

Hess Group, 57299 Burbach-Wahlbach, Germany

Riyadh Kingdom Concrete Products continues with its ambitious plan to expand the production in Al Ahsa, Saudi Arabia

Zoman Mohammed Al Hajri & Partners Contracting Co. (known as Al Zoman Contracting Co.) is a general contracting company specializing in turnkey civil, mechanical & electrical projects, ranging from road & bridges construction to infrastructure & street lighting. The company is classified as First in Road Construction/Earthworks and Second in Electrical, with an annual work capacity of over 350 million riyals and over 1,000 employees. The sister company Riyadh Kingdom for Trading & Contracting LLC operates plants for the production and supply of ready-mix concrete and all other cement products, ranging from paving stones, curb stone and concrete blocks. Riyadh Kingdom Concrete Products planned to expand and approached their long-standing partner Hess Group, for support. The partnership between the two companies has now existed close to a decade.

Misfer Al Zoman, Managing Director of Riyadh Kingdom Concrete Products contacted Hess in November 2010 regarding the expansion of production capacity. The customer received an order for delivery of 140,000 m² of paving stones and was optimistic about further demand. This has been taken as an signal to expand production capacity. In August 2011 Hess received the order for the delivery of a fully automatic plant based on the machine RH1500-3 and the concrete mixing plant. The plant was the first fully automatic Hess RH1500-3 Plant including mixing plant from Hess in the Eastern Region

of Saudi Arabia (Al Khobar Industrial Area), Dammam and the first fully automated plant of the customer. In a very short time, the customer could see the advantages such as a wider range of concrete products, continuous product quality and savings in the number of personnel for the operation, compared to mobile or semi-automatic production plants. The new production facility could maintain 85 % to 90 % efficiency in the concrete product production and got great quality reputation for their products in the eastern province of the Kingdom of Saudi Arabia.

Therefore, the company now decided to invest in another RH 1500-3: „After nine years’ experience with plants of Hess Group, we have seen trustful advanced technology, reliable aftersales support and spare parts availability. We are looking forward for further expansions in the future together“, said Mr. Misfer Al Zoman. The Plant is installed in the Al Ahsa Area, approx. 150 km away from Dammam.

Market penetration in Saudi Arabia

The market in the Middle East, especially in Saudi Arabia, is very dynamic and is constantly developing. Therefore, business success depends heavily on how quickly and well you can respond to market and product developments. The modular equipped plants from Hess Group offer significant advantages here.



Production site of Riyadh Kingdom Concrete Products Al Ahsa

In addition to technical aspects, close and partnership-based cooperation with the customer, experience with local conditions and the willingness to support the customer in all aspects of his business are factors for the market success and consequently a decision criterion of the customer.

Trust, empathy and loyalty are values that customers from the region appreciate.

Hess Group has built up a large network, maintains constant contact with its customers and is known for its remarkably good and flexible machines and plants.

The complete package

One of the key arguments for Riyadh Kingdom Concrete Products was the local availability and know-how of Hess engineers and experts, experience with local conditions such as climate, personnel, raw materials and product development and the attitude of being at the customer's side at all times. That includes listening carefully with a deep understanding of the practical production conditions on site. Even if there are no obstacles, engineers from the Topwerk Middle East office, visit the plants after commissioning regularly and provide technical support and advice. The goal is to make sure the customer's production plants runs smoothly always.

On the technical side, Hess Group provides machines which allow products from 25 mm to 500 mm, depending on the model chosen.



Block machine RH 1500-3 with double flying bucket



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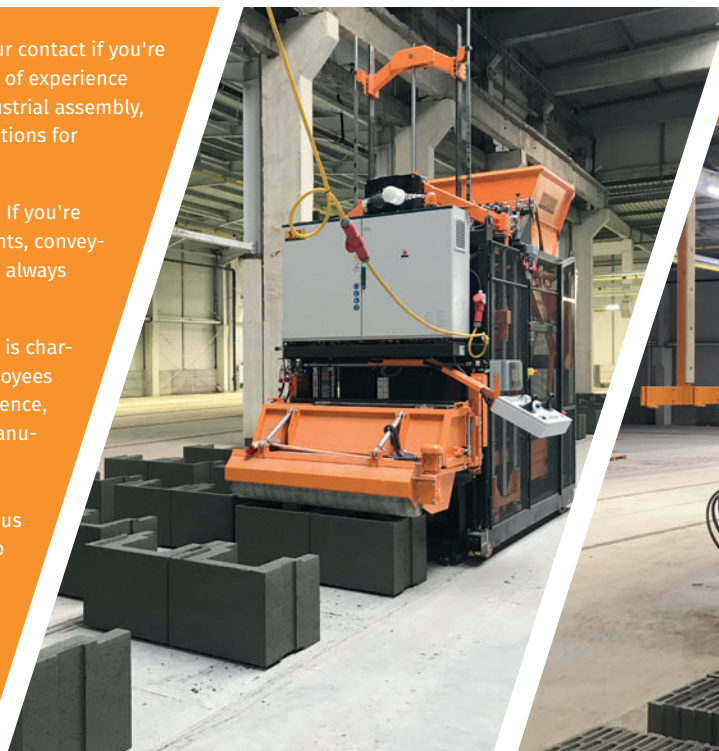
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The customer has the possibility to produce a wide range of products from thin to high concrete products in highest quality. By now, customers know that they turn to Hess Group if they want to plan flexibly in the future.

Hess RH 1500-3

The technology has proven itself under difficult local climate conditions up to and over 50°C which are normal conditions in the Middle East during summer time.

The RH1500-3 machine is the state of the art technology with 1400x1100 mm pallet size, amplitude controlled vibration (Variotronic) and is equipped with unique oil bath vibration table, which provides permanent lubrication of bearings for very high compaction in short cycle times. The production could reach a steady rate of 5500 square meters of 60 mm height rectangular pavers in 20 hours daily production time. The mentioned compaction technology in the RH 1500-3 allows a production of 25 seconds cycle time for curbstones including face mix with 25 cm height. In addition, the advanced filling system with laser sensors in the filler boxes and machine hoppers assure sustainable quality in every cycle. This enables a precise control when filling the mould. As a result, 6 curbstones of a total length of 6 linear meters have a very high density and reach a very high strength, which is comparable to the known wet press products, also produced mainly in the Middle East.

To secure the cycle time of the machine throughout the output of the plant, a servo-controlled handling system is required. At the wet side, Hess installed V- belt conveyors, one of the fastest and smoothest possibilities to handle a production board with fresh concrete products.

The 14 to capacity elevator, finger cart and lowerator with 20 storeys, are connected to the big chamber curing room with 4180 pallets active capacity.

This plant setup has been chosen by the customer in the first plant already, to ensure the production without stops in the production flow.

From the lowerator a walking beam conveyor transports the cured products on the production boards to the Hess Cuber Servo 700. The cuber is fully electric servo controlled in the movements. Attached to the cuber is the hydraulic clamping device. The cuber will ensure the fastest cycle time to cube the products, as well to keep up with the high speed of the concrete block machine.

Efficiency is the biggest task for a concrete block making plant; therefore, customers are asking for short cycle times. But what counts at the end is the number of high-quality products, going out of the plant and a very limited wastage in production. Therefore, the wet and dry side of the plant have to be harmonized in terms of cycle time setup, depending on the different products produced on the wet and dry side. With a Hess concrete block machine a realistic wastage of less than 2 % is possible, through easy operating of the plant with the



Finger car, 14to capacity



Cuber Servo 700 with walking beam conveyor and stone cube frame conveyor

Hess advanced control systems. The Hess Training Academy is also a key point and a special offer from Hess, where the customers' operators are well trained in concrete technology, efficient operating of the equipment and about the maintenance and troubleshooting of the plant. The Hess Training Academy will be held by Hess engineers wherever there is demand worldwide.

Coming back to the efficiency, the advanced handling system of the Hess plant has a buffer system, to ensure that both sides, wet and dry side, are never stopped in their production. The system will supply the wet side with production pallets, if there is a waiting time on the dry side or take out pallets of the system in case the wet side is stopped. Even if there are products with different cycle times on wet and dry side produced, the intelligent buffer system increases the capacity of the plant, by taking in or out production pallets in very short cycle time.

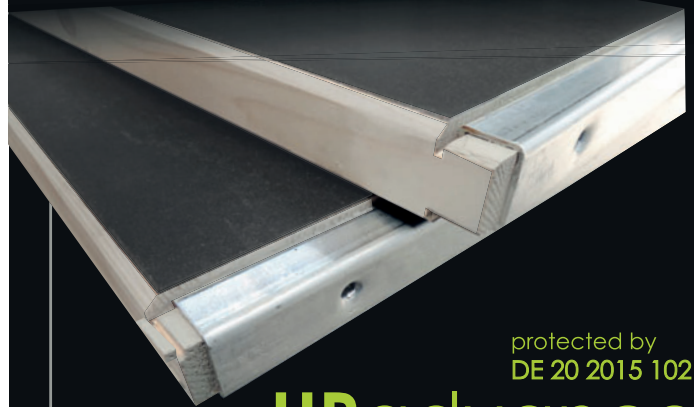
The block plant is operated by the Hess control system Karajan. This is the meaning of a stand alone touch screen monitor, from which the complete process of the production of the concrete products is controlled.

The mixing plant was also delivered by Hess Group: The hoppers are installed on a low ramp and filled with aggregates by wheel loader. The aggregates are collected by a double aggregate weigh batcher, moving on rails and weighing the requested aggregate very precisely. Through a 4-hopper powder pigment dosing system, the concrete products can be coloured in any possible colour feature requested by the customers clients. The pigments are dosed into the aggregate weigh batcher and embedded in the aggregates; the aggregate weigh batcher moves then to the skip hoists of the mixers.

The customer chose a higher capacity coarse-mix mixer of 3750l due to a high demand of kerbstone production. The face mix mixer 750l was installed on the same mixing platform. The mixed concrete is transported to the block machine via double flying bucket. This prevents contamination of face and core concrete, beginning with the dosing of the grain sizes.



Karajan visualisation and control system



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Mixing plant control

The control of the mixing plant is placed inside the control cabin, where the operator can control the complete mixing process. Receipts are stored in the system for all individual products. A transfer of the complete relevant production data from batching, mixing, pressing, curing, until cubing can be collected from the Hess control system and even transferred to a customer's ERP system.

A very special feature included in all new plants of Hess is the Hess statistics system. This system enables the plant manager or owner to review all relevant production information of his plant on his mobile device - anywhere in the world.

Even customers with older plants, installed this system in their controls, to be able to check what the plant is producing, in real time, from far away.

Commissioning during Corona crisis

Hess Group is worldwide in permanent contact with its customers and that is no different during the Corona crisis. Nevertheless, the installation of the new RH1500-3 was special: Usually Hess Group get engineers from Germany for commissioning a new plant. But due to the Covid-19 lockdown, the commissioning was done remotely. Just as this works perfectly for trouble shooting, for the first time a complete commission was carried out, by Topwerk Middle East engineers. The PLC software of the complete plant was sent to the Topwerk Middle East engineers from their German colleagues. With the online support of the German engineers, Topwerk Middle East engineers put the plant into operation, which was constantly connected to the PLC's in the plant as well as to the visualisation systems, through internet. Thanks to the adapted work processes the commission took almost the same time as normal.

Future Prospects

Saudi Arabia has a young and growing population. This leads to demand for housing and infrastructure. The Kingdom aims

to create more jobs for Saudi Arabians (Saudization) and more prosperity. With the Vision of 2030 (Project worth \$500 billion Dollars) a master plan was presented. As part of Vision 2030, mega projects such as NEOM are planned or already under progress. This and several other projects require huge amounts of building materials.

Hess Group has continuous business in Saudi Arabia as well in other countries in the Middle East and implements the lessons learned.



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