

The Evolution of Design Trends in Industrial Machinery

South Africa – June 2019: The influence of changes in human society and activity has always been the underlying motivation behind major trends in the development of everyday objects, and the trends and changes we've witnessed in the fields of industry and industrial machinery are no exception.

From the moment the industrial revolution was set into motion at the turn of the 19th century, the race has been on to modify and enhance the strength, durability and production capacity of machines across the spectrum of industrial sectors, as the demand of growing populations has increased exponentially.

After the Second World War, the mass urbanisation that characterised global development in the 1950s and 60s increased demand for large-scale construction projects, which in turn saw demand for heavy machinery increase, too. There was a huge focus on the development of rail projects like the Tokaido Shinkansen in Japan – the fastest railway in the world at the time - by global manufacturing giant, Hitachi.

Fast-forward a couple of decades to the 1980s and 90s, and the industrial landscape was transformed yet again, with political and environmental factors driving new demands and operating bases. This was the age of the ultra large hydraulic excavator – another leading innovation by the Hitachi Construction Machinery Group (HCM) - which demanded the development of larger hydraulic systems as well as electronic components to support these much-larger machines, forever changing the face of open-pit mining operations around the world.

Throughout all of these industrial phases up to present time, the impact of technological advancements in the field has been a consideration in terms of their effects on human settlements – by noise and dust pollution, for example – and, of course, with regard to safety.

This has prompted yet another level of demand, whose challenges have been met in the digital age with greater levels of innovation in shorter timespans than were seen throughout the combined preceding decades of industrial advancement. Modern excavation equipment, for example, uses improved hydraulic system designs, with advanced electronic controls on hydraulic pumps, improving response and economic control of the pump for greater efficiency and system operation. It also means lower fuel consumption and operating costs.

All of these innovations are important from a sustainability point of view, bearing in mind that heavy industry often comes under fire for its environmental impact, driving a much more environmentally-focused approach to industrial development in general.



More and more companies are seeking to combine technological solutions and environmentally-friendly practices, and it shows in the development of digital innovations that monitor carbon output, fuel consumption and other factors with potential environmental impact.

Digital solutions have literally transformed the face of modern heavy industry, reducing general capacity for human error while simultaneously streamlining and optimising production output in significant volumes. ICT (Information & Communication Technology) has, in recent years, become an integral player in the design, operation and maintenance of construction machinery. This in itself implies greater levels of safety for human operators, whose roles are shifting further from manual operation as digital innovation enables higher degrees of remote programming and operation of machinery.

Those manufacturers of heavy machinery who innovated and consolidated their way through the recessions of previous decades and have embraced the technology of our times find themselves at the frontier of the next wave of digital advancement. Today, they are setting design trends rather than responding to them, with automation and connectivity playing a significant role in the everyday operations of both, manufacturers and end users.

One example of this is the HCM's recent announcement of its vision for an open and interoperable partner ecosystem for autonomous mining.

HCM is pioneering this approach to autonomy among the leaders in global mining technology in support of ISO standards and with the aim of encouraging new entrants into the industry, with its Solution Linkage platform. The platform assists customers to integrate new vendors into their existing infrastructures.

HCM Vice President and Chief Technology Officer, Hideshi Fukumoto says, "Open innovation is the guiding technological philosophy for Solution Linkage. Based on this philosophy, HCM is announcing its commitment to championing the customer enablement of autonomous mining through an open, interoperable ecosystem of partner solutions."

Fukumoto says the Group believes that this approach will provide greater flexibility and control for customers in terms of integrating new autonomous solutions into their existing operations while reducing the associated risks and costs of alternative approaches.

The primary significance of the HCM Group's interoperable offering is that it simplifies the connectivity between systems to eliminate operational silos and enable end-to-end visibility and control across the mining value chain.



Meanwhile, the world rides on the cusp of a wave of new technology as explorations into AI continue, raising as many new questions to answer as it offers answers to existing ones.

Ends.

For more information visit the website: <http://www.hitachi.co.za/za/about-us>

For further information, please contact:

Boitumelo Mogano

T: 087 701 5501

E: boitumelo@flume.co.za

