



Nordimpianti System Srl, 66100 Chieti (CH), Italy

GPC invests in new extruder for deep hollow core slabs

GPC is a South Korean precast company. It is part of the large international construction conglomerate GS Construction Company Co. Ltd. which is involved in more than 50 construction sites across South Korea and has a workforce of more than 5,000 employees, generating an annual turnover of over € 90 billion. The parent company is involved in all types of construction projects but it is its involvement in the logistics, industrial and commercial building sector that has led to an accelerating demand for deep hollow core slabs used for floors, a demand that has benefitted GPC, creating added value and also driving the growth of the subsidiary company.

GPC was established in 2020 in Eumseong. As well as benefitting from the natural growth of a lively construction market, the demand for precast concrete elements has also rocketed in recent years because of on-site safety concerns with traditional construction methods and the drive to reduce carbon emissions.

The production site for precast elements at GPC is divided into various departments using different production technologies. The plant produces beams, columns, and wall panels, however the majority of the plant is given over to the man-

ufacture of the prestressed hollow core floor slabs. The hollow core slab production line consists of 12 production beds, 150m in length, giving an annual production capacity of over 500,000 square meters. The hollow core slabs produced by the company range from 200 mm to 500 mm high, used for residential, industrial and commercial applications.

GPC was also focusing on the 350 mm, 400 mm, and 500 mm high elements. These element heights are of strategic importance to GPC allowing it to supply floors for important applications such as logistic centers, office buildings, and basement multi-story parking lots.

The initial experience that GPC had using extruder technology led them to conclude that they needed to reduce production costs. In early 2022 they started to look to other suppliers that could supply a reliable machine that required less and easier maintenance.

Their search led them to Nordimpianti and a decision to purchase the Nordimpianti Extruder EVO2. This decision was made after detailed comparative analysis between their existing system and the advantages that the Nordimpianti machine had to offer.



Aerial view of GPC in Eumseong



GPC's personnel appreciating the permanent oil bath gearbox transmission on arrival at the plant



Following various visits to the production facilities of Nordimpianti's customers in South Korea, GPC were impressed by the engineering design of their Extruder machine, especially noting Nordimpianti's use of direct drives instead of drive chains, and that all the gears required for the rotation and oscillation of the Archimedean screws and forming tubes worked in a permanent oil bath gearbox thus ensuring the reliability and durability of the machine.

This was in sharp contrast to their existing Extruder machine which had gears and chains that operated in the open and that were fully subjected to the harsh operating conditions found in these production environments.

Nordimpianti also offered other innovative solutions to drive down maintenance costs that were of particular interest to GPC.

The feeding screws are the main wear component in extrusion machines and have the task of delivering and pushing the concrete into the compaction chamber where the element is formed.

The feeding screws used in the old production machines were of the traditional type, that is made up of a single piece. However, Nordimpianti is distinctive in being able to supply feeding screws which are divided into two parts.



Two-part feeding screws

The two-part design of the screws from Nordimpianti makes it possible to replace only the end part of the screw where most of the wear is concentrated. This allows the customer to take advantage of further cost saving opportunities both in the cost of screws and the time needed to replace them.

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NORDIMPIANTI's expertise in the manufacture of reliable, profitable and high quality production machines and equipment is internationally proven.

NORDIMPIANTI is able to supply a single machine or everything needed for a complete, ready to go, plant always with the back-up of the professional consultancy and after sales service expertise of its personnel.

+39 0871 540222





Extruder EVO2 during the first bed casting of 400mm high hollow core slabs



Casting of 500mm high hollow core slabs

The first EVO2 Extruder delivered to GPC is able to produce elements with heights of 350 mm, 400 mm and 500 mm high.

With its emphasis on after sales service Nordimpianti sent its chief technician to help GPC, not only with the commissioning but also to help the production team to optimise the concrete mix design for the production of hollow core slabs.

After finalising the mix design, GPC started to commission the Extruder, producing hollow core elements from 350 mm to 500 mm high.

During the testing, the technicians of both companies were able to evaluate the performance of the machine and, in particular, the high casting speeds that were attained which reached over 1.7m per minute for 400 mm high hollow core slabs.

This level of production means that GPC is able to complete the casting of a 150m production bed in an hour and a half, which will result in the company increasing its daily production capacity by 25%.



Extruder EVO2 bed casting in automatic mode



Nordimpianti's Chief Technical Engineer, Mr. Sandro Chiurco, in the laboratory checking the quality of different aggregates



The first hollow core slabs produced ready to be transferred to the storage area

The obvious advantages that GPC saw for themselves during the commissioning of the Nordimpianti Extruder had an immediate consequence. The performance and production of the Extruder from Nordimpianti led GPC to place an order for another machine, this time an Extruder capable of producing hollow core slabs 320 mm high which will soon be delivered to the GPC plant.

All in all the change to use machines from Nordimpianti has been validated by GPC who have appreciated the quality of the products and after-sales services offered by Nordimpianti resulting in a step change to production efficiency and cost savings. ■

FURTHER INFORMATION

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Nordimpianti System Srl
Via Erasmo Piaggio, 19 / A
66100 Chieti (CH), Italy
T +39 0871 540222
F +39 0871 562408
info@nordimpianti.com
www.nordimpianti.com



GS E&C Co., Ltd.
33, Jong-ro Jongno-gu,
03159, Seoul, Republic of Korea
T +82 2 2154 1114
F +82 2 2154 0823
www.gsenc.com



GPC Corp.
653-32, Daegum-ro, Daeso-myeon, Eumseong-gun
27661, Chungcheongbuk-do, Republic of Korea
T +82 2 2154 4914
F +82 2 2154 0829
www.gpc.co.kr



HMI operating panel of the extruder machine showing a production speed of 1.7m/min for 400mm hollow core slabs