

System dramatically reduces noise within cabin of a vehicle

Hyundai Motor Group develops world's first RANC system

KUWAIT CITY, Dec 10: Hyundai Motor Group today announced the development of the world's first Road Noise Active Control (RANC) system. The first-ever system dramatically reduces noise within the cabin of a vehicle.

RANC builds on the Group's current Active Noise Control (ANC) technology, which actively reduces noise by emitting soundwaves inverted to incoming noise. ANC is a software-driven technology that analyses the in-cabin sound to decrease engine and road noise, versus the passive method of blocking noise through sound insulation.

The existing noise insulation method involved sound insulations and dynamic dampers, which not only increased weight but also failed to block the buzzing infrasound completely. In contrast, ANC utilizes much lighter parts like microphones and controllers to control the noise and reduces infrasound more efficiently. The technology is already available in some Hyundai Motor Group vehicles.

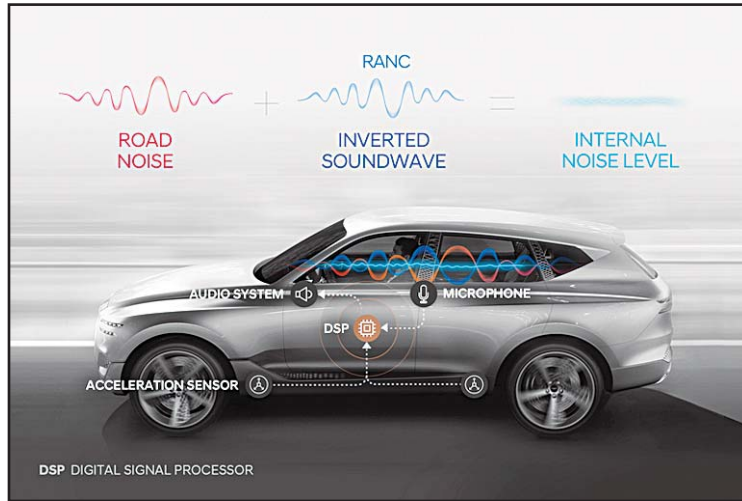
However, due to the limitations of noise measurement and analysis technology, the existing ANC was only able to be utilized when noise was constant and the occurrence of the noise predictable. The Group's current ANC technology has been most commonly used to counteract constant engine noise. Given that it only takes about 0.009 second for road or engine noise to reach the passenger, the current technology was limited.

With the first-ever RANC technology, Hyundai Motor Group is able to greatly improve in-cabin quietness. The new system can analyze various types of noise in real-time and produce inverted soundwaves.

For example, there are different types of road noises that the new technology can process, such as resonant sounds created between tires and wheels or rumble sounds coming up from the road.

The working principle of RANC is as follows: Using an acceleration sensor, RANC calculates the vibration from the road to the car and the control computer analyzes road noise. As its computation and signal transfer speeds are optimized, it only takes 0.002 second to analyze the noise and produce an inverted soundwave, generated by the DSP (Digital Signal Processor). The microphone constantly monitors the road noise cancellation status, and sends the information to the DSP. RANC is able to conduct accurate noise analysis and rapid computation to combat road noise for the driver's seat, the passenger seat and rear seats separately.

Based on tests evaluating road surface, vehicle speed, and different seat-



Researchers demonstrate the Road Noise Active Noise Control (RANC) system.

ing positions, RANC was able to reduce in-cabin noise by 3dB. That 3dB level is roughly half the noise level as compared without RANC. Thanks to this achievement, the Group can potentially decrease the amount of unsprung weight in a vehicle, utilizing fewer sound-insulating parts and dampers as compared with before.

Hyundai Motor Group went through six years of research and development for the mass production of RANC. Especially, the pre-production phase involved an open innovation between industry and academia, with participation by Korea Advanced Institute of Science and Technology, WeAcom, ARE, BurnYoung and more. Furthermore, the mass production phase was carried out with global car audio company, Harman to increase degree of competition.

Hyundai Motor Group has completed domestic and American patent application about the location of sensors and signal selection method, the core technology of RANC.

Looking to the future, in-cabin quietness becomes more important as internal combustion vehicles are phased out. Vehicle interior noise primarily comes from three sources: vehicle powertrain noise, road noise, and wind noise. There is almost no powertrain noise from electric and fuel cell electric vehicles, so quelling road and wind noise becomes even more imperative. Utilizing RANC can significantly reduce road noise and create a serene cabin for future electric and fuel cell electric vehicles.

"RANC is a remarkable technology which takes existing NVH technology to the next level," said Gangdeok Lee, a Research Fellow of NVH Research Lab. "We will continue to take the leading position of NVH technology and deliver the highest level of quietness to customers."

The technology will begin to be applied to an upcoming Genesis model.

More details about RANC can be found at the Hyundai Motor Group Newsroom

Hyundai offers style, performance and sustainability at Los Angeles Auto Show

Models highlight design and engineering capabilities

LOS ANGELES, Dec 10: Hyundai is premiering three amazing vehicles at the 2019 Los Angeles Auto Show, showcasing the future of style, the future of performance, and the here-and-now of eco-friendly driving.

For style, the Hyundai stand unveils the Vision T concept, the seventh in a series of Hyundai Design Center concepts expressing Hyundai's evolving Sensuous Sportiness global design language. The SUV concept has a matte-green exterior finish and is powered by a plug-in hybrid powertrain, indicating its eco-lifestyle focus and inherent balance with the environment in which it is driven.

For performance, Hyundai introduces the RM19 Racing Midship Sports Car, with the letters RM referring to the N prototype model's "Racing Midship" body configuration. This drivetrain configuration provides supercar-level handling balance, for outstanding connection to the tarmac at all speeds and driving conditions. Featuring a powerful 2.0-liter turbocharged, direct-injected engine with an output of approximately 390 horsepower, RM19 is expected to yield impressive zero-60 mph (96.6 km/h) performance of under four seconds.

For the here-and-now, LA is the venue to launch a redesigned version of the eco-friendly IONIQ car lineup



IONIQ Electric car

in a North American debut. IONIQ Hybrid, Plug-in Hybrid and Electric cars all receive refreshed exterior and interior designs, added infotainment technology and new Hyundai SmartSense™ active safety features and driving assistance systems. Drivers of the new 2020 IONIQ Electric can also enjoy 270 kilometers of range thanks to an upgraded 38.3-kWh battery with 36 percent more energy capacity.

"Across our range, Hyundai is offering the best in design, performance, and sustainability, and our presence at this year's LA Auto Show has served to highlight those capabilities," said Mike Song, Hyundai's Head of Operations for the Middle East and Africa. "These are

three very exciting cars, that show Hyundai's talented designers and engineers are always ready to exceed expectations and set new standards."

One of the world's largest auto shows with around 1,000 vehicles on display, the Los Angeles Auto Show is taking place over the United States' Thanksgiving week, from 22 November to 1 December, and features a vast range of cars, trucks, SUVs, electric vehicles and more. For 2019, Hyundai has hosted several international media, including from the Middle East and Africa, to attend the global press conference and visit the show. The program also included test drives of the RM19 and IONIQ, as well as other flagship Hyundai models such as Nexo and Palisade.



Hyundai Vision T SUV concept



RM19 Racing Midship Sports Car

Slowing inflation supports a looser monetary policy

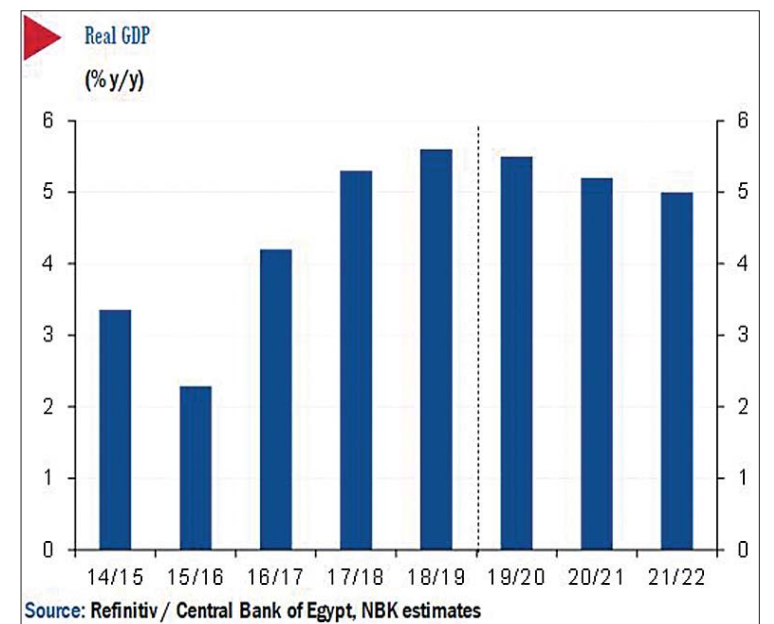
Egypt's economy on favorable trajectory

Report prepared by NBK

Egypt has successfully completed its 3-year IMF supported reform program, achieving its key objective of macroeconomic stability. Economic growth has continued its robust trend, reaching 5.6% in the first quarter (July-September) of the current fiscal year (FY19/20). Looking ahead, we expect growth to improve but at a slower pace compared to recent years. Real GDP growth will remain strong at around 5.5% in FY19/20 and average about 5% for the next couple of years. It will be supported by a strong pick-up in capital spending, a further improvement in the tourism sector and continued increases in natural gas production, which could turn Egypt into a net gas exporter in the short-run.

Egypt will likely move to a new precautionary non-financial program in which the IMF will play an advisory role, providing important policy and technical support. Coupled with the authorities continued commitment to reforms, such a program should help sustain Egypt's economic gains.

Despite the energy subsidy cuts adopted at the start of the fiscal year in July 2019, urban inflation started to decelerate faster than expected. It stood at 3.1% y/y in October 2019, the lowest reading since October 2005. This was driven by the state's efforts to ensure an adequate food supply and by continued strengthening of the EGP, which gained about 10% against the dollar in 2019, helping to curb import price pressures. We expect inflation to remain low in the single digits by 2022. These projections, however, are subject to uncertainty related to movements in the oil price, the exchange rate, and food price volatility, which has a large weight in the consumer basket. Slowing inflation has provided some space for the Central Bank of Egypt (CBE) to cut its interest rate four times in 2019 by a cumulative 450 bps. And while there is still



more room for further cuts, we do, however, expect the CBE to remain prudent and move cautiously – perhaps cutting the rate by 300-400 bps in 2020 – if inflation remains subdued.

High debt servicing costs weaken the fiscal position

The authorities continue to make progress in fiscal consolidation. Despite the recent increase in government salaries and pensions in July 2019, the primary budget surplus is estimated to have reached 1.5% of GDP in FY18/19 from 0.2% a year ago. We expect this trend to continue, with the primary surplus averaging 2.5% of GDP over the next couple of years.

The overall budget deficit remains relatively high standing at 8.2% of GDP in FY18/19, due mainly to high debt service costs. In fact, interest payments have increased in recent years, reflecting both the rise in outstanding public debt and higher domestic funding costs. We expect the fiscal deficit to narrow further to 7.5% of GDP in FY19/20 and reach 6% by FY21/22, thanks

to higher revenues (taxes and gas) and energy subsidy reforms. Public debt declined from 108% of GDP in FY16/17 to an estimated 92% of GDP in FY18/19, driven by cuts to benchmark interest rates and the move towards more international debt that carries lower interest rates. With lower budget financing needs, public debt is expected to fall to around 80% of GDP by FY21/22, but the structure of the debt will be tilted more toward external debt. In this context, the government plans to issue during the current fiscal year about \$7.0 billion multi-currency denominated international bonds to benefit from the historically low global interest rates.

The external sector to improve further

Egypt's external current account improved following the adoption of the reform program, with the deficit dropping from 6.1% of GDP in FY16/17 to 2.7% in FY18/19. It should shrink gradually to around 2% of GDP in FY21/22 on account of further growth in remittances and tourism as well as increase in gas revenue.

Promising outlook, but challenges remain

Egypt made commendable progress under its bold adjustment program and was able to restore macroeconomic stability in a relatively short time. Egypt's unwavering commitment to reform should now translate into a second-generation set of measures that focus on deep-rooted structural rigidities reflected mainly in the still dominant public sector. Egypt will need to focus on improving the business environment and developing the private sector to become the primary driver of economic growth. Addressing poverty and strengthening social safety nets will make it easier to forge ahead with the rest of the agenda over the next three years.



Combo photo from the ASMEK Event.

Telco participates in B2B 4 SME forum as main sponsor

VIVA showcases its 5G business solutions

KUWAIT CITY, Dec 10: VIVA, a world-class digital leader providing innovative services and platforms to customers and enabling the digital transformation in Kuwait, and a subsidiary of STC Group, has participated at the B2B 4 SME forum as main sponsor for the second year in a row, organized by the Association of Small and Medium enterprise of Kuwait (ASMEK).

VIVA's contribution at the event was through a special booth for VIVA business where the Enterprise team showcased the latest enterprise voice solutions for SMEs, including 5G Mobile Broadband, 5G Dedicated Data Access, 5G Dedicated Internet Access,

Cloud PBX, CCTV and Fiber Fixed Solutions.

Meshari Al-Hamad, General Manager of Enterprise and Wholesale at VIVA was a speaker at the panel, where he explained the history of the telecommunications companies and the significant role it played in the development of small and medium sized businesses, and providing them with the logistic support, in line with the ICT transformation in Kuwait and the region. He affirmed that VIVA will not limit itself as a telecoms operator solely, but will serve its customers based on their needs as a world-class digital leader providing innovative ser-

vices and platforms. VIVA's strategic plans tie in closely to incorporate and support the vision of His Highness Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah for Kuwait 2035, in positioning Kuwait as a major financial and commercial hub in the region.

This event is the first of its kind at a regional level, aiming to create an arena for interaction and highlighting the commercial exchange between owners of the SMEs and leading companies in the private sector, and the SMEs amongst themselves, which is a main factor that is bridging both parties and encouraging them to exchange knowledge and provide best offers to the project owners.

CBK publishes its quarterly statistical work

KUWAIT CITY, Dec 10: The Central Bank of Kuwait (CBK) has published data on the International Investment Position and Total External Debt of the State of Kuwait in its quarterly statistical bulletin starting from Q1 (January-March) 2019. In line with the international best practices, CBK continuously strives to enhance statistical work through the development of statistical databases and provision of integrated and comprehensive data in terms of coverage, periodicity, timeliness, and quality. The newly-introduced tables namely (44)

and (44-1) & (46) and (46-1) reinforce principles of disclosures and transparency by including the State of Kuwait's International Investment Position and Total External Debt, respectively, on an annual and quarterly basis.

It is worth mentioning that the Net Investment Position of the State of Kuwait represents the net overseas assets and net foreign liabilities, meanwhile the Total External Debt of the State of Kuwait includes the external debt of the general government and private sector.

Key economic indicators	FY17/18 FY18/19 FY19/20 FY20/21 FY21/22					
Nominal GDP	\$ bn	248	297	335	382	432
Real GDP	% y/y	5.3	5.6	5.5	5.2	5.0
Inflation	% y/y	20.9	14.0	7.4	9.0	8.0
Budget balance	% of GDP	-9.7	-8.2	-7.5	-6.5	-6.0
Current account	% of GDP	-2.4	-2.7	-2.5	-2.0	-2.0

Source: Official sources, NBK estimates