation

Minimum 1200g polythene damp proof membrane

Beam and block or ground borne concrete substrate as appropriate

A Division of FRANCIS FLOWER

t: 01928 574574
e: ff@francisflower.co.uk
w: www.gypsol.co.uk

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