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Steel Fibre Reinforced Slab in Malaysia - Tesco DC

Newly formed CoGri Malaysia Sdn Bhd recently completed construction of a very special slab in Tesco's largest purpose built distribution centre in SE Asia. Sited North of Kuala Lumpur in Bukit Beruntung, the 416 metre long warehouse is a massive 50,000m² on a 25 acre plot of land which includes another 24000m² for future expansion. The main warehouse features 169 loading docks, 54,000 pallet spaces in 11 metre high selective racking.

Face Consultants prepared the design and specified the floor flatness as FM2 Special from the UK Concrete Society's Technical Report No. 34. This specification is for conventional wide aisle storage that may be converted to very narrow aisle in the future. The tolerances are designed to allow the conversion from conventional to narrow aisle racking storage with very little floor flatness upgrading required.

Face Consultants prepared the design and detailed



S240 Laser Screed®



Fibre Integration At Site

specifications for the Malaysia DC which required:

- * 2.4 x 2.6m pile grid
* 900 diameter pile heads
* 200mm thick sub base
* 210mm thick slab with 45kg/m³ HE+1/60 metal fibres
* AD10 armoured Joints
* 5 kg of fibre suppressant dry shake
* Masterkure 181 Acrylic Curing System

To avoid casting during the heat, batching plant staff mobilised at 2:30 a.m. and the first truck arrived on site at 4 a.m. For this type of construction the metal fibre is integrated in the concrete truck. CoGri Malaysia chose to do the fibre integration at site with a conveyor. Usually fibres are introduced at the batching plant but doing it at site conserves fibres in the event that a load of concrete is rejected upon reaching the site.

Following fibre batching the concrete was placed direct from the truck in 4 meter wide strips working left to right and then struck to tolerance with a Somero S240 Laser Screed®. The laser controlled head of the S240 Laser Screed® incorporates an auger which strikes the concrete and pushes excess

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CG Flooring Systems Update

During the summer period CG Flooring System have been busy with a number of projects, all of which presented their own unique challenges. Our first project in the Middle East has been completed and we have gained valuable experience working on the project for a fruit processing company in Al Ain, UAE. From working in temperature extremes of 45 degrees centigrade in the open canopied receiving area to the 6 degrees centigrade experienced in the cold stores, where the product is stored. Not to mention the logistical requirements we had to overcome just to ensure we could keep the water at an acceptable temperature in order to pump the

FASTFLOOR - IT.

This was an extremely challenging project for us and the lessons learnt along the way will undoubtedly stand us in good stead for our next project in the region.

Early July saw us refurbish two small industrial units for a prominent construction company in the South East of England.

The units had previously been used as garages, where existing tiles had to be removed from areas in each of the units, before the mechanical cleaning of the floor could take place. The floors were then ready



Floor Preparation- Al Ain

for patch repairs to be carried out prior to the application of an industrial grade sealer system. Not much in itself two small units, however both units were

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BIC Project in Athens

Concrete Grinding Ltd (CG) began the year with a return trip to Greece to work in partnership with Euroolit at a new facility for BIC-Violex SA in Athens constructed by Techniki Anodos SA.

The assignment was very similar to the Aktor project done back in 2007-2008 for IKEA. Euroolit constructed the steel fibre reinforced floor to a high standard. Face Consultants then tested the aisles for compliance to the DIN 15185 specification within the proposed truck wheel paths. The graphic traces were then analysed and any sections which did not comply with the specification were highlighted. Subsequently, Concrete Grinding Ltd used the Laser Grinder® to correct the floor within the wheel tracks at these locations.



Face consultants survey the floor according to DIN 15185 before the racking installation

The entire grinding process was completed before the racking installation started. All CG needed was for the aisle centres to be marked on the floor so that Laser Grinding could begin.

In total 14 aisles in 3 separate halls were brought in to full compliance of the DIN 15185 specification.

After Laser Grinding, Face Consultants surveyed every aisle to prove that the floor complied with the specification in full.



The laser grinder ready to work without racking being present

Overall, the work took 1 week from start to finish, was problem free and executed on time. This type of contract shows how CG can work alongside a flooring contractor such as Euroolit to offer a client a total solution. In addition, it demonstrates that the Laser Grinding process can be performed without any racking present – offering another level of flexibility to the main contractors project schedule.

A Great Result in The Middle East

FACE Middle East Fzc have successfully completed a design and supervision project for GRESCO Project Management in Jebel Ali Free Zone, Dubai, for their client Pharma World Holdings. Gulf Real Estate Consortium (GRESKO) is a prominent player in the UAE's real estate sector and a trusted name in the market since 1982.

FACE Middle East were involved with the project right from the very beginning of the initial design stage. The full floor slab design package (including loading calculations, thickness and slab layout) was submitted to Gresco several months before construction of the floor began. Then, six weeks prior to construction, FACE Middle East attended a pre-construction site meeting to check everything was in order and offer any advice where necessary. During the pre-construction site meeting, a presentation was made to both Gresco and the main contractor (System Construct) explaining how each Superflat slab would be cast and outlining the importance of different processes.

When the time came to begin construction of the floor, two FACE Middle East engineers were present to work with the main contractor and prepare everything, ready for casting the first VNA (very narrow aisle) slab.

After a few days of preparation, casting began with one VNA slab being cast per day. Each slab was surveyed using the FACE Digital Profileograph the day after casting and the results relayed to the project manager on a daily basis. This on-site supervision means progress and

quality is constantly monitored.

In total 14 VNA slabs were cast. Other areas were also monitored by FACE Middle East, including a receiving and dispatch area. Every VNA slab cast complied to the required flatness specification (TR34 Appendix C - DM2) and no remedial grinding was necessary.

FACE Middle East were also involved with a project in Riyadh, KSA for PWH's sister company, Banaja.

This project is a perfect example of how FACE Middle East's involvement at the early stages of the design process and successful relationship with all parties concerned helps to ensure the very best result is

achieved for the client.

Project Manager, Ala'a Al Jundi, for GRESCO Project Management L.L.C added, "I would like to extend my deepest thanks for your efforts towards achieving this great result. Many thanks to FACE Middle East for their valuable feedback & site control and to SYSTEM for their cooperation and understanding in this regard."



FACE M.E. supervising the construction of DM2 slab



Casting in progress. Most slabs achieved DM1

Project Manager for Techniki Anodos Mr. Manoilis Markakis commented, "Since this project was very pressed on time, the solution offered by Euroolit and Concrete Grinding Ltd was the only one that could guarantee the achievement of the specification and finish the works within the strict time schedule. The project went smoothly from start to finish. The Laser Grinding process was very impressive and both the Concrete Grinding Ltd and Euroolit teams were very professional. The way both companies worked together gave us a complete solution to the flooring issue, allowing the installation of the racking on time, just after the grinding process, enabling operations at full speed immediately. We are very happy with the results and would recommend using both companies for future work."

General Facilities Manager for BIC-Violex Mr. George Georgiou commented, "High

quality standards employed by BIC throughout their operations demanded the construction of a floor of the highest standards. The results regarding the technical solution offered by Euroolit in cooperation with Concrete Grinding Ltd fully justified our choice. The operation of our warehouse is flawless."



Just after the completion of the racking installation

Steel Fibre only Reinforced Slab on Piles Floor, Korea

In 2008, Hella KGaA Hueck & Co of Germany and Korean auto parts supplier Mando Corporation formed a Joint Venture company, Mando Hella Electronics (MHE), to develop a new generation of active vehicle safety systems. In early 2009 construction of a MHE Factory and Warehouse started at the Free Trade Zone in Songdo New City near Incheon, Korea.

From the experience of the Hella project team constructing facilities around the world, the importance of a good quality floor was emphasised at an early stage. The building specification recommended by Hella suggested the use of a Steel Fibre Reinforced Slab and required a flat floor in accordance with the DIN 18202 specification. Due to this and the need for a Piled Slab, the original design included a 200 mm Structural Slab followed by a 200 mm Topping slab to be constructed after the building was enclosed.

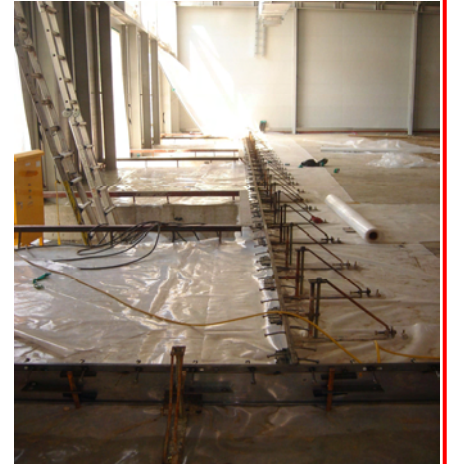
After Halla approached LGA Logis, based on its experience constructing floors to DIN specifications for German Clients such as BMW, LGA Logis immediately saw the opportunity to provide a more cost effective solution and proposed a Steel Fibre only Reinforced Slab on Piles (SOP). The preliminary design indicated that the original pile layout could be followed with a 250 mm thick Slab. Upon seeing a Steel Fibre SOP floor previously constructed in Korea by LGA Logis, Halla was surprised by the high quality of the slab surface, especially the lack of cracking, and agreed to work with LGA Logis to develop the solution further.

With the Steel Fibre SOP design being new to Halla, LGA Logis proposed to offer its unique total solution of 'Design-Construct-Insure' for peace of mind. Based on the programme saving, cost savings (see comparison table below) plus improvements in floor quality and long term durability expected, LGA Logis was selected as the Flooring Contractor. Face Consultants Ltd was engaged for the design work, which was protected with its global Professional Indemnity Insurance policy. As required by Halla, a well known Korean Professional Engineer – 'Dahn Structural Engineers' was also engaged by LGA Logis to endorse the design. The final design indicated that based on the current pile layout a 250 mm slab with 45 Kg/m³ of high tensile strength Steel Fibres and C30/37 concrete was sufficient. The only additional reinforcement required was a single layer of Steel Fabric in the edge span, from the ground beam to the first pile only.

Comparison Table between Original Design and LGA Logis Solution

Item	Original Design	LGA Logis Solution	Savings
Slab Thickness	200 mm + 200 mm	250 mm	-
Slab Construction Time	20 days	14 days	30%
Steel Weight	329 Tons	106 Tons	68%
Concrete Volume	2814 m ³	1829 m ³	35%

The floor was constructed in 5 casting days by Laser Screed. A Light Grey Dry Shake Topping was applied to the Factory floor area using the LGA Logis Automated Topping Spreader. Alphajoints with Alpha Dowels were installed as cast in place of Construction Joints. To one side of the building edge, 10 x 40 mm Stripjoints were installed with Dowel sleeves cast in place, to facilitate installation of a Construction Joint for a future expansion area. Upon completion of the casting the floor surface regularity was tested by Face Consultants with its Digital DIN Meter and confirmed to be fully compliant with the DIN 18202, Table 3, Group 4 specification. Visit www.lga-logis.com for more information.



Attention to detail is important



Topping Spreader in action



Floor Finishing in progress

New FACE in Romania

As of 1st September, the CoGri Group will have representation in Romania.



Daniel Lazar

The new company, Shoreskin, will be led by Daniel Lazar who will be promoting the Group services as a consultant.

Visit www.shoreskin.ro for more information

FloodSax® Wins Award In Lyon

Six companies, including PROMADIS, FloodSax® distributor in France, exhibited at the Territorial Solutions (SSTT) in Lyon in June, were honoured for their proposed technical solutions.

FloodSax® were announced as the winner under the Road & Public Works Category at the National Territorial Engineering Conference. FloodSax® are lightweight bags, ultra-absorbent, easy to deploy to protect against flooding and to contain the leakage of oil.

It is in this department that the FloodSax® were first used in Agnetz during the big storms that have affected the district. FloodSax® were first introduced at the show of Mayors in 2008. Marc Pestel-Debord, the Manager of Promadis, has successfully secured an initial order from the French Civil Defense, where FloodSax® are being tested and deployed in different regions.

Visit www.floodsax.fr or contact Promadis on +33 6 11 69 19 14 for more information.



Julien Foliguet, Promadis, with the award



New Appointment

The CoGri Group welcomes Jon Morris, joining CG Flooring Systems as their new Contracts Manager.

Jon has already worked for CGFS twice before in 2001 and in 2005. Jon's last post was an Operations Manager for a flooring products company based in Leeds.

Problem Free Concrete Floors - Fact or Fiction

The CoGri Group and its South African partner, [Royal Consulting \(Pty\) Ltd](#), in collaboration with the Concrete Society of Southern Africa, successfully held mini seminars for the Inland Branch and Western Cape Branch. The special mini seminars took place on the 7th and 9th July at the Midrand Protea Hotel in Midrand and at the Civil Engineering department of Stellenbosch University respectively.

The seminars coincided with the visit of Kevin Dare, Chairman of the CoGri Group in the UK, and were supported by the Cement and Concrete Institute (C&CI) and Royal Consulting (Pty) Ltd.

Both events attracted a significant number of audience, 90 delegates at the Stellenbosch University and 150 delegates in the Midrand Protea Hotel. This included 86 non-members, representing architects, consulting engineers, contractors and suppliers to the industry

The focus of the seminar was 'Problem Free Concrete Floors – Fact or Fiction?'. Proceedings were opened by the Chairman, John Sheath, with an overview of the Concrete Society and the benefits it can offer to members. This was done specifically due to the high numbers of non-members present, and will be repeated at all future meetings in an effort to boost membership (individual and company).

Bryan Perrie, Managing Director of the C&CI presented an overview of the current concrete flooring market in South Africa, which included details of common failures in concrete floors and designing and specifying to prevent them.

Kevin Dare presented his paper in two parts – one on the design process and detail design and the other on performance-based specifications.

Many references were made to the latest edition of the Concrete Society UK's Technical Report TR34 within which he had particular involvement in developing the flatness specifications.

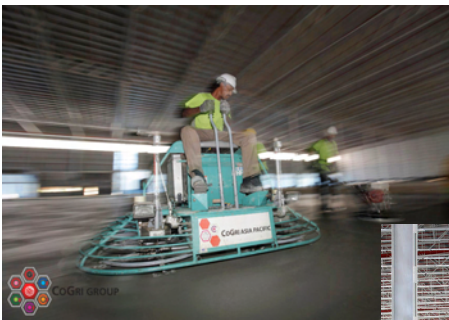
Concluding the programmed was a short talk by Ian Buchanan of Royal Consulting who presented a case for the setting up a South Africa Association of Industrial Flooring Contractors.

The Inland Branch Attendees



Steel Fibre Reinforced Slab in Malaysia - Tesco DC

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Finishing By Power Trowel

material out to the right side of the twelve foot wide head; a vibrator and a finishing blade smooth the just struck concrete surface. The only manual compaction of concrete done is around the perimeter joints to ensure that the load transfer dowels on the armour joints are fully enclosed with concrete. The last load of concrete was generally placed by 1 p.m. and finishing works completed seven to nine

hours later.

Twenty days into casting, the racking and racking sprinklers erection started.

Material used and production statistics for the 41 casting days are as follows:

- * 10,500m³ of concrete placed
- * 47 tonnes of fibres used
- * 39 man team including site

management x 41 casting days:

- Approximately 2000 total man days
- 0.039 man days per square meter of floor
- 0.19 man days per cubic meter of concrete

The project was completed on time and our team was demobilised from the site starting from the first week of June.



Finished Floor

CG Flooring Systems Update

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completed within one working week, with only two operatives on site. We received positive feedback from the main contractor running the project about the professional approach demonstrated by CG Flooring Systems. Well done to the team for their hard work.

A further opportunity to carry out floor levelling works at a Museum in London for two small gallery rooms covering an area of approximately 75m² in total. The galleries follow on from the main levelling works where CG Flooring Systems worked alongside Face

Consultants and completed in November/December of 2008. We were called in to this project by the floor finishes contractor to level the floor prior to their installation of the stone finish to the gallery floor. The challenge on this phase of the works was the timescale; 4 days from contact to completing the works. It demonstrates what can be done by ensuring a professional approach, coupled with good communication and resource management skills. Visit www.cg-flooring.com for more information.



Completed Floor