

ELECTRICA

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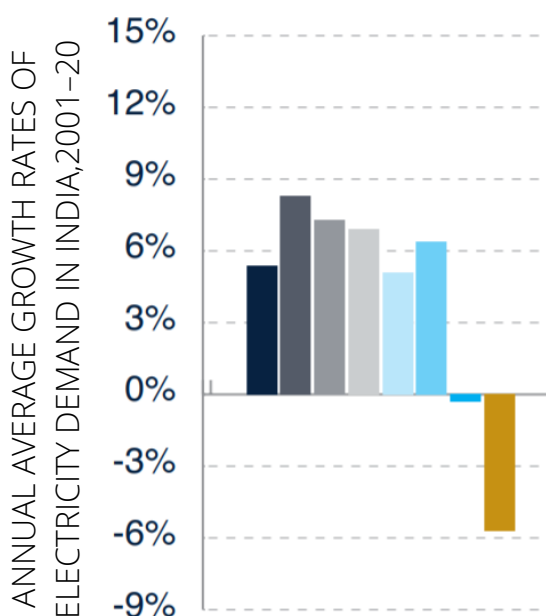
COVID-19 AND THE INDIAN POWER SECTOR: EFFECTS AND REVIVAL

TECHNOLOGY TO WATCH IN COVID 19

Post COVID-19: Indian Online Education Industry - Boon Or Bane For Students

by Chandan Kishore

The coronavirus pandemic has been responsible for millions of infections globally, affecting almost every sector across the world. Amid COVID-19 disrupted academic year, educational institutions are coming up with better methods, albeit as complementary to traditional classroom education. Caught in the vortex, the Indian education system is shifting the paradigm towards online education. The nationwide lockdown that was imposed, in hopes to contain the virus, resulted in schools and colleges being closed across the country affecting over 500 million students. In order to continue with classes, institutions are focusing on e-learning methods of learning on digital platforms. Nevertheless, statistics have shown that online has proven to enhance learning and the students' ability to retain information.



COVID-19 AND THE INDIAN POWER SECTOR: EFFECTS AND REVIVAL

The all-encompassing lockdown announced on 24th March 2020 by the Prime Minister as a precautionary measure against COVID-19, followed by subsequent extensions, has resulted in a standstill of all economic activity in the country. The recently released Index of Industrial Production (IIP) shows that economic output during April' 20 contracted by over 55 % year-on-year.

This contraction is reflected across all sectors including manufacturing, mining, and electricity generation. While this is a cause for concern, we should try not to restrict our analysis to the numbers alone. It is expected that with the re-opening of the economy, especially of the manufacturing sector, jobs and demand can be revitalized. This will, however, depend on various factors including proper implementation of the government's 'Aatma Nirbhar Bharat Abhiyan' stimulus package and strengthening of the nation's long-term growth prospects via measures for increasing consumer confidence and attracting investments.

The effect of the lockdown on the power sector, which itself contracted by 22.5% in April'20. It examines the reasons for the contraction, its effect on various constituent parts of the value chain, and prospects for revival.

As a starting point, it was expected that electricity demand and generation would be affected by the lockdown due to the restrictions on commercial, industrial and transport (railways account for approximately 500 mn units demand per day) activity in the country. Further, the demand profile itself naturally shifted towards domestic usage (24.8 per cent in 2018-19) from commercial (8.2 per cent in 2018-19) and industrial (41.2 per cent in 2018-19) consumption due to people being consigned to their homes.

With the lockdown being eased gradually all over the country, already there is an uptick in power demand, largely on the back of increasing industrial activity. Even residential demand is expected to grow due to hot weather. In fact, the peak demand observed on 25th May was greater than the peak demand on the same day in 2019. However, the commercial sector which includes offices, shopping malls, could still have subdued demand for some time due to the ongoing crisis keeping people at home with continued remote work and online education. But there is a clear indication that the power sector will bounce back to pre-COVID-19 levels, if not the levels achieved last year.

It is important that the government and other stakeholders use the learning from the crisis to overhaul the sector. There is an increasing need to consider policy changes, business modifications and technological innovations to make the sector more cost and resource efficient. . The cross-subsidy challenge and new tariff and market mechanisms need urgent attention. Moreover, application of innovation across the value chain from digitization of grid operations, smart grids, energy efficiency interventions, and adoption of advanced metering needs to be accelerated. This crisis also gives an opportunity to advance the adoption of renewable energy and energy storage, keeping in mind the lower cost of operations of renewable power plants, the steadily decreasing capacity utilization factor of coal power plants in the country (projected to be 56.5 per cent in 2020-21 not considering any residual effects of the pandemic), and India's commitments to global climate change goals.

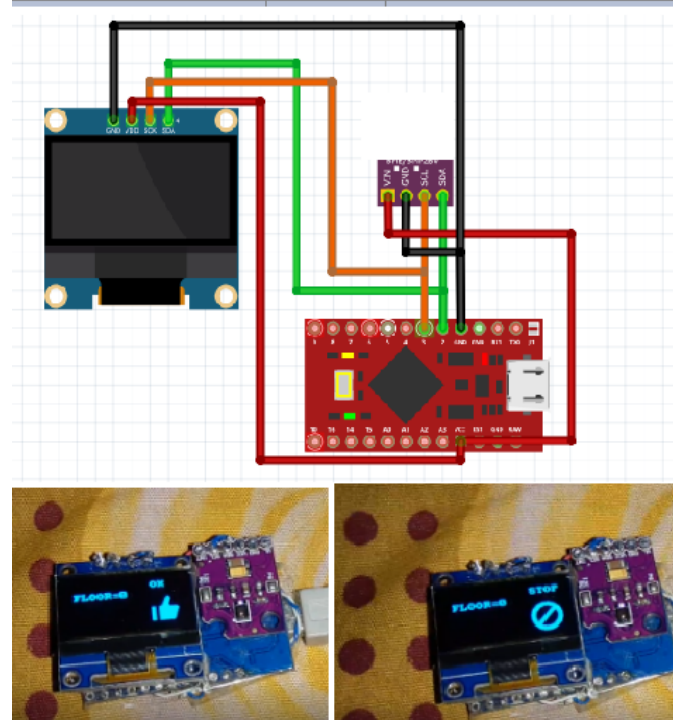
TECHNOLOGY TO WATCH IN THE COVID-19

CONTACTLESS UI CONTROL FOR LIFTS

Lifts/elevators in buildings, hotels and hospitals are used by many people. If it's a structure with over more than 100 floors, then using stairs is not a convenient option, especially for physically challenged and old-age people. Furthermore, in the current scenario of COVID-19, the chances of spreading the virus and other germs by touching the surfaces of switches and buttons has increased. So to minimise this risk, we will design a new, contactless gesture-based switch panel that can effectively replace the old, touch-based switch panel used in lifts. Our contactless gesture-based switch control panel is not just limited to lifts, but can also be implemented in other areas such as vending machines, ATMs and many more.

After connecting the components, power the Arduino and then give the gestures up or down to set the floor where you want to go. Then give the gesture left for acknowledging the lift to go to that position. Give the gesture right to stop the lift.

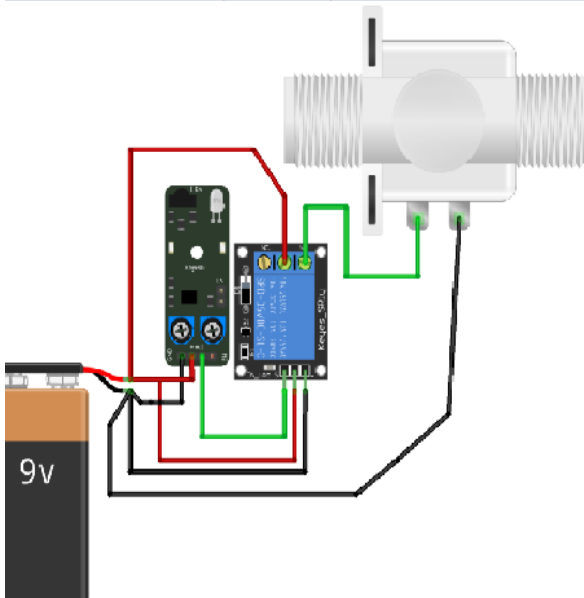
Component Name	Quantity	Description
Arduino Pro Micro/Nano	1	For Programming
APDS 9960	1	Gesture Sensor
OLED SSD1306	1	OLED DISPLAY
Wires	--	For Connection



Component Name	Quantity	Description
5V Relay	1	Single Channel
Solenoid Valve	1	12V-24V
IR Sensor	1	Proximity sensing

CHEAPEST TOUCHLESS WATER DISPENSER

A touchless water dispenser uses an IR sensor to detect whether or not a hand/glass is present near it. If detected, then a relay module is automatically triggered that is connected to a solenoid valve. This trigger turns the valve on to start the dispensing of water. Here we will also make one more model of automatic touchless water dispenser that can dispense a hand sanitizer or soap along with water.



Now power the device and then put the glass or hand near the IR sensor. When the IR sensor with high input comes near the relay, the plunger is pushed to make contact with NO (Normally open) and C (common) and hence the valve turns to on position, therefore allowing the water to flow to fill the glass. When the glass is removed from there, then the valve automatically turns to off position.

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Huge demand rising in Online Learning

The orders of 'Stay Home' and social distancing has spared no one. Students have been caged at their homes since Lockdown 1.0. India has the largest population in the world in the age bracket of 4-23 years which presents huge prospects in the education sector. Most of the companies, schools and institutions have come up with online essentials as their primary mode of teaching. The teachers and instructors are gradually organizing online webinars and meetings. Educational universities and institutions like Amity International Group, DIT University, Dehradun and many others have shown tremendous results in online teaching methodology. The institutions are promoting the concept of online classrooms and the resources are being provided to all the students digitally. The demand for online courses and learning has seen a sudden surge since the lockdown. This clearly indicates the huge demand that is rising for online learning. Online learning has been adopted in various countries as the primary mode of education. The e-learning method requires only a good internet connection and a computer/mobile as essentials. The sessions can also be recorded for later use. Also, the commute time is reduced to zero, buying enough time to relax after the sessions. Moreover, the importance of virtual learning is increasing as the academic year has been drastically interrupted due to Covid-19. Students are left with no other choice rather than attending online classes.

Technological challenges being faced by the teachers and students

The lockdown crisis has forced us to adopt online learning mode without any preparations. The educators and students are strangled with the basics like internet connectivity and unpredictable power cuts. Also, the educators are under tremendous stress in solving structural issues like teaching methods and deliverables. The new learning system has also resulted in increased working hours for the educators, inviting more pressure. Many students also try to skip classes, as the teacher are not able to ensure 100% attendance. Many parents don't have a spare computer or a laptop at home, as they themselves are busy working from home. This forces the students to struggle with attending the classes over smartphones.

Effective measures are taken by the Government to boost virtual classroom

The government is taking effective measures to curb the negative implications. FM recently announced help for all the students who don't have access to internet facility. This will consist of DIKSHA, a one-nation, one-digital platform facility for school students. The government also mentioned extensive use of radio services in the near future. Online teachings are a potential model for resource crunched country like India, and we should look forward to adapting to newer learning methods. With everything going digital, we need to assure efficiency in learning methods too. Online teachings will promote self-development and effective teachers are being able to realize it. The positive prospects, however, outweigh the negative implications and we should be ready to acclimatize with the advancements.